

Inria

RESEARCH CENTER

FIELD

Digital Health, Biology and Earth

Activity Report 2019

Section Dissemination

Edition: 2020-03-21

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7. Dissemination

7.1. Promoting Scientific Activities

7.1.1. Scientific Events: Organisation

7.1.1.1. General Chair, Scientific Chair

– Frédéric Cazals:

- F. Cazals co-organized, with P. Alliez and F. Chazal, the conference *New Horizons in Computational Geometry and Topology*, held at Sophia Antipolis (September 5-6, 2019) in honor of J-D. Boissonnat. See <https://project.inria.fr/jdb2019/en/>.

7.1.2. Scientific Events: Selection

7.1.2.1. Member of the Conference Program Committees

– Frédéric Cazals was member of the following program committees:

- Symposium on Computational Geometry
- Symposium On Geometry Processing
- International Conference on Computational Systems-Biology and Bioinformatics:
- Intelligent Systems for Molecular Biology (ISMB), PC member of Protein Interactions & Molecular Networks

7.1.2.2. Reviewer

– Frédéric Cazals reviewed for the following journals:

- Bioinformatics
- Discrete and applied mathematics
- PLOS Computational Biology
- PLOS One

7.1.3. Invited Talks

– Frédéric Cazals gave the following invited talks:

- *Multiscale molecular flexibility analysis: novel insights*. MPI Frankfurt, July 2019.
- *Multiscale molecular flexibility analysis: novel insights*. Conference of the Polish Bioinformatics Society, Torun, June 2019.
- *Bio-molecules: on the role of geometry in the tryptic structure - dynamics -function*. Meeting of the French Academy of Sciences, French Riviera, June 2019.
- *Leveraging structural data by decoupling structure, thermodynamics and dynamics*, Challenges in large scale biomolecular simulation, Inst. Etudes Sc. de Cargese, France, May 2019
- *Mining molecular flexibility: novel tools, novel insights*, University College, London, April 2019.
- *Novel structural parameters of IG-Ag complexes yield a quantitative description of interaction specificity and binding affinity*, Journées scientifiques de la SFHI (Soc. Fr. d'histocompatibilité et d'immunogénétique), Paris, Mars 2019.

7.1.4. Leadership within the Scientific Community

– Frédéric Cazals:

- 2010-.... Member of the steering committee of the *GDR Bioinformatique Moléculaire*, for the *Structure and macro-molecular interactions* theme.
- 2017-2019. Co-chair, with Yann Ponty, of the working group / groupe de travail (*GT MASIM - Méthodes Algorithmiques pour les Structures et Interactions Macromoléculaires*, within the *GDR de Bioinformatique Moléculaire* (GDR BIM, <http://www.gdr-bim.cnrs.fr/>).

7.1.5. Scientific Expertise

– Frédéric Cazals:

- 2019: reviewer for ERC consolidator grants.

7.1.6. Research Administration

– Frédéric Cazals:

- 2017-.... President of the *Comité de suivi doctoral* (CSD), Inria Sophia Antipolis - Méditerranée. The CSD supervises all aspects of PhD student's life within Inria Sophia Antipolis - Méditerranée.
- 2018-.... Member of the *bureau du comité des équipes projets*.

– Dorian Mazauric:

- 2019-.... Head of *Commission Mastic* (Médiation et Animation des MATHématiques, des Sciences et Techniques Informatiques et des Communications), Inria Sophia Antipolis - Méditerranée.
- 2016-2019. Member of the *Comité de Centre*, Inria Sophia Antipolis - Méditerranée.
- 2018-2019. Member of the *Commission de Développement Technologique*, Inria Sophia Antipolis - Méditerranée.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

- Master: Frédéric Cazals (Inria ABS) and Frédéric Chazal (Inria Saclay), *Foundations of Geometric Methods in Data Analysis*, Data Sciences Program, Department of Applied Mathematics, Ecole Centrale Paris. (<http://www-sop.inria.fr/abs/teaching/centrale-FGMDA/centrale-FGMDA.html>)
- Master : Dorian Mazauric, Algorithmique et Complexité, 23h30 TD, niveau M1, École Polytechnique de l'Université Nice Sophia Antipolis, filière Sciences Informatiques, France.
- Bachelor : Dorian Mazauric, Langages Formelles et Automates, 24h TD, niveau L3, École Polytechnique de l'Université Nice Sophia Antipolis, filière Sciences Informatiques, France.
- Bachelor : Dorian Mazauric, Algorithmique, 3h de cours et 8 heures de TD, niveau licence, Université Côte d'Azur, Diplôme interuniversitaire (formation des enseignants de lycée), Sophia Antipolis, France.

7.2.2. Supervision

- **PhD, 4th year:** Augustin Chevallier, *Random walks for estimating the volume of convex bodies and densities of states in high dimensional spaces*. Defended on the 08/04/2019. Université Côte d'Azur.
- **PhD in progress, 3rd year:** Méliné Simsir, *Modeling drug efflux by Patched*. Université Côte d'Azur. Thesis co-supervised by Frédéric Cazals and Isabelle Mus-Veteau, IPMC/CNRS.
- **PhD in progress, 2nd year:** Timothée O'Donnel, *Modeling the influenza polymerase*. Université Côte d'Azur. Thesis co-supervised by Frédéric Cazals and Bernard Delmas, INRA Jouy-en-Josas.
- **PhD in progress, 2nd year :** Thi Viet Ha Nguyen, Graph Algorithms techniques for (low and high) resolution models of large protein assemblies, Frédéric Havet (Inria/I3S project-team Coati) and Dorian Mazauric.

7.2.3. Juries

– Frédéric Cazals:

- Maria Elisa Ruiz Echartea, Université de Lorraine, December 2019. Rapporteur on the PhD thesis *Multi-component protein assembly using distance constraints*. Advisors: David W. Ritchie - Marie-Dominique Devignes.
- Alba Chiara De Vitis, Université Côte d'Azur, May 2019. Committee member. *Kernel Methods for High Dimensional Data Analysis*. Advisors: D. Cohen-Steiner, J-D. Boissonnat.
- Juraj Michalik, Ecole Polytechnique, March 2019. Rapporteur on the PhD thesis *Non-redundant sampling in RNA bioinformatics*. Advisors: Yann Ponty and H el ene Touzet.

7.3. Popularization

This part mainly concerns Dorian Mazauric.

7.3.1. Internal or external Inria responsibilities

- 2019-.... Head of *Commission Mastic* (M ediation et Animation des MATH ematiques, des Sciences et Techniques Informatiques et des Communications), Inria Sophia Antipolis - M editerran ee.
- 2019-.... Coordinator of *Terra Numerica – vers une Cit e du Num erique*.
- 2018-2019. Member of the *Conseil d'Administration de l'association les Petits D ebrouillards*.
- 2018-2019. Coordinator of *projet de m ediation Gal ejade : Graphes et ALgorithmes : Ensemble de Jeux   Destination des Ecoliers...* (mais pas que).

7.3.2. Articles and contents

See <https://galejade.inria.fr> and <http://terra-numerica.org/>.

7.3.3. Education

- 26/10/2019. Animation d'ateliers de GALEJADE au weekend d'initiation   la culture num erique organis e par Class'Code MED. Graphes, algorithmes et magie des math ematiques et de l'informatique.
- 03/06/2019. Formation d'enseignants   Draguignan ( ESP E de l'Acad emie de Nice). Graphes et algorithmes.
- 05/04/2019. Coordination d'ateliers Galejade anim s par des enseignants et des parents d' l eves de l' cole Pasteur du Cannet (suite   une formation Galejade quelques mois plus t t). Ateliers Galejade.
- 22/03/2019. Formation d'enseignants de REP+   l' ESP E de l'Acad emie de Nice (site de St phen Li geard).
- 26/02/2019. Formation des  tudiants de l' ESP E de l'Acad emie de Nice (site de St phen Li geard)   l'animation d'activit s informatiques et math ematiques. En collaboration avec l'Inspection Acad mique. Dans le cadre de la semaine des math ematiques. Graphes, algorithmes, jeux et magie des math ematiques.

7.3.4. Interventions

- National events:
 - 19-20/10/2019. Ateliers au village des sciences et de l'innovation au Palais des Congr s d'Antibes Juan-les-Pins. Voyage en train au pays des graphes, des algorithmes et de l'intelligence artificielle.
 - 06/10/2019. Atelier au village des sciences de Nice. F te de la Science 2019. Le plus grand r seau de tri humain du monde.

- 05/10/2019. Ateliers et conférence au village des sciences de Villeneuve-Loubet. Fête de la Science 2019. Algorithmes grandeur nature ? La magie des graphes et du binaire.
- 4/10/2019. Conférence à la maison des associations de Nice (114 élèves de première et terminal). Fête de la Science 2019. Pas besoin de réfléchir, les ordinateurs calculent tellement vite ?
- 03/10/2019. Deux conférences et ateliers au collège de la Vésubie-Jean Salines à Roquebille. Fête de la Science 2019. La magie des graphes et du binaire ? Algorithmes grandeur nature ? Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux.
- 26/03/2019. Fête des maths à l'ÉSPÉ de l'Académie de Nice (site de Stéphen Liégeard). Graphes et Algorithmes.
- 26/02/2019. Formation des étudiants de l'ÉSPÉ de l'Académie de Nice (site de Stéphen Liégeard) à l'animation d'activités informatiques et mathématiques. En collaboration avec l'Inspection Académique. Dans le cadre de la semaine des mathématiques. Graphes, algorithmes, jeux et magie des mathématiques.
- Public exhibitions (Futurs en Seine,...)
 - 24/05/2019. Présentation du projet Galéjade à l'AFINEF'Tour Sophia Antipolis (avec EducAzur).
 - 18/05/2019. Semaine du Numérique à Valbonne. Algorithmes pour toute la famille.
 - 27-28/04/2019. Atelier et conférences au festival Les Souffleurs d'Avenir. La magie des graphes, des algorithmes et du binaire.
- In educational institutions
 - 11/01/2019. Conférence au lycée Léonard de Vinci d'Antibes (deux classes de terminale). Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux ? Présentation du métier de chercheur.
 - 11/10/2019. Deux conférences au collège la Chênaie à Mouans Sartoux. La magie des graphes et du binaire ? Jeux combinatoires.
 - Année scolaire 2019/2020. Projets dans le cadre de MATH.en.JEANS au collège Jean Rostand de Nice. Avec Olivier Ginola.
 - 03/10/2019. Deux conférences et ateliers au collège de la Vésubie-Jean Salines à Roquebille. Fête de la Science 2019. La magie des graphes et du binaire ? Algorithmes grandeur nature ? Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux.
 - 26/03/2019. Conférence au collège Jules Romains de Nice (classes de sixième). La magie des graphes, des algorithmes et du binaire.
 - 13/03/2019. Conférences et ateliers au collège Alphonse Daudet de Nice (deux classes de sixième et deux classes de cinquième). Magie mathématique et jeux combinatoires.
 - 05/04/2019. Coordination d'ateliers Galejade animés par des enseignants et des parents d'élèves de l'école Pasteur du Cannet (suite à une formation Galéjade quelques mois plus tôt). Ateliers Galejade.
- Welcoming of schoolchildren or the general public in an Inria center: MathC2+ internship, open days,...
 - Semaine du 16 décembre 2019. Accueil de 12 stagiaires de troisième à Inria Sophia Antipolis - Méditerranée.
 - 28/06/2019. Activité pour une quarantaine d'étudiants de classes préparatoires scientifiques de Sophia Antipolis. Algorithmes de tri.

- 14/06/2019. Activité pour une quarantaine de lycéens des Alpes-Maritimes (accueillis à Inria Sophia Antipolis - Méditerranée durant 4 jours dans le cadre du stage MathC2+). Algorithmes grandeur nature.
- 26/04/2019. Visite d'une dizaine de jeunes de la mission locale de Grasse à Inria Sophia Antipolis - Méditerranée. La magie des graphes, des algorithmes et du binaire.

7.3.5. Internal action

- Internal meetings such as Café des sciences
 - 29/04/2019. Café-in à Inria Sophia Antipolis - Méditerranée (séminaire interne pour tous les membres du centre de recherche : chercheurs, ingénieurs, administratifs...). Ateliers Galejade.
- Training of colleagues on new contents or media (activités débranchées, Poppy Ergo, Tensor-Flow,...)
- Training follow-up (Media Training, new media such as Poppy ergo, with SIF, etc.)
- Science outreach towards services (DPEI, STIP...)

7.3.6. Creation of media or tools for science outreach

See <https://galejade.inria.fr> and <http://terra-numerica.org/>.

BEAGLE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Organisation

9.1.1.1. General Chair, Scientific Chair

- Eric Tannier was the organizing committee chair of the Inria scientific days, July 2019.

9.1.1.2. Member of the Organizing Committees

- Guillaume Beslon and Anton Crombach, members of the organizing committee of MMEE 2019 (Mathematical Modeling in Ecology and Evolution, Lyon, July 2019)
- Guillaume Beslon : member of the organizing committee of the EvoLyon Day (Lyon, November 2019)
- Guillaume Beslon : member of the organizing committee of BDA 2019 (Bases de Données Avancées, Lyon, October 2019)
- Anton Crombach was part of the organizing and scientific committees of the winter course "Advanced Lectures in Computational Systems Biology" in Aussois.
- Hugues Berry was a member of the Local Organising Committee for conference MedInfo 2019 (<https://www.medinfo-lyon.org/en/>)
- Eric Tannier is a member of the organizing committee of "SEMOVI", séminaire de modélisation du vivant, a local scientific animation in systems biology.

9.1.2. Scientific Events: Selection

9.1.2.1. Chair of Conference Program Committees

- Eric Tannier was the program committee chair of the Inria scientific days, July 2019.

9.1.2.2. Member of the Conference Program Committees

- Anton Crombach, involved in the selection of talks and posters for MMEE (Mathematical models in ecology and evolution, Lyon, July)
- Christophe Rigotti, member of the program committee of the 19th IEEE International Conference on Data Mining (ICDM).
- Christophe Rigotti, member of the program committee of the 34rd ACM Symposium On Applied Computing (SAC).
- Guillaume Beslon and Jonathan Rouzard-Cornabas, members of the program committee of ALife 2019 (2019 Conference on Artificial Life. Newcastle. United Kingdom)
- Eric Tannier, member of the program committee of Jobim 2020
- Eric Tannier, member of the program committee of RECOMB Comparative Genomics 2019
- Eric Tannier, member of the program committee of ISBM/ECCB 2019

9.1.2.3. Reviewer

- Eric Tannier reviewed for RECOMB 2020

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- Hugues Berry is Associate Editor for PLoS Computational Biology
- Eric Tannier is a guest editor for the epijournal DMTCs, and edited a special issue in 2019

- Eric Tannier is an editor of "Peer Community in Evolutionary Biology"
- Eric Tannier is a founding editor of "Peer Community in Mathematical and Computational Biology"

9.1.3.2. Reviewer - Reviewing Activities

- Bioinformatics, Journal of Experimental Zoology Part B...

9.1.4. Invited Talks

- Carole Knibbe, 2019 Gordon Conference on "Organismal, Cellular, Molecular and Theoretical Approaches to Understanding Evolution", Easton, MA, USA, June 9-14 2019.
- Anton Crombach, lab seminar at LBMC
- Anton Crombach, lab seminar at LBBE
- Anton Crombach, invited speaker at the EvoLyon conference in november 2019
- Hugues Berry, Artificial Intelligence and Health: the ambition of the French Plan, Aviesan Meeting, Brussels Belgium, Dec. 2019
- Hugues Berry, An introduction to the theoretical models for passive molecule movements in living cells, Action Nationale de Formation du CNRS, Measurement of Molecular Dynamics in Living Cells, Lille, France, Oct. 2019
- Hugues Berry, Searching for deterministic chaos in biological data, Dynamical Systems and Applications to Biology, CIMPA School, Dhaka, Bangladesh, June 2019
- Hugues Berry, Anomalous diffusion in living cells : bridging the gap between experiments and models through collaborative challenges, Random Walks and Intracellular Transport, School of Mathematics, University of Manchester, Manchester, UK, April 2019
- Hugues Berry, Investigating the effect of the nanoscale architecture of astrocytic processes on the propagation of calcium signals, Tampere University of Technology, Tampere, Finland, April 2019
- Hugues Berry, Inria research at the forefront of digital sciences for medicine, 2019 French-American Innovation Day (FAID2019), Houston, Texas, USA, march 2019
- Carole Knibbe, Eric Tannier, Which social and environmental responsibility for researchers, lab seminar at LBMC
- Eric Tannier, open science as an institutional response to the editorial crisis in research, "open science day" of the research biology federation, Lyon.
- Guillaume Beslon, invited talk at UGA (séminaire "Translation et Innovation en Médecine et Complexité") in November 2019
- Guillaume Beslon, invited talk at the I4ID 2019 conference (Immunotherapies & Innovations for Infectious Diseases Congress, Lyon, December 2019)

9.1.5. Leadership within the Scientific Community

- Anton Crombach is the lead editor of book "Evolutionary Systems Biology, 2nd edition" (ongoing work).
- Hugues Berry organised the 1st Singapore-France Joint Workshop on AI in Health, in association with the international conference MedInfo (<https://medinfo-lyon.org/en/>), Lyon, France, August 27-29, 2019.
- Hugues Berry co-organized the INSERM Workshop "Intracellular dynamics of molecules: analysis and models" (<https://research.pasteur.fr/en/event/intracellular-dynamics-of-molecules-analysis-and-models/>). The workshop combined a 3-day critical assessment phase (in Bordeaux, France, June 24-26 2019) and a 3-day technical workshop (in Lyon, France, July 1-3 2019). This workshop addressed a biologist audience and covered the main experimental methods to quantify the mobility and trajectories of biomolecules in living cells, with an emphasis on the quantification methods for individual trajectories and the interest of computer simulations for analysis and interpretation.

- Carole Knibbe and Guillaume Beslon (together with Dusan Misevic from the Center for Research and Interdisciplinarity in Paris) edited a special issue of the Artificial Life journal (vol25 issue 4, nov 2019), with extended versions of the best papers of ECAL 2017. Link : https://www.mitpressjournals.org/doi/abs/10.1162/artl_a_00298?af=R

9.1.6. Scientific Expertise

- Hugues Berry, Reviewer for the Fond National de la Recherche Scientifique (FNRS, Belgium) for the call "FRQ-FNRS Québec - Communauté française de Belgique"

9.1.7. Research Administration

- Christophe Rigotti, elected member of Insa Scientific board (Conseil scientifique)
- Eric Tannier, elected member of the Inria Administration Council
- Eric Tannier, member of the open science committee of the French Ministry of research
- Eric Tannier, member of the ethics platform of the university of Lyon
- Eric Tannier, member of the "Sciences Environments Societies" workgroup of Inria
- Eric Tannier, member of the Environmental responsibility workgroup of LBBE
- Eric Tannier, scientific responsible of the "cours colloques" committee of Inria
- Eric Tannier, member of the scientific committee of the science shop, univ Lyon
- Hugues Berry, Deputy scientific director of Inria for digital biology and health
- Guillaume Beslon, member of the ANR CE45 committee (Mathématiques et sciences du numérique pour la biologie et la santé)
- Guillaume Beslon, member of the IRD CSS5 committee (Science des données et des modèles)

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

License: Jonathan Rouzaud-Cornabas, Object-Oriented Programming, 120h, L3, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, System Programming, 60h, M1, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, Network Programming, 20h, M1, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, High Performance Computing, 60h, M2, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, High Performance Computing, 12h, M2, Bioinformatics and Modeling Department, INSA de Lyon

Licence: C. Knibbe, Fundamentals of algorithmics and programming, 80 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Licence: C. Knibbe, Architecture of computer systems, 19 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Licence: C. Knibbe, Software development, 32 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Licence: C. Knibbe, HTML/CSS, 4 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Master: C. Knibbe, Careers in bioinformatics and modelling, 20 heqTD, M1, Bioinformatics and Modelling program of INSA-Lyon

Licence: Christophe Rigotti, Object-Oriented Programming and Graphical User Interfaces, 86h, L2, Department 1er cycle of INSA-Lyon.

Licence: Christophe Rigotti, Simulation of Chemical Reactions, 26h, L2, Department 1er cycle of INSA-Lyon.

Licence: Christophe Rigotti, Numerical Modelling for Engineering, 60h, L2, Department 1er cycle of INSA-Lyon.

Master: Christophe Rigotti, Data Mining, 25h, M1, Bioinformatics and Modeling Department of INSA-Lyon.

Master: Eric Tannier, Comparative Genomics, 8h, M1, Bioinformatics and Modeling Department of INSA-Lyon.

Master: Eric Tannier, String algorithmics, 12h, M1, Bioinformatics and Modeling Department of INSA-Lyon.

Master: Eric Tannier, String algorithmics, 12h, M1, Bioinformatics UCBL.

Master: Eric Tannier, Research Ethics, 6h, M2, Bioinformatics UCBL

Doctorat: Eric Tannier, Environmental responsibility of research activities, NGS formation, Lyon

Doctorat: Eric Tannier, Research Ethics, 12h, all specialities, Université de Lyon

Doctorat: Eric Tannier, Research Ethics, 6h, Inria PhD students

Master: Audey Denizot, 64h de cours en enzymologie (M1, INSA Lyon) et biologie cellulaire (M2, ENS Lyon).

E-learning

MOOC: Eric Tannier, Research Ethics, FUN, Ph-D candidates, 3000 registered participants

9.2.2. Supervision

PhD in progress: Julie Etienne, "Modélisation et simulation du flux de triglycérides alimentaires, de l'absorption entérocytaire à la sécrétion des chylomicrons", INSA-Lyon, co-supervised by Carole Knibbe and Marie-Caroline michalski (CarMeN laboratory), started in October 2019.

M2 : Julie Etienne, "Analysing and modelling the traffic of triglycerides through enterocytes", co-supervised by Carole Knibbe (80)

M2 : Ella Beaumann, "Modélisation compartimentale de cinétiques postprandiales cliniques", co-supervised by Carole Knibbe (70)

M2: Hugues Berry and Christophe Rigotti where co-supervisors of the M2 internship of Tymofii Prokopenko (co-supervision with Olivier Pascual of team SynatAc INSERM/CNRS) from 28/01/2019 to 14/06/2019. Title: "Classification and clustering of activity data of microglial cells".

M2 Sujin Hyun, 1 feb 2019 to 31 jul 2019 (6 months), title "Re-assessing the link between splicing and mRNA quality control" (supervised by A Crombach)

PhD: Audrey Denizot, "Simulation de la signalisation calcique dans les prolongements fins astrocytaires", INSA Lyon, 08 Nov. 2019 (co-supervision H. Soula and H. Berry)

PhD: Hugues Berry participated to the PhD Advisory Committee of Barbara Genocchi (BioMediTech, Tampere University of Technology, Finland)

PhD: Eric Tannier participated to the PhD Advisory Committee of Raphael Forquet (UCBLyon)

PhD in progress: Alexandre Laverre, "influence croisée de l'organisation spatiale et des mutations structurales dans les génomes", encadré par Anamaria Necsulea et Eric Tannier, début en septembre 2018

PhD in progress: Théo Tricou, "Détection d'espèces éteintes avec les transferts horizontaux", encadré par Damien de Vienne et Eric Tannier, début en septembre 2018

PhD in progress: Hugo Menet, "Phylogénie multi-échelles des holobiontes", encadré par Eric Tannier et Vincent Daubin, début en septembre 2019

M2: Hugo Menet, "Phylogénie multi-échelles des holobiontes", encadrée par Eric Tannier, 2019

9.2.3. Juries

- HDR: Jérémie Roux, "Integrative single-cell approaches to understanding cancer drug response heterogeneity in tumor cell dynamics" Université Côte d'Azur, Nice, France, September 2019 (Hugues Berry, reviewer)
- HDR: Jean-Baptiste Masson, "Probabilistic induction and physics modelling to probe biological decision making In situ", Sorbonne University, Paris, France, May 2019 (Hugues Berry, reviewer)
- HDR: Celine Scornavacca, "Phylogenetic reconciliations and networks", Univ Montpellier (Eric Tannier, examinateur)
- PhD: Audrey Denizot (Ph-D, INSA-Lyon, October 2019) (Guillaume Beslon was a member of the PhD Committee)
- PhD: Andreas Odorico (Ph-D, Gif-sur-Yvette, December 2019) Guillaume Beslon was reviewer
- PhD: Adrien Legrand (University of Picardie Jules Verne, Amiens, November 2019) Christophe Rigotti was reviewer

9.3. Popularization

9.3.1. Articles and contents

- Hugues Berry participated in popularization activities with the edition of a book, written in French, on the relationships between sex (i.e. a biology concept) and Gender (a sociology approach) (Abou, B. and Berry, H., eds., (2019). *Sexe et Genre: de la Biologie a la Sociologie*. Editions Materiologiques, Paris, <https://materiologiques.com/sciences-philosophie-2275-9948/282-sexe-et-genre-de-la-biologie-a-la-sociologie.html>) In recent years, debates about sex and gender concepts between biology and the humanities and social sciences have become more intense, both for scientific reasons and for their societal impacts. Many biologists reject the questioning made by researchers in humanities and social sciences, of what biology considers fundamental, such as sex binarity or sex differences. Humanities and social scientists, on the other hand, often see biology as an academic and institutional source of naturalistic arguments used to oppose gender studies. They denounce biases in the interpretation of biologists as resulting, precisely, from gender-related biases. However, scientific exchanges at the interface between biology and the humanities and social sciences are undoubtedly necessary to overcome these antagonisms. The objective of this book is to implement a dialogue between the two fields, trying to overcome misunderstandings and misconceptions that have gone on for long. The book consists in 12 chapters stemming from biologists and sociologists, organized so as to try and foster dialogue between both communities. The target readership of the book is composed of non specialist readers (in particular non biologists nor sociologists) with a pre-existing interest on gender issues and their relations to biology. That is why the book was written in French and includes chapters intended to newcomers in the field (e.g. "The determination of sex in the human species and the rest of life" or "Why Gender?") to more advanced viewpoints ("What we learn from transidentities"). The objective of the publisher was to publish a reference book in French on the relations between sex and gender.
- "Le mouvement est devenu massif", an interview of Hugues Berry to the French journal L'Usine Nouvelle, Special Edition "A year of simulation", number 3608, April 25, 2019. <https://www.usinenouvelle.com/editorial/le-mouvement-est-devenu-massif.N834680>
- Eric Tannier is a co-author of "Quand les branches de l'arbre du vivant s'entremêlent", in *Pour la science*, 2019.

9.3.2. Education

- We have an ongoing collaboration with the Grenoble Rectorat. The aim is to use our computational models to train school professor to evolutionary concepts.

9.3.3. Interventions

- Audrey Denizot participated to activities in the mediation association DéMesures:
 - "Cosmograff" project. This project aims to present the solar system and its scales to the general public, in collaboration with the Musée des Confluences and the collective of street artists Superposition <https://bit.ly/35gtYpI>. Creation of audio guides in French and English for reuse at the 2019 EWASS international astronomy conference. <https://bit.ly/2rQIB5y>
 - "ArtScience" project, which aims to present the work of scientists to artists. This project culminated in an artistic exhibition at the ENS Lyon, from April to July 2019, in collaboration with the Taverne Gutenberg <https://bit.ly/2OldNR3>. Creation of a series of photographs presenting the links between science and art that emerged from this project <https://bit.ly/2XqjaCz>.
- Eric Tannier co-organized a citizen science event at the Théâtre Nouvelle Génération, Vaise, december 2019
- Eric Tannier organizes a workshop on environmental responsibility of researchers in january 2020
- Eric Tannier participated to a "pint of science" evening on the social and environmental responsibility of researchers, May 20, 2019

9.3.4. Internal action

- Eric Tannier and Carole Knibbe gave a lecture on environmental responsibility at the Inria Bio days, 2019
- Eric Tannier gave a training to PhD students on research ethics, 6h, Inria Grenoble Rhône-Alpes, January 2019

9.3.5. Creation of media or tools for science outreach

- We developed the GreenMice game, a small video-game designed to teach the basis of evolutionary biology to young children

BIGS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. Member of the Organizing Committees

- Sandie Ferrigno, Anne Gégout-Petit, Clémence Karmann, Aurélie Muller-Gueudin, Nassim Sahki, Bruno Scherrer and Sophie Wantz-Mézières were very active members of the organizing committee of the "Journées de Statistique de la SFdS" at FST in Nancy, June 2019.
- Anne Gégout-Petit, Aurélie Muller-Gueudin, and Pierre Vallois were in the organizing committee of the workshop "Modélisation de l'hétérogénéité tumorale et thérapies ciblées" at FST in Nancy, September 2019.
- Sophie Wantz-Mézières was part of the organizing committee of the national workshop of the "Fédération Charles Hermite": "Sécurité et confiance dans les échanges des données de santé", at the "Ecole de Chirurgie" in Nancy, November 2019.

10.1.2. Scientific Events: Selection

10.1.2.1. Chair of Conference Program Committees

A. Gégout-Petit was ETC program coordinator of the European Meeting of Statisticians, Palermo, July 2019.

10.1.2.2. Member of the Conference Program Committees

A. Gégout-Petit was part of the program committee of the CFIES (Colloque francophone international sur l'enseignement de la statistique), Strasbourg, Septembre 2019.

10.1.3. Journal

10.1.3.1. Reviewer - Reviewing Activities

All BIGS members are regular reviewers for journals in probability, statistics and machine learning: Bernoulli, Scandinavian Journal of statistics, Stochastics, Journal of Statistical Planning Inference, Journal of theoretical Biology, IEEE Trans. Biomedical Eng., Theoretical Biology and Medical Modelling, Royal Society of Chemistry, Signal Processing: Image Communication, Mathematical Biosciences, LIDA, Annals of Applied Probability, Annals of Operations Research and Journal of Machine Learning Research, as well as conferences such as ICML, World IFAC Congress, FOSBE, ALCOSP..

10.1.4. Invited Talks

- Talk "Agrégation de méthodes statistiques pour la sélection de variables corrélées et en grande dimension". Séminaire AgroParisTech, Paris, May 2019, Aurélie Muller-Gueudin.
- Talk "Modélisation de réseaux de régulation de gènes par processus déterministes par morceaux". Journée de la Fédération Charles Hermite, Nancy, June 2019, Aurélie Muller-Gueudin.

10.1.5. Research Administration

Anne Gégout-Petit is member of "Bureau du comité des projets", centre Inria Nancy Grand-Est.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

B. Scherrer excepted, BIGS members have teaching obligations at "Université Lorraine" and are teaching at least 192 hours each year. They teach probability and statistics at different levels (Licence, Master, Engineering school). Many of them have pedagogical responsibilities.

- A. Gégout-Petit : Head of the Master 2 "Ingénierie Mathématique et Outils Informatiques (Mathematical Engineering and Computer Tools)", Université de Lorraine
- A. Gégout-Petit created and is now in charge of cursus CMI in applied mathematics for Lorraine University
- T. Bastogne is in charge of the spécialité Systèmes & TIC du master Ingénierie de Systèmes Complexes
- T. Bastogne is in charge of professional master: CIIBLE (Cybernétique, Instrumentation, Image en Biologie et medecinE) en M2 with Medicine Faculty of Université de Lorraine
- T. Bastogne is in charge research master "Biosanté Numérique" with engineering school "Telecom Nancy"
- Master: S. Ferrigno, Experimental designs, 4.5h, M1, fourth year of EEIGM, Université de Lorraine, France
- Master: S. Ferrigno, Data analyzing and mining, 63h, M2, third year of Ecole des Mines, Université de Lorraine, France
- Master: S.Ferrigno, Modeling and forecasting, 43h, M1, second year of Ecole des Mines, Université de Lorraine, France
- Master: S.Ferrigno, Training projects, 18h, M1/M2, second and third year of Ecole des Mines, Université de Lorraine, France
- Master: A. Muller-Gueudin, Probability and Statistics, 160h, second year of ENSEM and ENSAIA, University of Lorraine, France.
- Master: A. Muller-Gueudin, Scientific calculation with Matlab, 20h, second year of ENSAIA, University of Lorraine, France.
- Master: A.Gégout-Petit, Statistics, modeling, 15h, future teacher, Université de Lorraine, France
- Master: A.Gégout-Petit, Statistics, modeling, data analysis, 80h, master in applied mathematics, Université de Lorraine, France
- Licence: S. Wantz-Mézières, Applied mathematics for management, financial mathematics, Probability and Statistics, 160h, I.U.T. (L1/L2/L3)
- Licence: S. Wantz-Mézières, Probability, 100h, first year in Telecom Nancy engineering school (initial and apprenticeship cursus)
- Licence: A. Muller-Gueudin, Statistics, 60h, first year of ENSAIA, University of Lorraine, France.
- Licence: S. Ferrigno, Descriptive and inferential statistics, 60h, L2, second year of EEIGM, Université de Lorraine, France
- Licence: S. Ferrigno, Statistical modeling, 60h, L2, second year of EEIGM, Université de Lorraine, France
- Licence: S. Ferrigno, Mathematical and computational tools, 20h, L3, third year of EEIGM, Université de Lorraine, France
- Licence: S. Ferrigno, Training projects, 20h, L1/L3, first, second and third year of EEIGM, Université de Lorraine, France

10.2.2. Supervision

- PhD : Clémence Karmann, "Network inference for zero-inflated models", Grant : Inria-Cordis. Advisors: A. Gégout-Petit, A. Muller-Gueudin, Université de Lorraine, defended on November 25, 2019.
- PhD : Florine Greciet, "Modèles markoviens déterministes par morceaux cachés pour la propagation de fissures", grant CIFRE SAFRAN AIRCRAFT ENGINES, Advisors : R. Azaïs, A. Gégout-Petit, Université de Lorraine, defense on January, 2020.
- PhD : Kévin Duarte, "Aide à la décision médicale et télémédecine dans le suivi de l'insuffisance cardiaque", Advisors : J.-M. Monnez and E. Albuissou.
- PhD : Pauline Guyot, "Modélisation et Simulation de l'Electrocardiogramme d'un Patient Numérique", Grant : CIFRE-Cybernano. Advisors: T. Bastogne, E. H. Djermoune.
- PhD: Nassim Shaki, "Détection de rupture dans des signaux multivariés pour la prédiction d'événement redouté à partir de paramètres physiologiques recueillis par capteurs connectés après greffe pulmonaire", grant Inria-Cordis. Advisors: A. Gégout-Petit, S. Mézières, M. d'Ortho.
- Benoît Lalloué, contract research engineer for two years, RHU Fight RF, supervised by Jean-Marie Monnez.
- Postdoc: Lionel Lenôtre, Telomer Modelling, grant LUE GEENAGE. Advisors: A. Gégout-Petit, D. Villemonais.
- Postdoc: Emma Horton, Telomer Modelling, grant LUE GEENAGE. Advisors: A. Gégout-Petit, D. Villemonais.
- Master: all BIGS members regularly supervise project and internship of master IMOI students.
- Engineering school: all BIGS members regularly supervise project of "Ecole des Mines ", ENSEM or EEIGM students.

10.2.3. Juries

- Anne Gégout-Petit participated to the jury of the Phd defense of Edouard Fournier, Paul Sabatier University, Toulouse, October 8th
- Anne Gégout-Petit participated to the jury of the HDR defense of Denis Villemonais, Lorraine Université, November 18th
- Anne Gégout-Petit was reviewer and participated to the jury of the Phd defense of Candy Abboud, INRA d'Avignon, Université d'Aix-Marseille, December 11th.
- Anne Gégout-Petit participated to the jury of the HDR defense of Adrien Coulet, Lorraine Université, December 16th.
- Anne Gégout-Petit is member of the "Jury du prix de thèse AMIES".

10.3. Popularization

10.3.1. Interventions

- Anne Gégout-Petit participated in a round table on Artificial Intelligence and Health as part of "La fête de la science" 2019
- Anne Gégout-Petit participated at the "Brunch Données de santé et thermalisme" Janvier 2019
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "La main à la Pâte" project, elementary schools, Nancy, January-June 2019
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "Energies renouvelables", "La main à la Pâte" project, Institut médico-éducatif (IME), Commercy, October 2019-January 2020
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "L'Astronomie" Cgénial project, Collège Paul Verlaine, Malzéville, November 2019-February 2020.
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "Le Chocolat" Cgénial project, Collège de la Craffe, Nancy, November 2019-January 2020.
- Sophie Wantz-Mézières was part of the organization of a thematic and multidisciplinary week "Neurosciences, neuro-oncologie et numérique", for students from Telecom-Nancy and Faculté de Médecine de Nancy, May 2019.

CAPSID Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Organisation

- Sabeur Aridhi co-chaired the third international workshop on Advances in managing and mining large evolving graphs (LEG - <https://leg-ecmlpkdd19.loria.fr/>) held in conjunction with the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2019).
- Isaure Chauvot de Beauchêne and Marie-Dominique Devignes organised the first international Workshop (5 days) of the H2020-ITN project RNAct, "RRMs, RNA and RNAct" (<http://rnact.eu/Workshop1/>)
- Isaure Chauvot de Beauchêne organised the 3rd meeting (regional, 1 day, 25 pers.) of the GlycoEST group. GlycoEst is an informal working group which was recently created to develop an interdisciplinary regional network of glyco-scientists.
- Isaure Chauvot de Beauchêne organised a lecture and practical course at the AlgoSB WinterSchool 14-21 january 2019 on *Predicting RNA-Protein Interactions*.

9.1.2. Scientific Events: Selection

- Members of the following Conference Program Committees : Joint ICML 2019 Workshop on Computational Biology, IWBBIO 2019, ACM-BCB 2019, BIBM 2019, SWAT4HCLS 2019, EGC 2019.

9.1.3. Journal

- Editorial board of Intelligent Data Analysis (Sabeur Aridhi), Scientific reports (David Ritchie).
- Reviewer for Nucl. Acids Research (Marie-Dominique Devignes).
- Contribution to the IMIA Yearbook of Medical Informatics, 2019 (Malika Smaïl-Tabbone, [20])

9.1.4. Leadership within the Scientific Community

- Isaure Chauvot de Beauchêne is co-founder of the 3D Bioinfo ELIXIR Community.
- Marie-Dominique Devignes and Malika Smaïl-Tabbone have been invited to participate in the INI-CRCT network which is the subnetwork of the F-CRIN project (French Clinical Research Investigation Network) dedicated to cardio-renal diseases. Their contribution is related to their expertise in machine learning and network science.

9.1.5. Scientific Expertise

- Marie-Dominique Devignes reviewed a grant application for FWO (Flanders Research Organization).
- Malika Smaïl-Tabbone and Marie-Dominique Devignes both reviewed grant applications for the ANR.

9.1.6. Research Administration

- Sabeur Aridhi is a member of the Inria Nancy Grand-Est CDT: Commission du Développement Technologique.
- Marie-Dominique Devignes was a member of the ComiPers at Inria Nancy Grand-Est: Commission for the evaluation of CORDI post-doc and CORDI-S doctoral application.

- Malika Smaïl-Tabbone is a member of the IES commission for the elaboration of the policy concerning Scientific Information and Edition Scientifique at Inria Nancy Grand-Est and at the LORIA.
- Dave Ritchie was a member of the CMI at the LORIA: Commission de Mention Informatique of the Université de Lorraine's IAEM doctoral school.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Sabeur Aridhi and Malika Smaïl-Tabbone are enseignants-chercheurs with a full service. Sabeur Aridhi is responsible for the major in IAMD (Ingénierie et Applications des Masses de Données) at TELECOM Nancy (Université de Lorraine),

Marie-Dominique Devignes teaches about 34h at Telecom Nancy (1A) and 10h in the Coursus Master Ingenieur at the Université de Lorraine.

Isaure Chauvot de Beauchêne teaches about 10h in the Coursus Master Ingenieur at the Université de Lorraine.

9.2.2. Supervision

- PhD: Maria Elisa Ruiz Echartea, *Multi-component protein assembly using distance constraints*. Université de Lorraine. Defense date : 18/12/2019 (Manuscript under revision, soon in HAL). David Ritchie, Isaure Chauvot de Beauchêne.
- PhD in progress: Kévin Dalleau, *Complex graph analysis for classification: application to disease nosography*, 01/12/2016, Malika Smaïl-Tabbone, Miguel Couceiro.
- PhD in progress: Bishnu Sarker, *Developing distributed graph-based approaches for large-scale protein function annotation and knowledge discovery*, 01/11/2017, David Ritchie, Sabeur Aridhi.
- PhD in progress: Antoine Moniot, *Modeling protein / nucleic acid complexes by combinatorial structural fragment assembly*, 01/11/2018, David Ritchie, Isaure Chauvot de Beauchêne.
- PhD in progress: Athénaïs Vaginay, *Model selection and analysis for biological networks: use of domain knowledge and application to networks disturbed in diseases*, 01/11/2018, Taha Boukhobza, Malika Smaïl-Tabbone.
- PhD in progress: Anna Kravchenko, *Fragment-based modeling of protein-RNA complexes for protein design*, 01/10/2019, Malika Smaïl-Tabbone, Isaure Chauvot de Beauchêne.
- PhD in progress: Hrishikesh Dhondge, *A new knowledge base for modeling and design of RNA-binding proteins*, 01/10/2019, Marie-Dominique Devignes, Isaure Chauvot de Beauchêne.
- PhD in progress: Diego Amaya Ramirez, *HLA genetic system and organ transplantation: understanding the basics of immunogenicity to improve donor / receptor compatibility when assigning grafts to recipients*, 01/10/2019, Marie-Dominique Devignes, Jean-Luc Taupin.
- PhD in progress: Kamrul Islam, *Distributed link prediction in large complex graphs: application to biomolecule interactions*, 01/11/2019, Malika Smaïl-Tabbone, Sabeur Aridhi.

9.2.3. Juries

- Sabeur Aridhi was a member (examinator) of the PhD committee of Manel Zoghliani, University of Clermont Auvergne, *Multiple instance learning approaches for ionizing-radiation-resistance prediction*, 20/12/2019.
- Sabeur Aridhi was a member (reviewer) of the PhD committee of Zekarias Tilahun Kefato, University of Trento, *Network and Cascade Representation Learning Algorithms based on Information Diffusion Events*, 29/04/2019.
- Sabeur Aridhi was a member (reviewer) of the PhD committee of Nasrullah Sheikh, University of Trento, *Network Representation Learning with Attributes and Heterogeneity*, 16/07/2019.

- Marie-Dominique Devignes was a member (reviewer) of the PhD committee of Manel Zoghliani, University of Clermont Auvergne, *Multiple instance learning approaches for ionizing-radiation-resistance prediction*, 20/12/2019.

9.3. Popularization

9.3.1. Interventions

- Dominique Mias-Lucquin was co-organizer of the "Pint of Science" event, 21-22 may, 2019 (24 countries involved ; <http://pintofscience.com>).

DYLISS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Selection

10.1.1.1. Member of the Conference Program Committees

- 12th international conference Semantic Web and Tools for Healthcare and Life Sciences (SWAT4HCLS) [O. Dameron]
- 19th NETTAB-BBCC joint international conference [E. Becker, O. Dameron]
- CSBio2019: The 10th International Conference on Computational Systems-Biology and Bioinformatics [A. Siegel]
- WBC@ICML 2019, ICML 2019 Workshop on Computational Biology [A. Siegel]
- CP'2019 25th International Conference on Principles and Practice of Constraint Programming [A. Siegel]
- Journée IA et santé, organisée par l'AFIA (Assoc. Fr. pour l'Intelligence Artificielle) et l'AIM (Assoc. Fr. d'Informatique Médicale) [O. Dameron]
- JOBIM 2019 [A. Siegel]

10.1.1.2. Reviewer

- Semantic Web and Tools for Healthcare and Life Sciences: O. Dameron
- Journée IA et santé: O. Dameron

10.1.1.3. Jury member

- Jury of interpretability prize of Sigmorphon shared task 2019: F. Coste

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- Journal of Biomedical Semantics [O. Dameron]
- Editor of special issue in grammatical inference of Machine Learning: [F. Coste]

10.1.2.2. Reviewer - Reviewing Activities

- Bioinformatics [A. Siegel, E. Becker]
- Biosystems [A. Siegel]
- Briefings in Bioinformatics [O. Dameron]
- IEEE/ACM TCBB [A. Siegel]
- Neuroinformatics [O. Dameron]
- Machine Learning [F. Coste]
- PLoS Computational biology [A. Siegel]

10.1.2.3. Peer Community in Genomics

In addition to the traditional publishing activities, Dyliss has also been active in the alternative approach “Peer Community in” (PCI). It is a non-profit community of researchers who review and recommend for free (we also do it for free with traditional journals and conferences anyway), unpublished preprints in their field (i.e. unpublished articles deposited on open online archives like arXiv.org and bioRxiv.org). To a lesser extent, they may also recommend articles already published in journals.

Denis Tagu has been one of the creators of Peer Community in Genomics (PCI Genomics [\[More details\]](#)), which has been launched in October 2019. The scope of this PCI encompasses all aspects of genomics (structural genomics, functional genomics, epigenomics, evolutionary genomics, population genomics, proteomics, bioinformatics) dealing with every type of organisms (viruses, bacteria, fungi, plants, animals,...) as well as metagenomes.

- Denis Tagu is a manager
- Olivier Dameron is a recommender

10.1.3. Invited Talks

- Dusseldorf, Quantitative Theoretical Biology group, Heinrich Heine Universitat, february 2019 [C. Frioux]
- Colloquium J. Morgenstern (Nice), february 2019 [A. Siegel]
- IGNITE International Training Network Spring school [O. Dameron]
- Colloque d'ouverture 50 ans du Laboratoire Jacques-Louis Lions, Roscoff, march 2019 [A. Siegel]
- CNRS GdR MaDics, june 2019 [O. Dameron]
- Boolean Weekend, Burlington, US, april 2019 [A. Siegel]
- Department of Plant Science, University of Oxford, may 2019 [C. Frioux]
- Quadram Institute, may 2019 [C. Frioux]
- Network analysis to elucidate natural system dynamics, diversity and performance, CECAM Conference, Lyon, may 2019 [A. Siegel]
- Séminaire IMBAS Inra Toulouse, june 2019 [A. Siegel]
- CNRS GdR BIM, november 2019 [O. Dameron]
- The 10th International Conference on Computational Systems-Biology and Bioinformatics (CSBio 2019) [N. Théret] Nice (France) December 4 to 7, 2019

10.1.4. Leadership within the Scientific Community

- Member of the steering committee of the International Conference on Grammatical Inference [F. Coste]

10.1.5. Scientific Expertise

10.1.5.1. International expertise

- Luxembourg, FNR. Core program [A. Siegel]

10.1.5.2. Prospective working groups

- "Big & Open Data en recherche à l'horizon 2040" foresight working group of PROSPER network [F. Coste]

10.1.5.3. National responsibilities

- **Institutional boards for the recruitment and evaluation of researchers.**
 - National Council of Universities, section 65 [O. Dameron, nominated member].
- **Recruitment committees.**
 - Inria Senior Researchers [national committee, A. Siegel]
 - Assistant professor in Mathematics for Biology, section 26, Univ Rennes 1 [E. Becker]

10.1.5.4. National scientific boards

- Animation of the Systems Biology working group of national infrastructure GDR IM and GDR BIM [A. Siegel].
- Board of directors of the French Society for biology of the extracellular matrix [N. Théret].

10.1.5.5. Local responsibilities

- Scientific Advisory Board of Biogenouest [N. Théret]
- Delegate to research integrity at the University of Rennes 1 [N. Théret]
- Head of the "Data and Knowledge Management" Department (6 teams) of the IRISA lab [A. Siegel, since june 2019]
- IRISA laboratory (computer science department of Univ. Rennes 1) council [A. Siegel, until june 2019]
- Member of the Inria Rennes center council [J. Got]
- Responsibility of the IRISA laboratory "Health-biology" cross-cutting axis [O. Dameron, until June 2019] [[More details](#)]
- Social committee of Univ. Rennes 1 [C. Belleannée]
- Scientific committee of Univ. Rennes 1 school of medicine [O. Dameron, A. Siegel].
- Emergency aid commission of Univ. Rennes 1 & Rennes2 [C. Belleannée]

10.1.6. Research Administration

10.1.6.1. Inria Instances

- Inria National evaluation board [A. Siegel, nominated member].
- Equality and diversity Committee, Inria - Responsible of the working group focusing on recruitment procedures [A. Siegel].

10.1.6.2. CNRS

- Chargée de mission "bioinformatique" at INS2I-CNRS (Institute for Computer Science of CNRS) [A. Siegel, nominated member].

10.1.6.3. Inria local instances

- Gender equality commission, IRISA & Inria Rennes [A. Siegel, coordinator]
- CUMI (Comission des utilisateurs des moyens informatiques) of Inria Rennes [F. Coste]
- Inria Rennes PhD recruitment (CORDIs) [C. Belleannée]

10.2. Teaching - Supervision - Juries

10.2.1. Teaching track responsibilities

- Coordination of the doctoral school "Biology and Health" of University of Bretagne Loire, Rennes Site 1 [N. Théret]
- Coordination of the master degree "Bioinformatics", Univ. Rennes1 [E. Becker, O. Dameron]

10.2.2. Course responsibilities

- "Method", Master 2 in Computer Sciences, Univ. Rennes 1 [E. Becker]
- "Statistiques appliquées", 3rd year in Fundamental Computer Sciences, ENS Rennes [E. Becker]
- "Introduction to computational ecology", Master 2 in Ecology, Univ. Rennes 1 [E. Becker]
- "Object oriented programming", Master 1 in Bioinformatics, Univ. Rennes 1 [E. Becker]
- "Advanced R for data analysis", Master 1 in Ecology + Master 1 in Bioinformatics, Univ. Rennes 1 [E. Becker]
- "Insertion Professionnelle et tables rondes", Master 1 and Master 2 in Bioinformatics, Univ. Rennes 1 [E. Becker]
- "Atelier de Biostatistiques", 2nd year Biology, Univ Rennes 1 [E. Becker]
- "Internship", Master 1 in Computer Sciences, Univ. Rennes 1 [C. Belleannée]
- "Supervised machine learning", Master 2 in Computer Sciences, Univ Rennes 1 [F. Coste]

- "Atelier bioinformatique", Licence 2 informatique, Univ. Rennes 1 [O. Dameron]
- "Bioinformatique pour la génomique", 2nd year school of medicine, Univ. Rennes 1 [O. Dameron]
- "Bases de mathématiques et probabilité", Master1 in public health, Univ. Rennes 1 [O. Dameron]
- "Programmation en Python", Master 1 in Public Health, Univ. Rennes 1 [O. Dameron]
- "Intégration: Remise à niveau en informatique", Master 1 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- "Programmation impérative en Python", Master 1 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- "Semantic Web and bio-ontologies", Master 2 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- "Internship", Master 2 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- Master: A. Siegel, Integrative and Systems biology, Master 2 in bioinformatics, Univ. Rennes 1 [A. Siegel]
- Micro-environnement Cellulaire normal & pathologique, Master 2 in Biologie cellulaire et Moléculaire, Univ. Rennes 1 [N. Théret]

10.2.3. Teaching

Licence : E. Becker, "TPs Python", 12h, 1st year in Biology, Univ. Rennes 1, France

Licence : E. Becker, "Atelier de Biostatistiques", 34h, 2nd year in Biology, Univ. Rennes 1, France

Licence : E. Becker, "Statistiques Appliquées", 20h, 3rd year in Fundamental Computer Sciences, ENS Rennes, France

Master : E. Becker, "Object oriented programming", 43h, Master 1 in Bioinformatics, Univ. Rennes 1, France

Master : E. Becker, "Advanced R for data analysis", 34h, Master 1 in Bioinformatics, Univ. Rennes 1, France

Master : E. Becker, "Introduction to computational ecology", 34h, Master 2 in Ecology, Univ. Rennes 1, France

Master : E. Becker, "Method", 15h, Master 2 in Computer Sciences, Univ. Rennes 1, France

Master : E. Becker, "Insertion Professionnelle et tables rondes", 8h, Master 1 and Master 2 in Bioinformatics, Univ. Rennes 1, France

Master : E. Becker, "Systems Biology : biological networks", 27h, Master 2 in Bioinformatics, Univ. Rennes 1, France

Licence: C. Belleannée, Langages formels, 20h, L3 informatique, Univ. Rennes1, France.

Licence: C. Belleannée, Projet professionnel et communication, 16h, L1 informatique, Univ. Rennes1, France.

Licence: C. Belleannée, Enseignant référent, 20h, L1 informatique, Univ. Rennes1, France.

Licence: C. Belleannée, Spécialité informatique : Functional and immutable programming , 42h, L1 informatique, Univ. Rennes1, France

Master: C. Belleannée, Algorithmique du texte et bioinformatique, 10h, M1 informatique, Univ. Rennes1, France

Master: S. Blanquart, Juries of Master 1 in bioinformatics, 5h, Univ. Rennes 1, France

Master: L. Bourneuf, Projet, 25h, M1 Santé Publique, France.

Master: F. Coste, Supervised machine learning, 20h, M2 + M1 Science Informatique, Univ. Rennes, France

Licence: O. Dameron, Biostatistiques, 12h, 1st year school of medicine, Univ. Rennes 1, France

Licence: O. Dameron, "Atelier bioinformatique", 12h, Licence 2 informatique, Univ. Rennes 1, France

- Master: O. Dameron, "Intégration: Remise à niveau en informatique", 18h Master 1 in bioinformatics, Univ. Rennes 1, France
- Master: O. Dameron, "Programmation impérative en Python", 985h Master 1 in bioinformatics, Univ. Rennes 1, France
- Master: O. Dameron, "Système informatique GNU/Linux", 10h, Master 1 in bioinformatics, Univ. Rennes 1, France
- Master: O. Dameron, 5h, "Internship", Master 1 in bioinformatics, Univ. Rennes 1, France
- Master: O. Dameron, "Bases de mathématiques et probabilité", 9h, Master1 in public health, Univ. Rennes 1, France
- Master: O. Dameron, "Programmation impérative en Python (2)", 3h Master 1 in public health, Univ. Rennes 1, France
- Master: O. Dameron, 20h, "Semantic Web and bio-ontologies", Master 2 in bioinformatics, Univ. Rennes 1, France
- Master: O. Dameron, 15h, "Internship", Master 2 in bioinformatics, Univ. Rennes 1, France
- Licence: N. Guillaudeau, Projet professionnel et communication, 16h, 1st year Computer Science, Univ. Rennes 1, France
- Licence: N. Guillaudeau, "TPs Python", 36h, 1st year in Biology, Univ. Rennes 1, France
- Licence: M. Louarn, Introduction à la BioInformatique, 6h, L2 Informatique, Univ. Rennes 1, France.
- Licence: M. Louarn, Informatique, 10h, L1 Physique Chimie, Univ. Rennes 1, France.
- Master: M. Louarn, Informatique Médicale Avancée, 2h, M1 Médecine, Univ. Rennes 1, France.
- Master: M. Louarn, Object-oriented programming, 25h, M2 bioinformatique et génomique, Univ. Rennes 1, France.
- Master: M. Louarn, Jury de stage, 6h, M1 bioinformatique et génomique, Univ. Rennes 1, France.

10.2.4. Supervision

- PhD: Yann Rivault, *Analyse de trajectoires de soins à partir de bases de données médico-administratives : apport d'un enrichissement pas des connaissances biomédicales issues du Web des Données*, defended 28th January 2019, supervised by O. Dameron and N. Lemeur [64].
- PhD: Lucas Bourneuf, *A search space of graph motifs for graph compression: From Powergraphs to triplet concepts*, defended 17th december 2019, supervised by J. Nicolas [12].
- PhD in progress: Johanne Bakalara, *Temporal models of care sequences for the exploration of medico-administrative data*, started in Oct. 2018, supervised by T. Guyet (Lacodam), E. Oger (Repères) and O. Dameron.
- PhD in progress: Arnaud Belcour, *Inferring Model metabolisms for bacterial ecosystems reduction*, started in Oct. 2019, supervised by A. Siegel and S. Blanquart.
- PhD in progress: Mael Conan, *Predictive approach to assess the genotoxicity of environmental contaminants during liver fibrosis*, started in Oct. 2017, supervised by S. Langouet and A. Siegel.
- PhD in progress: Olivier Dennler, *Modular functional characterization of ADAMTL and ADAMTSL protein families*, started in Oct. 2019, supervised by N. Theret, F. Coste and S. Blanquart.
- PhD in progress: Nicolas Guillaudeau, *Compare gene structures to predict isoform transcripts*, started in Oct. 2018, supervised by O. Dameron, S. Blanquart and C. Belleannée.
- PhD in progress: Virgilio Kmetzsch *Multi-modal analysis of neuroimaging and transcriptomics data in genetically-induced fronto-temporal dementia*, started in Oct. 2019, supervised by E. Becker and O. Colliot (Inria Aramis, ICM Paris)

PhD in progress: Marine Louarn, *Intégration de données génomiques massives et hétérogènes, application aux mutations non-codantes dans le lymphome folliculaire*, started in Oct. 2017, supervised by A. Siegel, T. Fest (CHU) and O. Dameron.

PhD in progress : Hugo Talibart, *Learning grammars with long-distance correlations on proteins*, started in Nov. 2017, supervised by F. Coste and J. Nicolas.

PhD in progress : Pierre Vignet, *Identification et conception expérimentale de nouveaux agents thérapeutiques à partir d'un modèle informatique des réseaux d'influence du TGF- β dans les pathologies hépatiques chroniques*, started in Dec. 2018, supervised by N. Théret and A. Siegel.

PhD in progress : Méline Wéry, *Methodology development in disease treatment projects.*, started in Oct. 2017, supervised by E. Becker, C. Bettembourg (Sanofi), O. Dameron, and A. Siegel.

10.2.5. Juries

- Referee of PhD thesis: Aarón Ayllón-Benítez, Univ. Bordeaux [O. Dameron] - A. Beica, ENS [A. Siegel, president] - F. Bridoux, Marseille [A. Siegel] - C. Hernandez, ENS [A. Siegel, president]
- Member of PhD thesis juries: Sandeep Manandhar, Univ. Rennes [O. Dameron] - A. Husson, Paris Diderot [A. Siegel] - Arran Hodgkinson, Univ. Montpellier [N. Théret]
- Referee of habilitation thesis: Fleur Mougín, Univ. Bordeaux [O. Dameron] - S. Peres, Orsay [A. Siegel]
- Member of habilitation thesis juries: Adrien Coulet, Univ. Lorraine [O. Dameron] - L. Calzone [A. Siegel, president]

10.2.6. Interns

- Internship, from Jan 2019 until Jun 2019. Supervised by O. Dameron and O. Corby (Wimmics team, Sophia-Antipolis). Student: Antoine Abel (Master 2 bioinformatique, Univ. Rennes 1). Subject: Faster SPARQL federated queries [31]
- Internship, from Jan 2019 until Jun 2019, Supervised by O. Dameron and A. Duchene (Theranexus). Student: Pierre Beaudier (Master 2 bioinformatique, Rennes). Subject: Evaluation of the public databases' relevance as comprehensive tools for pharmacological mechanisms [32]
- Internship, from Jan 2019 until Jun 2019, Supervised by E. Becker, Fabrice Legeai (IGEPP) and Julien Bobe (LPGP). Student: Fanny Casse (Master 2 bioinformatique, Rennes). Subject: MiRNA regulating genes responsible for fertility and early embryonic development in the Medaka fish [35].
- Internship, from April 2019 until July 2019, Supervised by P. Dabert (IRSTEA), A. Siegel and S. Blanquart. Student: Theo Combe (Master 1 bioinformatique, Rennes). Subject: Reconstructing metabolic pathways of methanogenic communities using metabarcoding data
- Internship, from May 2019 until Jun 2019, Supervised by F. Coste. Student: Arthur Correnson (Licence math-informatique, Université Paul Sabatier, Toulouse). Subject: Implementation of a new partial local multiple alignment algorithm.
- Internship, from Jan 2019 until Jun 2019, Supervised by F. Coste, N. Théret, S. Blanquart, C. Belleannée. Student: Olivier Dennler (Master 2 bioinformatique, Rennes). Subject: Functional module characterization of ADAMTS / ADAMTSL protein family [37]
- Internship, from Jan 2019 until Jun 2019, Supervised by A. Siegel. Student: Clara Emery (Master 2 bioinformatique, Rennes). Subject: Modeling of quorum sensing system by in silico approaches
- Internship, from May 2019 until Oct 2019, Supervised by E. Becker and G. Rabut (IGDR, Rennes). Student: Camille Juigne (ENSSAT, Lannion). Subject: Data integration and formal analysis of the network between ubiquitination enzymes.
- Internship, from Jan 2019 until Jun 2019, Supervised by F. Morrews. Student: Albane Lysiak (Master 2 bioinformatique, Rennes). Subject: Exploiting paralog genes for discovering genetic regulation by transcription factors.

- Internship, from Jul 2019 until Aug 2019, Supervised by C. Belleannée and N. Guillaudeau. Student: Pierre Alexis Odyé (Master 1 informatique, Rennes). Subject: Design of a database on known and predicted transcriptomics data in humans, mice and dogs.
- Internship, from Jul 2019 until Aug 2019, Supervised by E. Becker and F. Moreews. Student: Hugo Simon (1st year Telecom Paris Tech). Subject: Large scale analysis of metabolic networks as biological graphs.
- Internship, from Jun 2019 until Jul 2019, Supervised by A. Siegel and R. Andonov. Student: Kerian Thuillier (ENS Rennes). Subject: Linear programming for metabolic network completion [41]
- Internship, from Jan 2019 until Jul 2019, Supervised by C. Frioux. Student: Margot Wagner (Master 2 écologie, Rennes). Subject: Discriminant analysis of transcriptomics and metagenomics of an alga and its microbiota in multiple culture conditions with genome-scale modelling.

10.3. Popularization

10.3.1. Interventions

- "J'peux pas j'ai informatique", Welcoming of high-school students to leverage stereotypes about computer sciences (110 participants), Apr. 2019 [O. Dameron, A. Siegel]
- "Elles codent Elles créent" Our Ph-D students have been involved in creative Python learning sessions for female students in two high-schools. [M. Louarn, M. Wéry, A. Siegel]
- Operation DECLIC (Dialogues Entre Chercheurs et Lycéens pour les Intéresser à la Construction des Savoirs). Lycée Descartes, Rennes. Nov 2019 [More details] [N. Théret, M. Conan, P. Vignet, O. Dennler]

10.3.2. Internal action

- Organization of the weekly seminar "Symbiose", involving teams DYLISS, GENSCALE and GENOUEST: [S. Blanquart]

10.3.3. Creation of media or tools for science outreach

Science en Cour[t]s (<http://sciences-en-courts.fr/>) Many of our current and former PhD students (M. Wéry, L. Bourneuf, A. Antoine-Lorquin, C. Bettembourg, J. Coquet, V. Delannée, G. Garet, S. Prigent) have been heavily involved in organization of a local Popularization Festival where PhD. students explain their thesis via short movies. The movies are presented to a professional jury composed of artists and scientists, and of high-school students. Previous years films can be viewed on the festival web-site [More details]

ERABLE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Organisation

9.1.1.1. General Chair, Scientific Chair

- Giuseppe Italiano is member of the Steering Committee of the *Workshop on Algorithm Engineering and Experimentation (ALENEX)*, of the International Colloquium on Automata, Languages and Programming (ICALP), and of the Workshop/Symposium on Experimental Algorithms (SEA).
- Alberto Marchetti-Spaccamela is a member of the Steering committee of *Workshop on Graph Theoretic Concepts in Computer Science (WG)*, and of *Workshop on Algorithmic Approaches for Transportation Modeling, Optimization, and Systems (ATMOS)*.
- Arnaud Mary is member of the Steering Committee of *Workshop on Enumeration Problems and Applications (WEPA)*.
- Marie-France Sagot is member of the Steering Committee of *European Conference on Computational Biology (ECCB)*, *International Symposium on Bioinformatics Research and Applications (ISBRA)*, and *Workshop on Enumeration Problems and Applications (WEPA)*.
- Alexander Schönhuth is member of the Steering committee of the *Research in Computational Molecular Biology, satellite conference on massively parallel sequencing (RECOMB-seq)*.

9.1.1.2. Member of the Organizing Committees

- Leen Stougie was co-organiser of MAPSP 2019, Jun 2019, Hotel Zeeuwse Stromen, Renesse; and of the Networks Workshop on Random graphs, counting and sampling, Sep 2019, CWI, Amsterdam.

9.1.2. Scientific Events: Selection

9.1.2.1. Member of the Conference Program Committees

- Giuseppe Italiano was a member of the Program Committee of *APF*, *ATMOS*, and *CIAC*.
- Arnaud Mary was a member of the Program Committee of *MFCS*, and *WEPA*.
- Nadia Pisanti was a member of the Program Committee of *BIOINFORMATICS*, *CPM*, *ICCS*, *ISBRA*, *IWOCA*, and *WABI*.
- Marie-France Sagot was a member of the Program Committee of *BIBM*, *CIAC*, *CPM*, *PSC*, *RecombCG*, and *WABI*.

9.1.2.2. Reviewer

Members of ERABLE have reviewed papers for a number of workshops and conferences including: *CPM*, *ISMB*, *RECOMB*, *WEPA*, *WABI*.

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- Roberto Grossi is member of the Editorial Board of *Theory of Computing Systems (TOCS)* and of *RAIRO – Theoretical Informatics and Applications*.
- Giuseppe Italiano is member of the Editorial Board of *Algorithmica* and *Theoretical Computer Science*.
- Vincent Lacroix is recommender for *Peer Community in Genomics*, see <https://genomics.peercommunityin.org/>.
- Alberto Marchetti-Spaccamela is member of the Editorial Board of *Theoretical Computer Science*.
- Arnaud Mary is Editor-in-Chief of a special issue of *Discrete Applied Mathematics* dedicated to WEPA 2016.
- Nadia Pisanti is since 2012 member of Editorial Board of *International Journal of Computer Science and Application (IJCSA)* and since 2017 of *Network Modeling Analysis in Health Informatics and Bioinformatics*.
- Marie-France Sagot is member of the Editorial Board of *BMC Bioinformatics*, *Algorithms for Molecular Biology*, and *Lecture Notes in Bioinformatics*.
- Leen Stougie is member of the Editorial Board of *AIMS Journal of Industrial and Management Optimization*.
- Cristina Vieira is Executive Editor of *Gene*, and since 2014 member of the Editorial Board of *Mobile DNA*.

9.1.3.2. Reviewer - Reviewing Activities

Members of ERABLE have reviewed papers for a number of journals including: *Theoretical Computer Science*, *Algorithmica*, *Algorithms for Molecular Biology*, *Bioinformatics*, *BMC Bioinformatics*, *Genome Biology*, *Genome Research*, *IEEE/ACM Transactions in Computational Biology and Bioinformatics (TCBB)*, *Molecular Biology and Evolution*, *Nucleic Acid Research*.

9.1.4. Invited Talks

- Giuseppe Italiano: invited talk on “2-Connectivity on Directed Graphs”, 14th Computer Science Symposium in Russia (CSR 2019), Novosibirsk, Russia.
- Nadia Pisanti: Invited talk on “Mapping Reads on a Pan-Genome: Pattern Matching on Degenerate Texts”, 1st Workshop on Computational Pan-Genomics, Bielefeld, Germany; Invited talk on “On-line (approximate) Pattern Matching on Degenerate Texts and Applications”, 14th Workshop on Compression, Text and Algorithms (WCTA), Segovia, Spain.
- Solon Pissis: Invited talk on “Even Faster Elastic-Degenerate String Matching via Fast Matrix Multiplication”, Algorithms Group Seminar Series, 24 Oct 2019, University of Warsaw, Warsaw, Poland; Invited talk on “When linear space is impractical: computing absent words in output-sensitive space”, Bonsai Bioinformatics Seminar Series, 11 Jun 2019, Université de Lille, Lille, France; Invited talk on “Elastic-degenerate strings: a new representation for pattern matching in a collection of similar texts”, Computer Science Seminar Series, Feb 12 2019, University of Pisa, Pisa, Italy.
- Leen Stougie: Invited talk on “Fixed-Order Scheduling on parallel machines”, Workshop on Combinatorial Optimization, 26-27 September 2019, TU Berlin, Germany.
- Cristina Vieira: Invited talk on “Contribution of Transposable element to gene expression in *Drosophila* (and other)”, XI Symposium of Ecology, Genetic and *Drosophila* Evolution, November 2019, Pelotas, Brazil.

9.1.5. Scientific Expertise

Giuseppe F. Italiano is member of the Council of the European Association for Theoretical Computer Science. Leen Stougie is member of the General Board of the Dutch Network on the Mathematics of Operations Research (Landelijk Netwerk Mathematische Besliskunde (LNMB)).

9.1.6. Research Administration

Hubert Charles is director of the Biosciences Department of the Insa-Lyon and co-director of studies of the “Bioinformatique et Modélisation (BIM)” track.

Giuseppe Italiano is member of the Advisory Board of MADALGO - Center for MAssive Data ALGORithmics, Aarhus, Denmark.

Nadia Pisanti is since November 1st 2017 member of the Board of the PhD School in Data Science (University of Pisa jointly with Scuola Normale Superiore Pisa, Scuola S. Anna Pisa, IMT Lucca).

Marie-France Sagot is member of the Advisory Board of CWI, Amsterdam, the Netherlands, and chair of the CSS for Mbio at Inra.

Alexander Schönhuth is member of the Scientific Board of BioSB (the Dutch organisation for bioinformatics) since May 2017.

Leen Stougie is since April 2017 Leader of the Life Science Group at CWI. He is member of the General Board of the Dutch Network on the Mathematics of Operations Research (Landelijk Netwerk Mathematische Besliskunde (LNMB)), and member of the Management Team of the Gravity project Networks.

Alain Viari is member of a number of scientific advisory boards (IRT (Institut de Recherche Technologique) BioAster; Centre Léon Bérard). He also coordinates together with J.-F. Deleuze (CNRGH-Evry) the Research & Development part (CReFlX) of the “Plan France Médecine Génomique 2025”.

Fabrice Vavre is President of the Section 29 of the CoNRS8.

Cristina Vieira is member of the “Conseil National des Universités” (CNU) 67 (“Biologie des Populations et Écologie”), and since 2017 member of the “Conseil de la Faculté des Sciences et Technologies (FST)” of the University Lyon 1.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

9.2.1.1. France

The members of ERABLE teach both at the Department of Biology of the University of Lyon (in particular within the BISM (Bioinformatics, Statistics and Modelling) specialty, and at the department of Bioinformatics of the Insa (National Institute of Applied Sciences). Cristina Vieira is responsible for the Master Biodiversity, Ecology and Evolution (<https://www.bee-lyon-univ.fr/>). She teaches genetics 192 hours per year at the University and at the ENS-Lyon. Hubert Charles is responsible for the Master of Modelling and Bioinformatics (BIM) at the Insa of Lyon (<http://biosciences.insa-lyon.fr/>). He teaches 192 hours per year in statistics and biology. Vincent Lacroix is responsible for the M1 master in bioinformatics (<https://www.bioinfo-lyon.fr/>) and of the following courses (L3: Advanced Bioinformatics, M1: Methods for Data Analysis in Genomics, M1: Methods for Data Analysis in Transcriptomics, M1: Bioinformatics Project, M2: Ethics). He taught 96 hours in 2018-2019 and 192 hours in 2019-2020. Arnaud Mary is responsible for three courses of the Bioinformatics Curriculum at the University (L2: Introduction to Bioinformatics and Biostatistics, M1: Object Oriented Programming, M2: new course on Advanced Algorithms for Bioinformatics) and one at Insa (Discrete Mathematics). He taught 198 hours in 2019. Blerina Sinimeri taught 36 hours in 2019 on graph algorithms for the M1 students of the Master in Bioinformatics, and on Discrete Mathematics at Insa. Fabrice Vavre taught 20h at the Master level.

The ERABLE team regularly welcomes M1 and M2 interns from the bioinformatics Master.

Vincent Lacroix and Audric Cologne were instructors in the NGS data analysis training for the CNRS Formation, a course coordinated by Annabelle Haudry, LBBE (<https://cnrsformation.cnrs.fr/stage-19026-Bioinformatique-pour-le-traitement-de-donnees-de-sequencage-%28NGS%29—Lyon.html>).

All French members of the ERABLE team are affiliated to the doctoral school E2M2 (Ecology-Evolution-Microbiology-Modelling, <http://e2m2.universite-lyon.fr/>).

9.2.1.2. Italy & The Netherlands

Italian researchers teach between 90 and 140 hours per year, at both the undergraduate and at the Master levels. The teaching involves pure computer science courses (such as Programming foundations, Programming in C or in Java, Computing Models, Distributed Algorithms) and computational biology (such as Algorithms for Bioinformatics).

Dutch researchers teach between 60 and 100 hours per year, again at the undergraduate and Master levels, in applied mathematics (*e.g.* Operational Research, Advanced Linear Programming), machine learning (Deep Learning) and computational biology (*e.g.* Biological Network Analysis, Algorithms for Genomics).

9.2.2. Supervision

The following PhDs were defended in ERABLE in 2019:

- Jasmijn Baaijens, CWI (supervisor: Alexander Schönhuth), Sep 2019
- Annelieke Baller, Vrije Universiteit Amsterdam (co-supervisor: Leen Stougie), Nov 2019
- Thomas Bosman, Vrije Universiteit Amsterdam (co-supervisor: Leen Stougie), Nov 2019
- Audric Cologne, University of Lyon 1 (funded by Inserm and Inria, co-supervisors: Patrick Edery – Federation of Health Research of Lyon-Est, Vincent Lacroix), Oct 2019
- Leandro Ishi Soares de Lima, University of Lyon 1 (funded by the Brazilian “Science without Borders” program, co-supervisors: Giuseppe Italiano, Vincent Lacroix, Marie-France Sagot), Apr 2019
- Nikos Parotsidis, University of Rome Tor Vergata, supervisor: Giuseppe Italiano, Mar 2019
- Henri Taneli Pusa, University of Lyon 1 (funded by H2020-MSCA-ETN-2014 project MicroWine, co-supervisors: Alberto Marchetti-Spaccamela, Arnaud Mary, Marie-France Sagot), Feb 2019

The following are the PhDs in progress:

- Marianne Borderes, University Lyon 1 (funded by ANR Technology Spock, co-supervisors: Susana Vinga – Instituto Superior Técnico at Lisbon; Marie-France Sagot)
- Nicolas Homberg, Inra, Inria & University of Lyon 1 (funded by Inra & Inria, co-supervisors: Christine Gaspin at Inra; Marie-France Sagot)
- Carol Moraga Quinteros, University of Lyon 1 (funded by Conicyt Chile, co-supervisors: Rodrigo Gutierrez – Catholic University of Chile, Marie-France Sagot)
- Camille Sessegolo, University of Lyon 1 (funded by ANR Aster; co-supervisors: Vincent Lacroix, Arnaud Mary)
- Michelle Sweering, CWI (co-supervisors: Solon Pissis and Leen Stougie)
- Yishu Wang, University Lyon 1 (funded by Ministère de l’Enseignement supérieur, de la Recherche et de l’Innovation, co-supervisors: Mário Figueiredo – Instituto Superior Técnico at Lisbon; Marie-France Sagot; Blerina Sinimeri)
- Irene Ziska, University Lyon 1 (funded by Inria Cordi-S, co-supervisors: Susana Vinga – Instituto Superior Técnico at Lisbon; Marie-France Sagot)

9.2.3. Juries

The following are the PhD or HDR juries to which members of ERABLE participated in 2019.

- Vincent Lacroix: External reviewer of the PhD of Patricia Sieber, supervised by Stefan Schuster at Friedrich-Schiller University of Jena, Germany; external reviewer of the PhD of Luca Denti, supervised by Paola Bonizzoni at University Bicocca of Milano, Italy.
- Arnaud Mary: External reviewer of the PhD of Karima Ennaoui, supervised by Lhouari Nourine at University of Clermont-Ferrand, France.
- Marie-France Sagot: External Reviewer of the PhD of Pierre Marijon, University of Lille, France, Dec 2019.

- Leen Stougie: Reading Committee of the PhD of Teun Janssen, TU Delft, Mar 2019; Chair Reading Committee of the PhD of Pieter Kleer, Vrije Universiteit Amsterdam, Sep 2019; Reading Committee of the PhD of Peter van der Gulik, Univ. of Amsterdam, Sep 2019; Chair Reading Committee of the PhD of Maaïke Hoogeboom, Vrije Universiteit Amsterdam, Dec 2019.
- Cristina Vieira: Member of the PhD Committee of Olivier Tabone, Faculté de Médecine Rockefeller, Jan 2019; Member of the PhD Committee of Sébastien Lemaire, ENS Lyon, Mar 2019; External Reviewer of the PhD of Natalia Martinez, Université Paris Sud, Oct 2019.

9.3. Popularization

9.3.1. Interventions

Carol Moraga Quinteros participated in the contest “DESCRYPThèse” of the doctoral school E2M2 of the University of Lyon 1, winning a prize for one of the best presentations in April 2019. The title of the talk was “BrumiR: un algorithme *de novo* pour prédire les petits ARNs sans génome de référence”.

GENSCALE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Selection

10.1.1.1. Chair of Conference Program Committees

- seqBIM 20019 : national meeting of the sequence algorithms GT seqBIM [C. Lemaitre]

10.1.1.2. Member of the Conference Program Committees

- JOBIM 2019: French symposium of Bioinformatics [C. Lemaitre]
- seqBIM 2019 : national meeting of the sequence algorithms GT seqBIM [C. Lemaitre, P. Peterlongo]
- BIBM 2019, IEEE International Conference on Bioinformatics and Biomedicine [D. Lavenier]
- BIOKDD 2019, 10th International Workshop on Biological Knowledge Discovery from Big Data [D. Lavenier]
- IPDPS 2019, 33rd IEEE International Parallel and Distributed Processing Symposium [D. Lavenier]
- 11th International Conference on Bioinformatics and Computational Biology (BICOB-2019) [R. Andonov]
- RCAM 2019 (Recent Computational Advances in Metagenomics) [P. Peterlongo]

10.1.1.3. Reviewer

- ISMB 2019 (Intelligent Systems for Molecular Biology) [W. Delage, C. Lemaitre]

10.1.2. Journal

10.1.2.1. Reviewer - Reviewing Activities

- Bioinformatics [P. Peterlongo, D. Lavenier]
- BMC Bioinformatics [D. Lavenier]
- BMC Genomics [D. Lavenier, F. Legeai]
- Briefing in Bioinformatics [D. Lavenier]
- Nature Scientific Reports [F. Legeai]
- Genome Biology [D. Lavenier]
- Genomics [D. Lavenier]
- Machine Learning [J. Nicolas]

10.1.3. Invited Talks

- (IB)2 Research Day - Bruxelles - Oct 2019- "Metagenomics-Comparisons and variants" [P. Peterlongo]

10.1.4. Leadership within the Scientific Community

- Members of the Scientific Advisory Board of the GDR BIM (National Research Group in Molecular Bioinformatics) [P. Peterlongo, C. Lemaitre]
- Animator of the Sequence Algorithms axis (seqBIM GT) of the BIM and IM GDRs (National Research Groups in Molecular Bioinformatics and Informatics and Mathematics respectively) [C. Lemaitre]
- Animator of the INRA Center for Computerized Information Treatment "BBRIC" [F. Legeai]

10.1.5. Scientific Expertise

- Expert for the MEI (International Expertise Mission), French Research Ministry [D. Lavenier]
- Member of the Scientific Council of BioGenOuest [D. Lavenier]
- Member of the Scientific Council of the Computational Biology Institute of Montpellier [D. Lavenier]
- Member of the Scientific Council of Agrocampus Ouest (Institute for life, food and horticultural sciences and landscaping) [J. Nicolas]
- Expert for the Elixir French Service Delivery Plan [P. Peterlongo]

10.1.6. Research Administration

- Member of the CoNRS, section 06, [D. Lavenier]
- Member of the CoNRS, section 51, [D. Lavenier]
- Corresponding member of COERLE (Inria Operational Committee for the assesment of Legal and Ethical risks). Participation to the ethical group of IFB (French Elixir node, Institut Français de Bioinformatique) [J. Nicolas]
- Member of the steering committee of the INRA BIPAA Platform (BioInformatics Platform for Agroecosystems Arthropods) [D. Lavenier]
- Member of the steering committee of The GenOuest Platform (Bioinformatics Resource Center BioGenOuest) [D. Lavenier]
- Scientific Advisor of The GenOuest Platform (Bioinformatics Resource Center BioGenOuest) [J. Nicolas]
- Representative of the environmental axis of the IRISA UMR [C. Lemaitre]
- In charge of the bachelor's degree in the computer science department of University of Rennes 1 (90 students) [R. Andonov]
- Member of the Council of Administration of ISTIC [R. Andonov]

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence : C. Delahaye, G. Siekaniec, Python, 48 h, L1, Univ. Rennes 1, France.

Licence : R. Andonov, Graph Algorithms, 60h, L3, Univ. Rennes 1, France.

Licence : K. Da Silva, Algorithms and Complexity, 36 h, L3, ENSAI, Rennes, France.

Licence : W. Delage, Introduction to Biostatistics, 36 h, L2, Univ. Rennes 1, France.

Master : R. Andonov, S. Francois, Operational research, 82h, M1 Miage, Univ. Rennes 1, France.

Master : G. Siekaniec, Python, 21 h, M1, Univ. Rennes 1, France.

Master : K. Da Silva, Statistical learning, 22h, M1, Univ. Rennes 1, France.

Master : C. Lemaitre, P. Peterlongo, Algorithms on Sequences, 52h, M2, Univ. Rennes 1, France.

Master : C. Lemaitre, T. Lemane, Bioinformatics of Sequences, 40h, M1, Univ. Rennes 1, France.

Master : P. Peterlongo, Experimental Bioinformatics, 24h, M1, ENS Rennes, France.

Master : F. Legeai, RNA-Seq, Metagenomics and Variant discovery, 12h, M2, National Superior School Of Agronomy, Rennes, France.

Master : R. Andonov, Advanced Algorithmics, 25h, Univ. Rennes 1, France.

Master : D. Lavenier, Memory Efficient Algorithms for Big Data, Engineering School, ESIR, Rennes.

Master : W. Delage, Internship jury, 6 h, M1, Univ. Rennes 1, France

10.2.2. Supervision

PhD in progress : S. François, Combinatorial Optimization Approaches for Bioinformatics, 01/10/2016-30/09/2019, R. Andonov.

PhD in progress : L. Lecompte, Structural Variant detection in long-read sequencing data, 01/09/2017, D. Lavenier and C. Lemaitre.

PhD in progress : W. Delage, De novo local assembly approaches for the detection of complex genomic variations in rare diseases, 01/10/2017, J. Thévenon and C. Lemaitre.

PhD in progress: K. da Silva, Metacatalogue : a new framework for intestinal microbiota sequencing data mining, 01/10/2018, M. Berland, N. Pons and P. Peterlongo.

PhD in progress: G. Siekaniec, Differential characterization of strains of bacterial species, 01/10/2018, E. Guédon, E. Roux and J. Nicolas.

PhD in progress: C. Delahaye, Robust interactive reconstruction of polyploid haplotypes, 01/10/2019, J. Nicolas

PhD in progress: T. Lemane, unbiased detection of neurodegenerative structural variants using k-mer matrices, 01/10/2019, P. Peterlongo

10.2.3. Juries

- *Member of Habilitation thesis jury.* S. Caboche, Univ. Lille [P. Peterlongo] R. Eyraud, Univ. Marseille [J. Nicolas, referee]
- *President of PhD thesis jury.* J. Wanza, University of Nice Sophia Antipolis [D. Lavenier], M. Guillemé, Univ. Rennes [J. Nicolas]
- *Referee of Ph-D thesis jury.* Kevin Gravouil, Univ Clermont Auvergne [P. Peterlongo]
- *Member of PhD thesis juries.* Lyam Baudry, University Paris-Sorbonne [C. Lemaitre], Pierre Morisse, Univ. Rouen [P. Peterlongo], Pierre Marijon, Univ Lille [P. Peterlongo], Franklin Delehelle, University of Toulouse [D. Lavenier], Lucas Bourneuf, Univ. Rennes [J. Nicolas].
- *Member of PhD thesis committee.* Chi Nguyen Lam, Univ. Brest [D. Lavenier], Benjamin Churcheward, Univ. Nantes [D. Lavenier], Victor Gaborit, Inserm Nantes [P. Peterlongo], Guillaume Gautreau CEA [P. Peterlongo], Sébastien François, Univ. Rennes [J. Nicolas], Mikail Demirdelen, Univ. Rennes [J. Nicolas], Hugo Talibart, Univ. Rennes [J. Nicolas].

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Member of the Interstice editorial board [P. Peterlongo]

10.3.2. Interventions

- In educational institutions : Participation to operation "A la découverte de la recherche" in high schools [P. Peterlongo]
- Short Movie "Moi, mon chien et les autres: à la recherche des transcrits perdus", presented at Sciences en Courts, a local contest of popularization short movies made by PhD students (<http://sciences-en-courts.fr/>) [G. Siekaniec].

10.3.3. Internal action

- co-organizer of Sciences en cour[t]s event, Nicomaque association (<http://sciences-en-courts.fr/>) [W. Delage]

10.3.4. Creation of media or tools for science outreach

- Popularization article in Interstices. "Analyser le génome des océans" <https://interstices.info/analyser-les-genomes-des-oceans/> [P. Peterlongo]

IBIS Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific events organisation

8.1.1.1. Member of organizing committees

IBIS members	Conference, workshop, school	Date
Hidde de Jong	CompSysBio: Advanced Lecture Course on Computational Systems Biology, Aussois	Apr 2019
Aline Marguet	Biohasard: Stochastic models for biology, Grenoble	Jun 2020
Delphine Ropers	Séminaire de Modélisation du Vivant (SeMoVi), Lyon and Grenoble	2019

8.1.2. Scientific events selection

8.1.2.1. Chair of conference program committees

IBIS member	Conference, workshop, school	Role
Eugenio Cinquemani	European Control Conference (ECC 2019 and 2020)	Associate editor

8.1.2.2. Member of conference program committees

IBIS member	Conference, workshop, program
Eugenio Cinquemani	ECC 2019 and 2020, CMSB 2018 and 2019, HSB 2019 and 2020, SASB 2019, IEEE CIBCB 2019
Hidde de Jong Delphine Ropers	CMSB 2019, FOSBE 2019, HSB 2019 and 2020 CSBio 2019

8.1.3. Journal

8.1.3.1. Member of editorial boards

IBIS member	Journal
Johannes Geiselmann	Frontiers in Microbiology (review editor)
Hidde de Jong	Journal of Mathematical Biology
Hidde de Jong	Biosystems (reviews editor)
Hidde de Jong	ACM/IEEE Transactions on Computational Biology and Bioinformatics

8.1.4. Scientific evaluation and expertise

IBIS member	Organism	Role
Johannes Geiselmann	INRA	Member scientific advisory committee Microbiologie, Adaptation, Pathogénie
Johannes Geiselmann	UMR5240 CNRS-UCBL-INSA- BayerCropScience	Member scientific council
Hidde de Jong	Microbiology and Food Chain Department, Inra	Member scientific council
Hidde de Jong	Univ Grenoble Alpes	Member scientific council of Pôle MSTIC
Hidde de Jong	International Human Frontier Science Program (HFSP)	Member grant selection committee
Delphine Ropers	INRA-Inria	Member selection committee PhD grants
Delphine Ropers	Elixir	Member of Microbial Biotechnology Community

8.1.5. Invited talks and other presentations

Eugenio Cinquemani

Title	Event and location	Date
Estimation and control of microbial dynamics: From single-cell to microbial communities	Presentation at Inria-KAIST workshop on Applied mathematics, Paris	Mar 2019
Optimal control of bacterial growth for metabolite production: The role of timing and costs of control	Presentation at ECC 2019, Naples (Italy)	Jun 2019
Enhanced production of heterologous proteins by a synthetic microbial consortium: Conditions and tradeoffs	Invited talk at Workshop Advanced Physics for Medicine, CNR, Rome (Italy)	Sep 2019

Hidde de Jong

Title	Event and location	Date
Integrated models of the cell: metabolism, gene expression, signalling	Tutorial at CompSysBio: Advanced Lecture Course on Computational Systems Biology, Aussois	Apr 2019
Optimal control of bacterial growth: biotechnological applications	Invited talk at Workshop New Vistas in Computational Systems and Synthetic Biology, Vigo (Spain)	May 2019
Optimal control of microbial growth and bioproduction	Invited talk at SYMER workshop, Global Challenge Week, Univ Grenoble Alpes, Grenoble	Jun 2019
Reengineering bacterial metabolism using synthetic biology and optimal control theory	Invited talk in special session on Predictive approaches for biological systems engineering, JOBIM 2019, Nantes	Jul 2019
Production of heterologous proteins by a synthetic microbial consortium: conditions and tradeoffs	Invited talk at Biocore seminar, Peyresq	Sep 2019

Stéphan Lacour

Title	Event and location	Date
New insights into the regulation of curli production by <i>E. coli</i>	BactoGre workshop, Grenoble	Avr 2019

Aline Marguet

Title	Event and location	Date
Inheritance and variability of kinetic gene expression parameters in microbial cells: Modelling and inference from lineage tree data	Invited talk at École de printemps de la chaire MMB, Aussois	May 2019
Inheritance and variability of kinetic gene expression parameters in microbial cells: Modelling and inference from lineage tree data	Presentation at ISMB/ECCB conference, Basel (Switzerland)	Jul 2019
Inheritance and variability of kinetic gene expression parameters in microbial cells: Modelling and inference from lineage tree data	Invited talk at Biohasard 2019 workshop, Rennes	Aug 2019
Inheritance and variability of kinetic gene expression parameters in microbial cells: Modelling and inference from lineage tree data	Presentation at Journée Inria-Bio, Lyon	Oct 2019
Inheritance and variability of kinetic gene expression parameters in microbial cells: Modelling and inference from lineage tree data	Seminar Master Mathématiques pour les Sciences du Vivant, Ecole Polytechnique, Palaiseau	Oct 2019
Modelling and statistics of branching processes	Workshop on Growth and division in mathematics and medicine, London (UK)	Nov 2019
Inheritance and variability of kinetic gene expression parameters in microbial cells: Modelling and inference from lineage tree data	Seminar équipe-projet DRACULA, Lyon	Nov 2019
Inheritance and variability of kinetic gene expression parameters in microbial cells: Modelling and inference from lineage tree data	Seminar unité MaIage, Jouy-en-Josas	Dec 2019
Long time behavior of a general class of branching Markov processes	Seminar Institut Fourier, Grenoble	Dec 2019

Marco Mauri

Title	Event and location	Date
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Thibault Etienne

Title	Event and location	Date
Regulatory mechanisms underlying coordination of mRNA degradation and cell physiology in <i>Escherichia coli</i>	Seminar during Journée annuelle du LIPhy, Grenoble	Jun 2019
Large scale modelling of mRNA decay in <i>Escherichia coli</i>	Seminar during Journée InriaBio, ENS de Lyon	Oct 2019

Antrea Pavlou

Title	Event and location	Date
Experimental and computational analysis of bacterial self-replicators	Poster at CompSysBio: Advanced Lecture Course on Computational Systems Biology, Aussois	Apr 2019
Experimental and computational analysis of bacterial self-replicators	Seminar for GdT MathBio, Grenoble	Nov 2019

8.1.6. Research administration

IBIS member	Committee	Role
Eugenio Cinquemani	Inria Grenoble - Rhône-Alpes	Member Comité des Emplois Scientifiques (CES)
Eugenio Cinquemani	Inria Grenoble - Rhône-Alpes	Member Comité des Utilisateurs des Moyens Informatiques (CUMI)
Eugenio Cinquemani	Inria	Member Comité Administrative Paritaire (CAP)
Eugenio Cinquemani	Inria Grenoble - Rhône-Alpes	Member Comité Développement Technologique (CDT)
Hidde de Jong	Inria Grenoble - Rhône-Alpes	Member scientific council (COS)
Hidde de Jong	Inria	Member working group on International Relations of Conseil d'Orientation Scientifique et Technique (COST)
Delphine Ropers	Inria	Member of Commission d'évaluation d'Inria
Delphine Ropers	Inria Grenoble - Rhône-Alpes	Référente chercheurs
Delphine Ropers	Inria Grenoble - Rhône-Alpes	Co-coordinator of mentoring program

8.1.7. Recruitment committees

IBIS member	Organism	Recruitment
Johannes Geiselmann	University of Barcelona	Assistant professor
Delphine Ropers	Inria Bordeaux Sud-Ouest	Chargés de recherche (jury d'admissibilité)
Delphine Ropers	Inria national	Chargés de recherche (jury d'admissibilité)
Delphine Ropers	Univ de Rennes	Assistant professor

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Four members of the IBIS team are either full professor or associate professor at Univ Grenoble Alpes. They therefore have a full teaching service (at least 192 hours per year) and administrative duties related to the organization and evaluation of the university course programs on all levels (from BSc to PhD). Besides the full-time academic staff in IBIS, the following people have contributed to courses last year.

Eugenio Cinquemani

Course: Stochastic modelling of gene regulatory networks, M2, BIM, INSA de Lyon (4 h)

Course: Statistics for systems biology, M1, Master Approches Interdisciplinaires du Vivant, CRI/Univ Paris Descartes (20 h, also in charge of 20 h of practicals)

Course: Modelling and identification of metabolic networks, M1, Phelma, INP Grenoble (4 h)

Hidde de Jong

Course and practicals: Modeling and simulation of gene regulatory networks, M2, BIM, INSA de Lyon (20 h)

Aline Marguet

Practicals: Biostatistics, M2, Univ Grenoble Alpes (24 h)

Delphine Ropers

Course and practicals: Modelling in systems biology, M1, Phelma, INP Grenoble (16 h)

Course and practicals: Cell systems biology and modelling cell functions, M1, Master ingénierie de la santé, Univ Grenoble Alpes (14 h)

Thibault Etienne

Course: Construction et analyse de plasmides in silico, M1, Master ingénierie de la santé, Univ Grenoble Alpes (4 h)

Antrea Pavlou

Practicals: Cellular biology, L1, Chemistry and biochemistry, Univ Grenoble Alpes (28 h)

8.2.2. Supervision

HdR: **Eugenio Cinquemani**, Identification, estimation and control of gene expression and metabolic network dynamics [14], Univ Grenoble Alpes, Nov 2019

PhD in progress: **Thibault Etienne**, Analyse intégrative de la coordination entre stabilité des ARNm et physiologie cellulaire chez *Escherichia coli*. Supervisors: Delphine Ropers and Muriel Cocaign-Bousquet (INRA Toulouse)

PhD in progress: **Joël Espel**, RNA engineering: Design of the dynamical folding of RNA and of RNA switches. Supervisors: Alexandre Dawid (Univ Grenoble Alpes) and Johannes Geiselmann

PhD in progress: **Antrea Pavlou**, Experimental and computational analysis of bacterial self-replicators. Supervisors: Hidde de Jong and Johannes Geiselmann

PhD in progress: **Maaike Sangster**, Development, characterization and control of E. coli communities on an automated experimental platform. Supervisors: Eugenio Cinquemani and Johannes Geiselmann

8.2.3. Juries**PhD thesis committees**

IBIS member	Role	PhD student	University	Date
Johannes Geiselmann	Président	Vanni Petrolli	Univ Grenoble Alpes	Nov 2019
Hidde de Jong	Rapporteur	Pauline Trébulle	AgroParisTech	Oct 2019
Hidde de Jong	Rapporteur	Firas Hammami	Univ d'Aix-Marseille	Dec 2019
Delphine Ropers	Examineur	Marianyela Petrizzelli	Univ Paris Sud	Jul 2019
Delphine Ropers	Examineur	Ronan Duchesne	Univ de Lyon	Dec 2019

Habilitation (HDR) committees

IBIS member	Role	HDR candidate	University	Date
Johannes Geiselmann	Président	Marianne Weidenhaupt	Univ Grenoble Alpes	Jan 2019
Hidde de Jong	Président	Arnaud Tonnelier	Univ Grenoble Alpes	Jun 2019
Hidde de Jong	Rapporteur	Stefan Müller	University of Vienna	Sep 2019
Hidde de Jong	Examineur	Eugenio Cinquemani	Univ Grenoble Alpes	Nov 2019

PhD advisory committees

IBIS member	PhD student	University
Eugenio Cinquemani	Arthur Carcano	Institut Pasteur/Inria
Eugenio Cinquemani	Alexey Koshkin	ENS de Lyon
Johannes Geiselmann	Alain Lombard	Univ Grenoble Alpes
Johannes Geiselmann	Shiny Martis	INSA de Lyon
Hidde de Jong	Charlotte Coton	INRA Moulon
Hidde de Jong	Kapil Newar	Univ Grenoble Alpes
Hidde de Jong	Agustín Yabo	Univ Nice–Sophia-Antipolis
Stéphan Lacour	Julien Trouillon	CEA Grenoble
Stéphan Lacour	Camille Brunet	CHU Grenoble
Stéphan Lacour	Raphael Fourquet	INSA de Lyon/Univ de Lyon
Stéphan Lacour	Kevin Pick	Univ de Lyon
Delphine Ropers	Manon Barthe	Univ Paul Sabatier, Toulouse
Delphine Ropers	Charlotte Roux	Univ Paul Sabatier, Toulouse
Delphine Ropers	Irene Ziska	Univ de Lyon

8.2.4. Teaching administration

Yves Markowicz is director of the BSc department at Univ Grenoble Alpes.

Michel Page is coordinator of the master Systèmes d'information et d'organisation at the Institut d'Administration des Entreprises (IAE), Univ Grenoble Alpes.

Eugenio Cinquemani organizes a module on statistics in systems biology at CRI/Univ Paris Descartes.

Delphine Ropers organizes a module on the mathematical modeling of biological systems at PHELMA, INP Grenoble.

Hidde de Jong organizes with Daniel Kahn a module on the modeling of genetic and metabolic networks at INSA de Lyon.

8.3. Popularization

8.3.1. Interventions

Delphine Ropers participated in the colloquium FIGAS 2019 - Un rêve pour les filles et les garçons : la Science (Nov 2019). She was moderator of the session "Stéréotypes dans le numérique", and co-presented with Thierry Vieville "Mais comment éduquer les garçons à l'équité des genres au niveau informatique et numérique ?".

LIFEWARE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. General Chair, Scientific Chair

Chetan Aditya was the co-organiser of a thematic workshop entitled "From Bench to Bedside" at the Center for Interdisciplinary research, Paris, April 2019.

Grégory Batt was a co-organizer of the thematic session entitled "Predictive approaches for biological systems engineering" at the JOBIM conference, Nantes, July 2019.

François Fages and Sylvain Soliman were scientific co-chairs of

- **the Constraints and Life Sciences Track of CP'2019** 25th International Conference on Principles and Practice of Constraint Programming, Stamford, CT, USA, September 30 to October 4, 2019.

François Fages was scientific co-chair of

- Workshop on Computational Systems Biology for Complex Disease **CSBCD**, ENS Paris-Saclay, Cachan, France, 28-29 Nov. 2019.
- **Formal methods for the synthesis of biomolecular circuits** Shonan Village, Japan, 2-6 Sep 2019.
- **France-Taiwan Summer School on New Strategies in Medical Diagnosis and Precision Medicine**, NTU, Taipei, Taiwan, 9-10 July 2019.

10.1.2. Scientific Events: Selection

10.1.2.1. Member of the Conference Program Committees

- Grégory Batt was a member of the program committee of the IFAC Conference on Foundations of Systems Biology in Engineering (FOSBE 2019), Valencia, Spain, and of the scientific committee of Advanced Lecture Course on Computational Systems Biology summer school, Aussois, France.
- François Fages was PC member of
 - **CIBCB'19** 16th IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology – Certosa di Pontignano, Siena - Tuscany, Italy, July 9-11, 2019
 - **CMSB'19** 17th International Conference on Computational Methods in Systems Biology. Trieste, Italy, September 2019.
 - **HSB'19**, 6th International Workshop on Hybrid Systems and Biology, will be held at the Charles University, Prague (CZ) on the 6th and 7th April 2019, and is colocated with ETAPS 2019.
 - **BIOINFORMATICS'19** 10th International Conference on Bioinformatics Models, Methods and Algorithms" co-located with **BIOSTEC'19**, Prague, Czech republic, Feb 2019.
- Jakob Ruess was a PC member of **CMSB'19**, the 17th International Conference on Computational Methods in Systems Biology. Trieste, Italy, September 2019.
- Sylvain Soliman was a PC member of **CSBio 2019** 10th International Conference on Computational Systems-Biology and Bioinformatics — Nice (France), December 4–7, 2019

10.1.2.2. Reviewer

Jakob Ruess was a reviewer for two conferences: *European Control Conference (ECC)* and *Bioinformatics 2020*.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

François Fages is member of

- the Editorial Board of the Computer Science area of the Royal Society Open Science journal, since 2014;
- the Editorial Board of the journal RAIRO OR Operations Research, since 2004.

10.1.3.2. Reviewer - Reviewing Activities

Grégory Batt was a reviewer for *Bioinformatics* and *ACS Synthetic Biology* journals.

François Fages made reviews for the journals *Biosystems* and *Transactions on Computational Biology and Bioinformatics*.

Mathieu Hemery made 5 reviews for the journal *Physical Review E*, and was a reviewer for the journals *Physical Review Letters* and *Royal Society Open Science*.

Jakob Ruess was a reviewer for the journals *Entropy* and *Scientific Reports*.

Sylvain Soliman was a reviewer for *Briefings in Bioinformatics*, and for the *Journal of Theoretical Biology*.

10.1.4. Invited Talks

- Chetan Aditya gave a presentation entitled "Synthetic optogenetic differentiation system for bioproduction in budding yeast" at the EMBL workshop "Creating is Understanding: Synthetic Biology Masters Complexity", September 2019, Heidelberg, Germany
- Grégory Batt gave the following invited talks:
 - Driving cellular processes with quantitative accuracy using real-time control approaches, 6th Cross Disciplinary Genomics Meeting of Sorbonne University, Nov 2019, Paris, France
 - Driving cellular processes with quantitative accuracy using real-time control approaches, SynGen Series UK, Nov 2019, London, UK
 - An experimental platform for automated calibration of antimicrobial resistance models, APHP/IP AMR STORM, Oct 2019, Paris, France
 - Balancing a genetic toggle switch by real-time control and periodic stimulations, International Workshop on Control Engineering and Synthetic Biology, Sept 2019, Oxford, UK
 - Experimental and computational methods for modeling cellular processes, Shonan meeting on Formal methods for the synthesis of biomolecular circuits, Sept 2019, Shonan, Japan
 - Driving cellular processes with quantitative accuracy using real-time control approaches, Seminar of Unité Physico Chimie Curie, Jan 2019, Paris, France
- François Bertaux gave an invited talk at the JOBIM thematic session entitled "Methods for single-cell omics data analysis", Nantes, July 2019.
- Andjela Davidovic gave a presentation entitled "Calibration of stochastic biochemical models using single-cell video-microscopy experiments" at the Stochastic models for biology conference (BioHasard 2019), August 2019, Rennes, France
- François Fages gave invited talk to
 - **Turing-completeness of Chemical Reaction Networks in Natural cells and Artificial vesicles (keynote CSBio 2019)** The 10th International Conference on Computational Systems-Biology and Bioinformatics. Nice, France. December 4 to 7, 2019
 - **Cells as Analog Chemical Computers: Turing Completeness and Synthesis** Formal methods for the synthesis of biomolecular circuits Shonan Village, Japan, 2-6 Sep 2019.

- **Modeling and Design of Biological Systems**, France-Taiwan Summer School on New Strategies in Medical Diagnosis and Precision Medicine, NTU, Taipei, Taiwan, 9-10 July 2019.
- **La Cellule un Calculateur Chimique** Journées scientifiques Inria, Lyon, 5-7 juin 2019.
- **La Cellule un Calculateur Chimique** Dassault-Systèmes, Vélizy, June 4th 2019.
- **Calculs Analogiques dans les Programmes Biochimiques Naturels et Synthétiques** Colloque d’ouverture 50 ans du Laboratoire Jacques-Louis Lions, Roscoff, France, 4-8 mars 2019.
- **Calculs analogiques dans les réseaux biochimiques naturels et synthétiques** Prix La recherche - 15th edition. Université Paris Dauphine, 4 Feb. 2019.
- Jakob Ruess gave an invited talk at the SYMBIONT meeting entitled "Molecular noise shapes bacteria-phage ecologies", Paris, April 2019.

10.1.5. Leadership within the Scientific Community

- Grégory Batt is co-animator of the working group on Symbolic Systems Biology (GT Bioss).
- Grégory Batt is a member of
 - the Technical Committee on Systems Biology of IEEE and CSS societies
 - the scientific board of the French research network on Bioinformatics (GdR BIM)
 - the scientific committee of the Advanced Course on Computational Systems Biology summer school, in Aussois
- François Fages is member of
 - the Steering Committee of the International Conference on Computational Methods in Systems Biology, CMSB, since 2008.
 - the Scientific Committee of the Doctorate School ED 474 FIRE, ex Frontiers in Life Sciences, FdV
 - the Scientific Committee of the Summer School **Modélisation Formelle de Réseaux de Régulation Biologique** Ile de Porquerolles du 23 au 28 juin 2019 .

10.1.6. Scientific Expertise

François Fages was

- member of the Jury for Inria Awards 2019
- evaluator of two DFG grant proposals
- reviewer of a program proposal from Institut Pascal - Paris Saclay
- reviewer of professorship application, Indraprastha Institute of Information Technology - Delhi, India.

10.1.7. Research Administration

- Grégory Batt is the deputy director of the department of Computational Biology at Institut Pasteur
- François Fages is member of the “Comité des Projets du centre” Inria Saclay-IdF, and Inria representative for **Doctorate School Institut Polytechnique de Paris**
- Sylvain Soliman is member of the “Commission Scientifique” of Inria Saclay-IdF

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Summer school: François Fages (teacher 6h) **Modélisation Formelle de Réseaux de Régulation Biologique**, Ile de Porquerolles.

Summer school: Jakob Ruess (teacher 6h) Blackboard course on Optimally learning dynamical models from data at the "Advanced lecture course on computational systems biology" in Aussois, France, April 2019.

Master: Grégory Batt (coordinator and teacher: 35h) and Jakob Ruess (25h), *Computational Biology*, M1, Interdisciplinary Approaches to Life Sciences (AIRE-LiSc).

Master: Grégory Batt (3h) *Synthetic Biology and Control course in Molecular and Cellular Biology* Sorbonne Université, Paris.

Master: François Bertaux (co-coordinator and teacher: 20h), *Systems Biology*, M1, Master Interdisciplinary Approaches to Life Sciences (AIRE-LiSc).

Master: François Fages (coordinator module 24h and teacher 12h) *C2-19 Biochemical Programming*, Master Parisien de Recherche en Informatique (MPRI), Paris.

Master: François Fages (co-coordinator module 36h and teacher 18h) and Sylvain Soliman (co-coordinator, teacher 18h) *INF555 - Constraint-based Modeling and Algorithms for Decision Making Problems* Master Artificial Intelligence, Ecole Polytechnique.

Bachelor 3: François Fages (co-coordinator module and teacher 4h30) and Sylvain Soliman (co-coordinator module, teacher 4h30) and Mathieu Hemery (TD 10h) *CSE 301b: Constraint Logic Programming*.

Bachelor 2: Eléonore Bellot (teacher 64h) *CSE201 Object-oriented Programming in C++* TD and project supervision

L1: Julien Martinelli (teacher 64h) Mathematics and Calculus, Univ. Paris Descartes

10.2.2. Supervision

PhD in progress: Chetan Aditya, "Control of heterogenous synthetic microbial systems", ED FdV, Université Sorbonne Paris Cité, Feb. 2018, Grégory Batt

PhD in progress: Virgile Andréani, Calibration efficace de modèles de résistance bactérienne aux antibiotiques à l'aide d'un plan d'expériences optimal, ED IPP, Ecole Polytechnique, Sept. 2016, Grégory Batt

PhD in progress : Eléonore Bellot, "Réduction de modèles différentiels par résolution de contraintes d'algèbre tropicale (min,+)", ED IPP, Ecole Polytechnique, Sept. 2018, F. Fages & S. Soliman (50-50%)

PhD in progress: Arthur Carcano, "Iterative design of single-cell experiments to learn single-cell models of biological systems", ED FdV, Université Sorbonne Paris Cité, Oct. 2018, Jakob Ruess and Grégory Batt

PhD in progress : Elisabeth Degrand, "Chemical Programming in Non-living Vesicles", ED IPP, Ecole Polytechnique, Oct. 2019, F. Fages & S. Soliman (50-50%)

PhD in progress : Jérémy Grignard, "Apprentissage de modèles à partir de données pour la conception d'expériences de criblage et la recherche de médicaments", ED IPP, Ecole Polytechnique, dec. 2018, F. Fages & T. Dorval, Servier (50-50%)

PhD in progress : Eléa Greugny, "Development and Implementation of a Mathematical Model of Inflammation in the Human Skin", ED IPP, Ecole Polytechnique, Aug. 2019, F. Fages & J. Bensaci & G. Stamatias, Johnson&Johnson Santé Beauté France (1/3-2/3))

PhD in progress : Julien Martinelli, "Apprentissage de modèles mécanistes à partir de données temporelles, application à la personnalisation de la chronothérapie des cancers", ED IPP, Ecole Polytechnique, Oct. 2018, F. Fages & A. Ballesta, Inserm (50-50%)

PhD in progress: Sebastian Sosa Carrillo, "Understanding the cost of protein production in yeast", ED FdV, Université Sorbonne Paris Cité, Feb. 2018, Grégory Batt

Master's Thesis: Oriane Bargain, "Graph matching, theory and SAT implementation", TU Dresden, Germany, Sep. 2019, F. Fages & S. Soliman (50-50%)

Master's Thesis: Elisabeth Degrand, "Evolving Chemical Reaction Networks", KTH Stockholm, Sweden, June 2019, F. Fages & M. Hemery (50-50%)

10.2.3. Juries

- Grégory Batt participated in the juries of
 - PhD Antoine Barizien, Ecole Polytechnique and Institut Pasteur, *Rapporteur*, Paris, May 2019
 - PhD Mathilde Koch, Ecole Polytechnique and INRA, *Examineur*, Paris, November 2019
- François Fages participated in the juries of
 - HDR Sabine Pérès, Université Paris-Saclay, *Reviewer*, 18 Nov. 2019
 - HDR David Safranek, Mazaryk Univ., Czech Republic *Reviewer*, July 2019
 - HDR Sriram Krishnamachary, Indraprastha Institute of Information Technology, Delhi, India, *Reviewer*, April 2019
 - PhD Adrien Husson, Université Paris-Diderot, *Rapporteur*, 16 Dec. 2019
 - PhD Jorgelindo da Viegas Moreira, Université Paris-Saclay, *Rapporteur*, 18 April 2019
 - Master Thesis, Oriane Bargain, Graph matching, theory and SAT implementation, Technische Universität Dresden, Germany, *Supervisor* October 2019
 - Master Thesis, Zi-Jun Lin, National Taiwan University, *Reviewer*, July 2019
 - Master Thesis, Wei-Chih Huang, National Taiwan University, *Reviewer*, July 2019
 - Master Thesis, Elisabeth Degrand, Evolving Chemical Reaction Networks, Kungliga tekniska högskolan, Stockholm, Sweden, *Supervisor* April 2019,

10.3. Popularization

10.3.1. Articles and contents

- For a Festschrift in honor of Catuscia Palamidessi, François Fages was unexpectedly inspired to compose a small music score and write a short essay on information leakage in music scores [10].
- Jakob Ruess gave an **interview** for the Swiss Institute of Bioinformatics (SIB) as a past laureate of the SIB Award.

10.3.2. Interventions

- Eléonore Bellot, Mathieu Hemery and Elise Weill Duflos participated at Fête de la Science at Inria SIF, Oct. 2019
- François Fages has received college school students for a visit to our research team with the question "Can we program any function ?", answered negatively by proving Cantor's theorem.
- Mathieu Hemery has animated debates with college school students on Science and Ethics at Inria and Association Arbre des Connaissances, Oct. 2019.

10.3.3. Creation of media or tools for science outreach

François Fages has created several BIOCHAM interactive notebooks that are integrated in the current release of BIOCAHM-4 to illustrate and exercise the main concepts of analog chemical computer and chemical programming, as taught in his Master course at MPRI.

MORPHEME Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Selection

9.1.1.1. Member of the Conference Program Committees

Laure Blanc-Féraud was member of the Conference Program Committees of NCMIP (New Computational methods for Inverse Problems), OSA Applied Optics Congress Mathematics in imaging, Workshop SPARS (Signal processing with Adaptive Sparse Structured Representation).

Luca Calatroni was the co-organiser of the workshop Regularisation methods for inverse problems and machine learning (Jussieu, Paris), 19 November 2019.

9.1.1.2. Reviewer

Laure Blanc-Féraud was a reviewer for the conferences IEEE ISBI, ICIP and ICASSP.

Xavier Descombes was a reviewer for for the conferences ISBI, ICIP, ICASSP.

Grégoire Malandain was a reviewer for the conference ISBI.

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

Laure Blanc-Féraud was Associated Editor for the journals SIAM Imaging Sciences. She was also responsible of the editorial field "Image" of the SCIENCES new editorial project of ISTE/WILEY Group which concerns the publication of collections of multi-authored titles in the fields of pure and applied sciences, health and humanities.

Luca Calatroni is a guest-editor of the Journal of Mathematical Neuroscience for the special issue on Colour representation and Cortical-inspired image processing

Xavier Descombes is Associated Editor for the journal Digital Signal Processing.

9.1.2.2. Reviewer - Reviewing Activities

Florence Besse was a reviewer for the journals Nature, Development, RNA, LifeStarAlliance, Front.mol.biol.

Luca Calatroni was a reviewer for the Journal of Mathematical Imaging and Vision, Applied Mathematics and Computation and SIAM Journal of Imaging Sciences.

Xavier Descombes was a reviewer for the Journal of the American Statistical Association.

9.1.3. Invited Talks

Laure Blanc-Féraud was invited to give a talk at to give a talk during the Sparsity4PSL International Summer School.

Luca Calatroni was invited to give a talk at the GdR Vision 2019 (Marseille), 10 October 2019, at the Statistical and Computational Learning seminars (Università di Genova, IIT, LCSL), 29 November 2019, and a BaD seminar (University of Bologna), December 3 2019.

Xavier Descombes was invited to give a talk at the Institut Henro Poincaré (Paris) for the workshop "Statistical Modeling for Shapes and Imaging", march 11-15.

9.1.4. Leadership within the Scientific Community

Laure Blanc-Féraud is member of IEEE BISP (Biomedical Imaging Signal Processing) Technical Committee.

Xavier Descombes is member of IEEE BISP (Biomedical Imaging Signal Processing) Technical Committee.

Grégoire Malandain is member of the IEEE/EMB Technical Committee on Biomedical Imaging and Image Processing (BIIP). He is an member of the Scientific Committee of the MIA department of INRA.

9.1.5. Scientific Expertise

Laure Blanc-Féraud is a member of the ANR scientific evaluation committee ASTRID.

Luca Calatroni was in the committee for the evaluation of PhD allocation for the Region Normandie.

Xavier Descombes is a member of the ANR scientific evaluation committee CE45.

Xavier Descombes is an expert of the French Research Ministry for evaluating companies CIR and JEI.

9.1.6. Research Administration

Laure Blanc-Féraud is a member of the "Commission Administrative Paritaire" for "chargé de recherche" of CNRS. She is a member of the Conseil Scientifique et Pédagogique de l'EUR DS4H, and of the Academic Council of the 3IA Côte d'Azur project, in charge of the biological axis.

Eric Debreuve is member of the Comité Permanent des Ressources Humaines (CPRH), UNS, section 61.

Xavier Descombes is member of the "comité des projets" of Inria CRISAM, of the Comité Permanent des Ressources Humaines (CPRH), UNS, section 61, of the ANR evaluation committee CE45, of the Labex Signalife Scientific Council.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : Arne Bechensteen, Outils pour la physique, 42h, L1, Polytech Nice Sophia, France

Licence : Arne Bechensteen, Programmation impérative PeiP1, 13h30, L1, Polytech Nice Sophia, France

Master : Arne Bechensteen, Traitement Numérique des Images, 8h, M2, Polytech Nice Sophia, France

Master : Arne Bechensteen, Compression, analyse et visualisation de contenus multimédia, 2h, M2, Polytech Nice Sophia, France

Licence: Florence Besse, RNA localization, 3h, L3, ENS Ulm, France

Master: Florence Besse, Neuron cell biology and circuits, 6h, M1/2, Université Côte d'Azur, France

Master: Florence Besse, RNA localization and neuron morphology, 4h, M1/2, Université Côte d'Azur, France

Master: Laure Blanc-Féraud, Traitement avancé des images, master STIMM, 8h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master: Eric Debreuve, scientific image processing, 9h EqTD, M1 + M2, Université Côte d'Azur, France

Master: Xavier Descombes, Traitement d'images, Analyse de données, Techniques avancées de traitement d'images, 10h Eq. TD, Niveau M2, ISAE, France.

Master: Xavier Descombes, Traitement d'images, master, 9h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master: Xavier Descombes, Bio-imagerie, master IRIV, 6h Eq. TD, Niveau M2, Université de Strasbourg, France

Master: Xavier Descombes, Analyse d'images, master GBM, 9h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master: Xavier Descombes, Traitement d'images scientifiques, master SVS, 15h Eq. TD Niveau M2, Université Côte d'Azur.

Licence: Henrique Goulart, Automatique, 30h, niveau L3, École Polytechnique Universitaire de Nice Sophia-Antipolis, France

Licence: Henrique Goulart, Traitement Numérique du Signal, 48h, niveau L3, École Polytechnique Universitaire de Nice Sophia-Antipolis, France

Master: Sarah Laroui, Analyse d'images, master GBM, 10h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master/Ingénieur: Sarah Laroui, Data Science, M2/Ingénieur 5, Niveau 5eme année ingénieur, 4h Eq. TD, Polytech Nice Sophia, France.

IUT 1ere année: Sarah Laroui, Acquisition et codage de l'information, niveau 1ère Année DUT RT, 13h30 Eq. TD, Institut Universitaire de Technologie (IUT) Sophia, France.

DUT: Somia Rahmoun, Acquisition et Codage de l'Information, 8h Eq. TD, Bac+1, IUT Réseaux et Télécommunications de Nice Côte d'Azur, France

9.2.2. Supervision

PhD: Emmanuelle Poulain, Recalage déformable entre angioscanner cardiaque 3D statique et angiographie coronaire dynamique 2D+t, université Côte d'Azur, october 10th, 2019, Grégoire Malandain.

PhD in progress: Arne Bechensteen, TIRF-MA and super-resolution by sparse estimation method, october 2nd, 2017, Laure Blanc-Féraud, Gilles Aubert, Sébastien Schaub.

PhD in progress: Cédric Dubois, Classification du plancton conjointe en espèce et traits morphologiques et fonctionnels avec contrainte de relations espèces-traits et de hiérarchie des espèces en taxonomie génétique, october 1st, 2019, Eric Debreuve, Jean-Olivier Irisson (LOV, Villefranche-sur-mer).

PhD in progress: Anca-Ioana Grapa, Characterization of the organization of the Extracellular Matrix (ECM) by Image Processing, 19 September 2016, Laure Blanc-Féraud, Xavier Descombes, E. van Obberghen, (iBV).

PhD in progress: Sarah Laroui, Classification and modelling of botrytis cinerea fungi growth from microscope images: toward the establishment of links between phenotypes and antifongic molecules, 1st August 2018, Eric Debreuve, Xavier Descombes

PhD in progress: Manuel Petit, Quantifying and modeling trajectories of living form development, 1st November 2019, Grégoire Malandain, Christophe Godin (EPI Mosaic, Inria, Lyon).

PhD in progress: Clara Sanchez, Lipides nutritionnels et neuroinflammation : développement d'outil de morphométrie cellulaire, 1st october 2019, Carole Rovère (IPMC), Eric Debreuve.

PhD in progress: Vasiliki Stergiopoulou, Learning and optimization for 3D+T super-resolution in fluorescent microscopy, January 1st 2020, Laure Blanc-Féraud, Luca Calatroni, Sébastien Schaub.

PhD in progress: Rudan Xiao, Analysis and classification of cellular and vascular markers in histological images: application to kidney cancer, 1st october 2019, Xavier Descombes, Eric Debreuve.

9.2.3. Post-doctorates

Post-doc: Vanna Lisa Coli, Image processing for ancient pottery, co-supervised by Laure Blanc-Féraud and Juliette Leblond EPI Factas.

Post-doc: Henrique Goulart, Superresolution microscopy by blinking molecules, supervised by Laure Blanc-Féraud, Eric Debreuve and Sébastien Schaub.

9.2.4. Internships

Amina Achaibou, Détection, caractérisation et clustering de cellules gliales dans le cadre d'une étude des lipides nutritionnels, Eric Debreuve

Ghosh Avrajit, Deep Learning for ExtraCellular Matrix classification, Laure Blanc-Féraud, Xavier Descombes

Deborah Cottais, Tumor cell tracking for automatic detection of cell death time, and classification of its type, Eric Debreuve

Paul-Emmanuel Ponsenard, Image binarization using persistence diagram, Xavier Descombes

Pat Vatiwutipong, Master of mathematics, "Properties of the d-Radon transform and application to imaging issues in archeology", co-supervised by Juliette Leblond EPI FACTAS and Laure Blanc-Féraud.

Zhankeng Zhang, Graph matching and classification using simulated annealing, Xavier Descombes

9.2.5. Juries

Florence Besse participated to 4 PhD defense committees (UCA (2) and University of Montpellier (2)) and 2 HDR defense committees (UCA and Paris Descartes)

Laure Blanc-Féraud was part of 3 PhD defense committees (Megane Boudineau IRIT Toulouse, Aleix Boquet Pasteur Institute Paris as reviewer, Jabrane Karkouri CReatis Lyon) and one HDR committee (Mathieu Aucejo CNAM Paris). She was part of 2 "comités de suivi de thèse".

Xavier Descombes participated as a reviewer to the PhD thesis committee of Lamees Nasser (Paris Sorbonne University) and Kim Jonkhooon (Paul Sabatier University, Toulouse).

Grégoire Malandain participated as reviewer to the PhD thesis committee of Carlos Tor Diez (COMUE Bretagne Loire) and as supervisor to the PhD thesis committee of Emmanuelle Poulain (université Côte d'Azur)

9.3. Popularization

9.3.1. Education

Luca Calatroni participates to the Italian project "Penne amiche della scienza" to promote scientific research in Primary Schools.

9.3.2. Interventions

Laure Blanc-Féraud gave a conference in high school CIV during "la fête de la science".

National events: Village des Sciences et de l'Innovation d'Antibes Juan les Pins 2019.

The Morpheme team took part in "La fête de la Science" during the "Village de la Science" in Juan-Les-Pins. Somia Rahmoun, Cedric Dubois and Arne Bechensteen were present at the Inria stand for this event.

MOSAIC Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events: Organisation

8.1.1.1. Member of the Organizing Committees

- Romain Azaïs was a member of the organizing committee of the Journées de Statistique 2019 in Nancy.
- Romain Azaïs organized with H el ene Leman (NUMED) the second InriaBio@Lyon day, which gathered 6 teams of the Inria center interested in biological questions.

8.1.2. Scientific Events: Selection

8.1.2.1. Reviewer

- Romain Azaïs: NeurIPS 2019.

8.1.3. Journal

8.1.3.1. Member of the Editorial Boards

- Christophe Godin:
 - Associate editor in Plant biophysics and modeling of the journal *Frontiers in Plant Sciences*.
 - Member of the Editorial Advisory Board of the journal *in silico Plants*.
 - Member of the board of the functional-structural plant modeling (FSPM) series of conferences (next to come at fall 2020).

8.1.3.2. Reviewer - Reviewing Activities

- Olivier Ali: *Frontiers in plant sciences*.
- Romain Azaïs: *Stochastic Processes and their Applications*, *Journal of Statistical Theory and Practice*, *Bernoulli*.
- Christophe Godin: *Frontiers in plant sciences*, *Annals of Botany*, *Bulletin of mathematical Biology* (co-coordination of a special issue).
- Bruno Leggio: *Physical Review Letters*, *Physical Review A*, *Physical Review B*, *Physical Review E*, *Frontiers in Plant Science*, *Entropy*, *Symmetry*, *Energies*.

8.1.4. Invited Talks

- Oliver Ali was invited to give a seminar at the UPSC Lab in Umea (Sweden) in December 2019.
- Romain Azaïs was invited to give a presentation at the UTC in Compi egne, at the Laboratoire Paul Painlev e in Lille, and at the Laboratoire de Biom etrie et Biologie Evolutive in Lyon.
- Christophe Godin was invited to give presentations at the research unit IGFL (Lyon), University of Calgary (Canada), University of Heidelberg (Germany) and ENS de Lyon.

8.1.5. Scientific Expertise

- Christophe Godin
 - is a member of the International Scientific Advisory Committee of the Plant Phenotyping and Imaging Research Centre (P2IRC), Saskatchewan, Canada.

- is a member of the Scientific Board of the Plant Biology and Breeding Department of INRA (BAP).

8.1.6. Research Administration

- Christophe Godin:
 - is a member of the Project Committee at Grenoble Rhone-Alpes Research Center.
 - is a member of the Steering Committee of the RDP Lab., Lyon.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

- Olivier Ali:
 - Jury for the evaluation of a practical course on computational modeling for developmental biology (Licence 3 Biology ENS Lyon).
 - Course (3h) and practical course (3h) about mechanical modeling of plant morphogenesis (Master plant biology for sustainable production, Umea university and Swedish University of Agricultural Science, Sweden).
- Romain Azaïs:
 - Colles de mathématiques, CPGE PCSE, Lycée Jean Perrin, Lyon
 - Cours de Master 2 Apprentissage à partir de données arborescentes, Master Maths en Action, Université Lyon 1
- Christophe Godin:
 - Cours Les plantes dans tous leurs états pour non-specialistes, ENS de Lyon: *Phyllotaxis*. (2h).
 - Cours Master Sysbio, U. de Lyon: *A journey in Phyllotaxis*. (2h).
 - Master Stem Cells and Development ENS de Lyon (3h): *Introduction to Phyllotaxis*.
- Florian Ingels:
 - Séances de TP Probabilités-Statistiques, Licence Mathématiques et Economie, Université Lyon 1
 - Séances de TP Statistiques pour l'informatique, Licence Informatique, Université Lyon 1

8.2.2. Supervision

PhD (2016 – 2019): Florine Greciet (IECL, Université de Lorraine and Safran). Régression polynomiale par morceaux pour la propagation de fissures. Supervisors: Anne Gégout-Petit (Inria team BIGS, IECL, Université de Lorraine) and Romain Azaïs.

PhD in progress (2019 - 2022): Florian Ingels (MOSAIC, Université de Lyon). Supervisors: Romain Azaïs, Christophe Godin.

Hadrien Oliveri PhD (2015-2019) Montpellier University, co-supervision Christophe Godin, Jan Traas,

Katia Mirande PhD (2018-2021) Strasbourg University, co-supervision Franck Hetroy, Christophe Godin

Anne Schneider PhD (2016-2020) Angers University, co-supervision Jessica Bertheloot, Christophe Godin

Manuel Petit PhD (2019-2022), ENS de Lyon, co-supervision Christophe Godin, Grégoire Malandain.

Master 2 (6 months): Florian Ingels. Statistical learning from trees: toward the definition of an optimal kernel for tree data. Supervisor: Romain Azaïs.

Master 2 (6 months): Florent Papini. Tracking cells in confocal images of meristems. Supervisor: Christophe Godin.

8.2.3. *Juries*

Christophe Godin was a member (as a supervisor) of the PhD defense of Hadrien Oliveri - University of Montpellier (May 2019).

Christophe Godin was the President of the PhD defense of Valeria Hernandez at ENS de Lyon (December 2019).

8.3. Popularization

- Olivier Ali:
 - Participated to the Declic initiative: Discussions about of scientific research to high school students (3h, Lycée Jean Perrin, Lyon).
 - Invited conference about mechanical modeling of plant morphogenesis for the Université Ouverte in Lyon.
- Christophe Godin participated to the Declic initiative: Introductory talk and discussions about scientific research to high school students (3h, Lycée Frédéric Fays, Villeurbanne).

8.3.1. *Interventions*

- Christophe Godin gave:
 - a lecture at Inria Grenoble in the context of a training program for Informatique et Sciences du Numérique dedicated to Math and Physics highschool teachers. see [video](#) (1h30)
 - a visio-seminar to highschool students of the French Lycée in Laos (1h30)

PLEIADE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Journal

9.1.1.1. Member of the Editorial Boards

Alain Franc is member of the editorial board of BMC Evolutionary Biology.

Pascal Durrens is a member of the editorial board of the journal ISRN Computational Biology.

9.1.2. Scientific Expertise

David Sherman is a member of the Scientific Advisory Board of **Enlightware GmbH**, Zürich.

9.1.3. Research Administration

Alain Franc has been appointed “chargé de mission calcul” at INRA by INRA Delegate for Digital Transition. As such, his mission is to propose animations and solutions for the development of scientific computing at INRA, whatever the Research Department.

David Sherman is president of the Commission for Technology Development (CDT) of the Inria Bordeaux Sud-Ouest research center. The CDT has two roles. First, it evaluates funding requests for Technology Development and Technology Transfer projects, which typically involve hiring technical staff. Second, the CDT is responsible for validating and overseeing contract engineers hired by Inria project-teams.

David Sherman represents Inria in the steering committee of the Region Nouvelle Aquitaine’s regional research network “Biodiversity and Ecosystemic Services” (BIOSENA).

9.2. Popularization

9.2.1. Education

David Sherman contributed to the *Journée APEIA (Activités Pour l’Enseignement de l’IA)*

David Sherman help train teachers in programming mobile robots, in preparation for R2T2 events (<http://r2t2.org>) coordinated by the Mobsya association and EPFL (Switzerland).

9.2.2. Interventions

In collaboration with a local PME, David Sherman helped design an interactive exhibit on tree classification for a museum in the Region Nouvelle Aquitaine, based on a specialization of **Qui se ressemble s’assemble**.

David Sherman presented the **Qui se ressemble s’assemble** activity to 100 middle school students during the Circuit Scientifique in 2019 (Figure 6), and to 40 undergraduate students from the ENS Lyon.

9.2.3. Creation of media or tools for science outreach

David Sherman refined his design for the electronics of the **Qui se ressemble s’assemble** activity, to explain the methods and uses of pattern classification of protein families. The activity uses 20 3D-printed point clouds and 4 oracles, containing a microcontroller, an RFID reader with a custom-designed inductive coil as input, and an LED ring as output. Participants propose groups of 3D shapes that they believe belong to the same class, and the oracle evaluate the group.



Figure 6. *Qui se ressemble s'assemble* during the Circuit Scientifique in 2019: (left) classification oracle (right) comparing similar shapes (Photo copyright Gautier DUFAU)

SERPICO Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organization

10.1.1.1. General Chair, Scientific Chair

- Charles Kervrann was co-General Chair (with R. Ober, Texas A&M), and head of the organizing committee of the “Quantitative BioImaging” (QBI’2019) conference (350 attendees, Rennes, January 2019).
- Jean Salamero was the scientific responsible and co-organizer of the first joint “Workshop on BioImaging” between Paris Sciences Lettres (PSL-Institut Curie) University and Peking University (PKU) (MoU for official “collaboration and exchange program PSL Qlife/PKU in the Bioimaging field 2020-2024).

10.1.2. Scientific Events: Selection

10.1.2.1. Member of the Conference Program Committees

- Charles Kervrann: member of the scientific committee of the international “Quantitative BioImaging” (QBI’2019, QBI’2020) conference, member of the scientific committee of the international NEUBIAS 2020 conference, and member of the scientific committee of the JIONC workshop (GdR Ondes, since 2014).
- Patrick Boutheymy: Associate Editor for the ISBI’2019 conference.

10.1.2.2. Reviewer

- Charles Kervrann: reviewer for ISBI’2019.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Charles Kervrann is Associate Editor of the “IEEE Signal Processing Letters” journal.
- Patrick Boutheymy is co-editor in chief of the open access journal “Frontiers in Computer Science”, section “Computer Vision and Image Analysis”.

10.1.3.2. Reviewer - Reviewing Activities

- Charles Kervrann: Journal of Mathematical Imaging and Vision, IEEE Signal Processing Letters, Nature Communications, IEEE Transactions on Medical Imaging, OSA Biomedical Optics Express.
- Patrick Boutheymy: IEEE Signal Processing Letters.
- Jean Salamero: Nature Methods, Journal of Cell Sciences, Nature Communications, Biology of the Cell, ACS Photonics, Journal of Microscopy.

10.1.4. Invited Talks

Charles Kervrann:

- “Statistical methods for intracellular dynamics classification in live cell imaging”, “Bioimage Processing” workshop, June, Cambridge, UK (see [29]).

- "Computational methods for intracellular dynamics in live cell imaging", "Random Walks and Intracellular Transport" workshop, Apr, Manchester, UK (see [28]).
- "A fast statistical colocalization method for 3D live cell imaging and super-resolution microscopy", "Statistical Modeling for Shapes and Imaging" workshop, March, Paris (see [27]).
- "Geolocalization and classification of macromolecules in cryo-electron microscopy with deep-learning", Journées Scientifiques de l'Université de Nantes: "la microscopie électronique pour les sciences du vivant", June, Nantes.
- "Computational methods for fluorescence microscopy", Institut Curie CNRS-UMR 168 Seminar, February, Paris.

Patrick Bouthemy:

- "Intensity-based methods for fully automated registration in 2D and 3D CLEM", COMULIS & BioImaging Austria/CMI conference, November, Vienna, Austria (see [26]).

Jean Salamero:

- "Live cell imaging in High Space-time Resolution" and BioImaging course (Co-Organizer), ReTUBI H2020 Super Resolution meeting and Imaging, October, Lisbon, Portugal.
- "Career Path for the Next Generation of BioImaging Scientist: Training Passport", Global BioImaging 2019 "EOE.V", September, Singapore.

Sylvain Prigent:

- "Portail analyse d'images France-BioImaging", 16èmes Assises Nationales des Plateformes du réseau RT-mfm, March, Rennes.
- "Portail analyse d'images France-BioImaging", 9èmes Journées Scientifiques et Techniques du Réseau des Microscopistes de l'INRA, November, Nantes.

10.1.5. Leadership within the Scientific Community

- Charles Kervrann is member of the executive board of the GdR MIV/ImaBio (2588 - Microscopie Fonctionnelle du Vivant) CNRS and member of the scientific committee of the Interdisciplinary MiFoBio School CNRS (<http://www.mifobio.fr>).
- Patrick Bouthemy is member of the board of AFRIF (Association Française pour la Reconnaissance et l'Interprétation des Formes).

10.1.6. Scientific Expertise

- Charles Kervrann was member of the selection committee for an Assistant-Professor (Maitre de Conférences) position at the University of Paris-Descartes (Section CNU 26, Mathematics). He was reviewer for European Research Council (ERC Consolidator Grant).
- Patrick Bouthemy was member of the committee for professor promotion at IMT Atlantique.
- Jean Salamero was reviewer for European Research Council (Junior Grant), ANR and ITMO Cancer program.

10.1.7. Research Administration

Charles Kervrann:

- Member of the executive board of the project committee ("bureau du Comité des Projets") of the Inria Rennes - Bretagne Atlantique centre since 2010.
- Co-head of the "BioImage Informatics" node (ANR France-BioImaging project <http://france-bioimaging.org/>), National Research Infrastructure for Biology and Health) since 2011.

Patrick Bouthemy:

- Head of Excellence Lab (Labex) CominLabs (<http://www.cominlabs.ueb.eu>) since April 2014.
- Deputy member of the board of directors and member of the selection and validation committee of the Images & Réseaux competitiveness cluster (<http://images-et-reseaux.com/>).
- Inria representative in the steering committee of the DGA-Inria collaboration.
- Member of the Research Committee of IMT Atlantique.
- Head of the evaluation committee of the EORD profession of the DGA and head of the HCERES evaluation committee of the DTIS department of ONERA.
- Member of the ANR evaluation committee for the call for proposals regarding the Artificial Intelligence field.

Jean Salamero:

- Director of the National Research Infrastructure in Biology and Health, France BioImaging (2015-2020) (<https://france-bioimaging.org/>).
- Director of the Service Unit UMS 3714 (2015-2020) CEMIBIO CNRS-Institut Curie.
- Member of the Advisory Committee for the creation of the National Biomedical Imaging Center (NBIC@Beijing, Republic of China) since 2017.
- Member of the Advisory Board of EMBL Core Facilities.
- Member of the Steering Committee of the DIM-ELICIT program (Région Ile de France) since 2016.
- Member of the Qlife “Institut Convergences” since 2018.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Charles Kervrann:

- Engineer Degree: Genomics and Informatics, 4.5 hours, MINES ParisTech.
- Master: From Bioimage Processing to BioImage Informatics, 5 hours, coordinator of the module (30 hours), Master 2 Research IRIV, Telecom-Physique Strasbourg and University of Strasbourg.
- Master: Analysis of Image Sequences, 9 hours, Master 2 Research SISEA, University of Rennes 1.
- Engineer Degree and Master 2 Statistics and Mathematics: Statistical Models and Image Analysis, 37 hours + 15 hours (TP, Emmanuel Moebel), 3rd year, Ecole Nationale de la Statistique et de l'Analyse de l'Information (ENSAI), Rennes.

10.2.2. Supervision

- Anca-Georgiana Caranfil (PhD in progress): Data assimilation methods for cell division mechanisms and molecule trafficking analysis (started in December 2016, supervised by C. Kervrann and Y. Le Cunff (IGDR, Rennes)).
- Gwendal Fouché (PhD in progress): Immersive interaction and visualization of temporal 3D data (started in October 2019, supervised by C. Kervrann, F. Argelaguet (EPC HYBRID, Inria, Rennes), and E. Faure (LIRMM, Montpellier)).
- Yunjiao Lu (PhD in progress): Intracellular dynamics and super-resolution imaging: analysis of bacteria wall at the molecular scale (started in October 2017, supervised by C. Kervrann, A. Trubuil and R. Carballido-Lopez (INRA, Jouy-en-Josas)).
- Léo Maczyta (PhD in progress): Motion saliency in video sequences (started in October 2017, supervised by P. Bouthemy and O. Lemeur (Team Percept, IRISA, Rennes)).

- Sandeep Manandhar (PhD defended [11]): Optical flow methods for 3D fluorescence imaging (defended in November 2019, supervised by P. Bouthemy and C. Kervrann).
- Emmanuel Moebel (PhD defended [12]): New strategies for the identification and enumeration of macromolecules in 3D images of cryo electron tomography (defended in January 2019, supervised C. Kervrann).
- Antoine Salomon (PhD in progress): Statistical aggregation for image analysis in fluorescence microscopy and super-resolution (started in November 2017, supervised by C. Kervrann).

10.2.3. Juries

Charles Kervrann:

- Reviewer of the HdR of E. Baudrier (University of Strasbourg, ICube – UMR 7357).
- Reviewer of the PhDs of A. Davy (University of Paris Saclay, Ecole Normale Supérieure Paris-Saclay, supervised by J.-M. Morel and A. Desolneux), P. Parutto (University of Paris Sciences et Lettres, Ecole Normale Supérieure, supervised by D. Holcman), J.D.K. Hansen (University of Copenhagen, DIKU, Denmark, supervised by F. Lauze).
- President of PhD thesis committee of M. Tassano (University of Paris-Descartes, supervised by J. Delon).
- Member of the PhD committee of P. Naylor (University of Paris Sciences et Lettres, MINES ParisTech, supervised by T. Walter).
- External examiner of the application of M. Arigovindan (Faculty assessment, promotion to the position of Associate Professor with tenure, Indian Institute of Science).

Patrick Bouthemy:

- President of the PhD thesis committee of A. Lopez (University of Rennes 1, supervised by J. Pettré and F. Chaumette).

ARAMIS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. General Chair, Scientific Chair

- S. Durrleman was general chair of the international Neuro Open Science Workshop (ICM, Paris)

10.1.1.2. Member of the Organizing Committees

- N. Burgos organized the international workshop on Simulation and Synthesis in Medical Imaging (SASHIMI) 2019, a satellite workshop of MICCAI 2019.
- N. Burgos organized a PRACE training event (Introduction to machine learning in Python with Scikit-learn)
- F. De Vico Fallani co-organized the Network Neuroscience satellite within the NetSCI conference.
- S. Durrleman co-organized the international workshop on the Mathematical Foundations of Computational Anatomy (MFCA), a satellite workshop of MICCAI 2019.
- S. Durrleman co-organized the workshop GEANT (GÉstion et pArtage de données en Neuroinformatique), Marseille Medical School.

10.1.2. Scientific Events: Selection

10.1.2.1. Member of the Conference Program Committees

- O. Colliot served as Program Committee member for the international conference SPIE Medical Imaging (San Diego, USA, 2019) and for the international workshop PatchMI (Shenzen, China, 2019).
- O. Colliot served as Award Committee member for the international conference of the Organization for Human Brain Mapping (OHBM, meeting held in Rome, Italy, 2019).
- F. De Vico Fallani served as Program Committee member for the international conference Netsci, Complenet, Complex networks.
- S. Durrleman served as Program Committee member for the international workshop Medical Imaging meets NeurIPS.

10.1.2.2. Reviewer

- O. Colliot acted as a reviewer for the international conferences SPIE Medical Imaging, Annual meeting of the Organization for Human Brain Mapping (OHBM) and the international workshop PatchMI.
- N. Burgos acted as a reviewer for the international conference Annual meeting of the Organization for Human Brain Mapping (OHBM), for the international workshop on Simulation and Synthesis in Medical Imaging (SASHIMI), and for the GRETSI symposium of signal and image processing.
- F. De Vico Fallani acted as a reviewer for the international conference on Brain-computer interfaces (Graz BCI) and the international conferences Complenet, Netsci, Complex Networks.
- S. Durrleman acted as a reviewer for Information Processing in Medical Imaging (IPMI) and MIC meets NeurIPS.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- O. Colliot is a member of the Editorial Board of the journal Medical Image Analysis (Elsevier).
- F. De Vico Fallani is a member of the Editorial Board of PLoS One, Brain Topography, IEEE TNSRE.
- S. Epelbaum is member of the editorial board for the Medecine Cognition et Vieillessement Scientific Journal.
- S. Durrleman is member of the editorial board of IEEE Transactions on Medical Imaging (TMI), and Neuron, Behavior and Data Analysis (Scholastica)

10.1.3.2. Reviewer - Reviewing Activities

- O. Colliot acted as a reviewer for Medical Image Analysis, Neuroradiology and Clinical Epidemiology.
- N. Burgos acted as a reviewer for IEEE Transactions on Medical Imaging; Medical Image Analysis; Medical Physics; IEEE Transactions on Computational Imaging; Scientific Reports; Artificial Intelligence in Medicine; Physics in Medicine and Biology; NeuroImage: Clinical; EJNMMI Research; International Journal of Radiation Oncology, Biology, Physics.
- S. Epelbaum acted as a reviewer for Alzheimer's & Dementia, the Journal of Alzheimer's disease, Annals of Neurology and Annals of Clinical and Translational Neurology.
- S. Durrleman acted as a reviewer for Journal of Mathematical Imaging and Vision
- F. De Vico Fallani acted as a reviewer for Brain, PloS Biology, Network Neuroscience, J Neural Engineering, Neuroimage.

10.1.4. Invited Talks

- O. Colliot gave an invited seminar at the University of Southern California (Los Angeles, USA).
- O. Colliot gave an invited seminar at the meeting of the Scientific Council of the Institute of Biology of CNRS.
- O. Colliot gave an invited seminar at CentraleSupélec (Gif-sur-Yvette, France)
- N. Burgos gave an invited seminar at the Université de Tours (Tours, France)
- N. Burgos gave an invited presentation at the MaDICS Symposium (Rennes, France)
- F. De Vico Fallani was invited for a plenary talk at the Institut de neurosciences des systemes INS (Marseille, France)
- F. De Vico Fallani was invited for a plenary talk at the Stem-cell and brain research institute SBRI (Lyon, France)
- F. De Vico Fallani gave an invited seminar at Laboratoire Bordelais de la Recherche en informatique (LABRI), Bordeaux, France
- F. De Vico Fallani gave an invited seminar at the Ecole Polytechnique, Paris, France
- F. De Vico Fallani gave an invited seminar at the Ecole Normale Supérieure, Paris, France
- S. Durrleman gave an invited lecture at the Institute for Pure and Applied Mathematics (IPAM), Los Angeles, USA
- S. Durrleman gave an invited lecture at the Pasadena Workshop, Sorbonne Université, Paris
- S. Durrleman gave an invited lecture at the Disease Progression Modeling workshop in Bonn, Germany
- S. Durrleman gave an invited seminar at CMIC, University College London, UK
- S. Durrleman gave an invited seminar at Bordeaux University, France
- S. Durrleman gave an invited seminar at Ecole Polytechnique, Paris, France

10.1.5. Scientific Expertise

- O. Colliot is a member of the "Commission des emplois scientifiques" of the Inria Paris Center, in charge of evaluating applications for PhD fellowships, postdoc fellowships and secondments.
- O. Colliot acts as an expert for GENCI (the national facility for high-performance computing).
- O. Colliot was a member of the recruitment committee ("jury d'admission") for the national competition for recruitment of permanent researchers at CNRS.
- S. Durrleman is a member of the Commission de Développement Technologique (CDT) of Inria Paris Center.
- S. Durrleman is director of the ICM Center for Neuroinformatics, and scientific manager of the ICM platform for data management and analytics.
- S. Durrleman serves as secretary of the MICCAI Special Interest Group SHAPE.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

- Master: Olivier Colliot coordinates the course "Methods for medical imaging" of the Master 2 in Computer Science of Sorbonne University and teaches 4.5 hours (eqTD).
- Master: F. De Vico Fallani, 3 hours (eqTD), "Methods for medical imaging" of the Master 2 in Computer Science of Sorbonne University.
- Master: Olivier Colliot coordinates the course "Artificial Intelligence" of the Master 2 Bioentrepreneur of Paris-Descartes University and teaches 30 hours (eqTD).
- Master: S. Epelbaum, Master in Neuroscience, 4 hours (eqTD), Sorbonne University
- Master: S. Durrleman, Master Mathématiques, Vision, Apprentissage (MVA), ENS Paris-Saclay (21 hrs cours magistral)
- Engineering school: Olivier Colliot, 3 hours (eqTD), Mines ParisTech
- Medical school: Didier Dormont is the Director of the University Diploma (DIU) "Diagnostic and Therapeutic Neuroradiology", Sorbonne University
- Medical school: Didier Dormont, Courses for Medical Students, Sorbonne University
- Medical school: Didier Dormont organizes and participates in the practical teaching of Neuroradiology for Medical Students in the Department of Diagnostic Neuroradiology of Pitié Salpêtrière University Hospital
- Medical school: Didier Dormont organizes and participates in the practical teaching of Neuroradiology for Radiology Specializing Residents in the Department of Diagnostic Neuroradiology of Pitié Salpêtrière University Hospital
- Medical school: S. Epelbaum gives lectures in Neurology on the topic of degenerative diseases for medical students of Sorbonne University (10 hours/year) and is regional supervisor of the national Inter University Diploma on Alzheimer's disease and Related disorders for Paris since 2015.

10.2.2. Supervision

PhD in progress : Juliana Gonzalez-Astudillo, "Network features for brain-computer interfaces", UPMC, started in 2019, advisor: Fabrizio De Vico Fallani

PhD in progress : Giulia Bassignana, "Identification of driver nodes in biological networks", Inserm, started in 2017, advisors: Fabrizio De Vico Fallani, Olivier Colliot, Violetta Zujovic

PhD in progress : Tiziana Cattai, "Leveraging brain connectivity networks to detect mental states in brain-computer interfaces", Inria, started in 2017, advisor: Fabrizio De Vico Fallani

PhD in progress : Virgilio Kmetzsch, "CMultimodal analysis of neuroimaging and transcriptomic data in genetic fronto-temporal dementia", Sorbonne University, Started in 2019, advisors: Olivier Colliot, Emmanuelle Becker and Olivier Dameron

PhD in progress: Wen Wei, “Learning brain alterations in multiple sclerosis from multimodal neuroimaging data”, Université de Nice Sophia-Antipolis, Started in 2016, advisors: N. Ayache, O. Colliot and S. Durrleman

PhD in progress: Alexandre Bône, “Learning methods for the spatiotemporal analysis of longitudinal image data: application to the diagnosis, prognosis and monitoring of Alzheimer’s disease”, started in 2016, advisors: O. Colliot and S. Durrleman

PhD in progress: Igor Koval, “Construction of disease progression models from multimodal longitudinal data”, started in 2016, advisors: S. Allasonnière and S. Durrleman

PhD in progress: Raphael Couronné, “Spatiotemporal analysis of the progression of the Parkinson’s Disease informed by multimodal longitudinal data”, started in 2018, advisor: S. Durrleman

PhD in progress: Thomas Lartigue, “Mixture Models in Gaussian Graphical Models”, started in 2017, advisors: S. Allasonnière and S. Durrleman

PhD in progress: Vianney Debavelaere, “Analysis of distribution of spatiotemporal trajectories in heterogeneous populations”, started in 2018, advisors: S. Allasonnière and S. Durrleman

PhD in progress: Johann Faouzi, “Machine learning approaches to predict impulse control disorders in Parkinson’s disease”, started in 2018, advisors: O. Colliot and J.-C. Corvol

PhD in progress: Simona Bottani, “Machine learning for differential diagnosis of neurodegenerative diseases from multimodal data”, started in 2018, advisors: O. Colliot and N. Burgos

PhD in progress: Elina Thibeau-Sutre, “Unsupervised learning from neuroimaging data to identify disease subtypes in Alzheimer’s disease and related disorders”, started in 2018, advisors: D. Dormont and N. Burgos

PhD in progress: Federica Cacciamani, “Awareness for cognitive decline in the earliest stages of Alzheimer’s disease”, started in 2018, advisor: S. Epelbaum

PhD in progress: Paul Vernhet, “Learning dynamical systems for disease progression modeling”, started in 2019, advisor: S. Durrleman

PhD in progress: Clément Mantoux, “Statistical analysis of graphs”, started in 2019, advisors: S. Durrleman and S. Allasonnière

10.2.3. *Juries*

- Olivier Colliot participated, as referee, to the PhD committee of Killian Hett (University of Bordeaux).
- Olivier Colliot participated, as referee, to the PhD committee of Florian Tilquin (University of Strasbourg).
- Olivier Colliot participated, as thesis director, to the PhD committee of Jorge Samper-Gonzalez (Sorbonne University).
- Olivier Colliot participated, as thesis director, to the PhD committee of Junhao Wen (Sorbonne University).
- Olivier Colliot participated, as thesis director, to the PhD committee of Pascal Lu (Sorbonne University).
- F. De Vico Fallani participated, as referee, to the PhD committee of Melodie Foullien (University of Lyon).
- F. De Vico Fallani participated, as examiner, to the PhD committee of Sebastien Campeon (Sorbonne University).
- S. Epelbaum participated, as thesis director, to the MD committee of Sinead Gaubert (AP-HP).
- S. Durrleman participated, as referee, to the PhD committee of Razwan Marinescu (University College London)

- S. Durrleman participated, as referee, to the PhD committee of Raphaël Sivera (Université Côte d'Azur)
- S. Durrleman participated, as thesis advisor, to the PhD committee of Maxime Louis (Sorbonne Université)
- S. Durrleman participated, as thesis advisor, to the PhD committee of Manon Ansart (Sorbonne Université)

10.3. Popularization

10.3.1. Articles and contents

- Olivier Colliot gave an interview for the popular science magazine "La Recherche".
- Stéphane Epelbaum participated to multiple events dedicated to general audience outreach including: articles in journals (L'Express, AFP, Pourquoi docteur) Radio shows and podcasts (France inter) and TV shows (BFMTV).
- S. Durrleman participated to several events dedicated to general audience outreach including 2 articles in Le Figaro Santé, 2 keynote lectures at AI for Health conference, and Sommet des start-up Challenges, and an article in Médecine, Cerveau et Cognition.

10.3.2. Interventions

- N. Burgos gave a presentation for the Rendez-vous des Jeunes Mathématiciennes (Inria Paris).

ATHENA Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Organisation

9.1.1.1. Member of the Organizing Committees

- M. Zucchelli is one of the organizer of the summer school on Brain Connectomics at the University of Verona, September 2019.

9.1.2. Scientific Events: Selection

9.1.2.1. Member of the Conference Program Committees

- T. Papadopoulo is member of the Program Committee of GRETSI 2019.
- T. Papadopoulo is member of the Program Committee of Soph.IA 2019.

9.1.2.2. Reviewer

- M. Clerc serves several international conferences (ISBI, ICASSP, IEEE EMBS, IEEE NER).
- R. Deriche serves several international conferences (ISBI, MICCAI, ISMRM, ...) and international workshops (CD-MRI Miccai, MFCA Miccai...).
- T. Papadopoulo serves several international conferences (GRETSI, ICIP, ISBI, ICASSP, VISAPP).

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- M. Clerc is member of the Editorial Boards of the Journal of Neural Engineering, and of the journal Neurons, Behavior, Data and Theory.
- R. Deriche is member of the Editorial Board of the Journal of Neural Engineering, editorial board member at Springer for the book series entitled Computational Imaging and Vision and member of the Editorial Board of the Medical Image Analysis Journal
- M. Clerc, R. Deriche and T. Papadopoulo serve as Guest Editor for the special issue on Non-invasive brain imaging of the Journal of Neural Engineering.

9.1.3.2. Reviewer - Reviewing Activities

- M. Clerc serves several international journals (Journal of Neural Engineering, NeuroImage, Physics in Medicine and Biology).
- R. Deriche serves several international journals (NeuroImage, IEEE Transactions on Medical Imaging, Magnetic Resonance in Medicine, Journal of Mathematical Imaging and Vision, Medical Image Analysis Journal, ...).
- T. Papadopoulo serves several international journals (Pattern Recognition, NeuroImage, Frontiers in Neuroscience, Brain Topography, Journal of Neural Engineering).
- S. Deslauriers-Gauthier serves several international journals (NeuroImage, IEEE Transactions on Biomedical Engineering, Journal of Neural Engineering).
- M. Zucchelli serves several international journals (NeuroImage, BioMedical Engineering OnLine).

9.1.4. Invited Talks

- M. Clerc gave a talk in front of the French Academy of Sciences on June 21 2019.
- M. Clerc gave a keynote talk at the INCF conference in Warsaw on Sep 2, 2019.

- M. Clerc gave a keynote talk at the ACM Multimedia HealthMedia workshop in Nice on October 21, 2019.
- R. Deriche gave an invited keynote speech at Hassan II Academy of Sciences and Technology, Kingdom of Morocco (Feb. 27, 2019).

9.1.5. Leadership within the Scientific Community

- M. Clerc is vice-president of the CORTICO association <https://www.cortico.fr>
- M. Clerc is vice-president of the NeuroMod institute of Université Côte d'Azur

9.1.6. Scientific Expertise

- M. Clerc is member of the COERLE and CERNA committees.
- R. Deriche serves several international institutions in reviewing applications : ERC Grants, Swiss National Science Foundation, EPFL, the Netherlands Organisation for Scientific Research (NWO).
- T. Papadopoulo serves several international (Cordis-H2020 for FET-OPEN), national (ANR) and local (NeuroMod in Nice, iSite NEXt in Nantes) institutions in reviewing applications.

9.1.7. Research Administration

- M. Clerc was appointed director of the Inria Sophia Antipolis research Center in November 2019.
- M. Clerc was president of the CRCN hiring committee at Inria Bordeaux in 2019.
- M. Clerc was vice-president of the Inria Evaluation committee from September to October 2019.
- R. Deriche is member of the Academic Council of UCA (Université Côte d'Azur).
- R. Deriche is member of the Scientific Council of Academy 2 *Complex Systems*, Université Côte d'Azur and member of the Scientific Council of Olea Medical Company (<https://www.olea-medical.com/en>).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: T. Papadopoulo, *Inverse problems for brain functional imaging*, 24 ETD, M2, Mathématiques, Vision et Apprentissage, ENS Cachan, France.

M. Clerc teaches Functional Brain Imaging in the MSc Mod4NeuCog of Université Côte d'Azur (30 hours).

M. Clerc gave two lectures in a summer school on Brain Connectomics at the University of Verona, September 2019.

M. Zucchelli gave one lecture and one hands-on session in a summer school on Brain Connectomics at the University of Verona, September 2019.

9.2.2. Supervision

PhD defended on May 7th, 2019: Thinhinane Megherbi, "HARDI & High Order Tensors", Supervisors: Rachid Deriche & L. Boumghar (USTHB, Algiers)

PhD in progress: Abib Alimi, "Diffusion & PLI" started Nov, 1st, 2016, Université Côte d'Azur. Supervisor: Rachid Deriche.

PhD in progress: Matteo Frigo, "Structure & Function" started Nov, 1st, 2017, Université Côte d'Azur. Supervisor: Rachid Deriche.

PhD in progress: Isa Costantini, "Brain Connectomics" started Oct. 1st, 2016, Université Côte d'Azur. Supervisor: Rachid Deriche.

PhD defended on Dec. 19th, 2019: Kostiantyn Maksymenko, "Inverse problem in EEG/MEG/SSEG: towards a better consideration of anatomo-functional constraints", Université Côte d'Azur, Supervisors: Théodore Papadopoulo and Maureen Clerc.

PhD in progress: Federica Turi, "User-adapted Brain Computer Interaction", Université Côte d'Azur, started October 2016. Supervisor: Maureen Clerc.

PhD in progress: Sara Sedlar, "Reconstruction and analysis of dynamical functional networks from EEG, MEG and dMRI measurements", Université Côte d'Azur, started October 2018. Supervisors: Théodore Papadopoulo and Maureen Clerc.

PhD in progress: Ivana Kojcic, "Estimation of cortical activity and of the structure–function link using EEG and dMRI", Université Côte d'Azur, started October 2018. Supervisors: Théodore Papadopoulo and Samuel Deslauriers-Gauthier.

PhD in progress: Côme Le Breton, "Non invasive analysis of epileptogenic networks and their response to neurofeedback", started June 2019. Supervisors: Maureen Clerc and Théodore Papadopoulo.

PhD in progress: Joan Belo, "Electroencephalography analysis of auditory attention when listening to music", started June 2019. Supervisors: Maureen Clerc and Daniele Schön.

9.2.3. *Juries*

- M. Clerc participated in the PhD Jury of Maria-Carla Piastra at University of Genova in March 2019.
- M. Clerc participated in the PhD Jury of Jelena Mladenovic at University of Bordeaux in September 2019.
- R. Deriche participated in the PhD Jury of L. El Gueddari at University Paris Saclay on Dec. 13th, 2019.
- R. Deriche participated in the PhD Jury of A. Mendoza Quispe at Ecole Normale Supérieure Paris-Saclay on Feb. 5th, 2019.
- R. Deriche participated in the PhD Jury of T. Megherbi at USTHB (Algiers) on May 7th, 2019.
- R. Deriche participated as a reviewer in the PhD Jury of M. Kchaou at ENIT (Tunis) defended on July, 2019.
- T. Papadopoulo participated as a reviewer in the PhD Jury of L. Uro at Sorbonne University Paris 6 on Nov. 25th, 2019.
- T. Papadopoulo participated as a reviewer in the HDR Jury of S. Bonnet at CEA Cinatec, Grenoble on Dec. 2nd, 2019.
- T. Papadopoulo and M. Clerc participated in the PhD Jury of K. Maksymenko at Université Côte d'Azur on Dec. 19th, 2019.

9.3. Popularization

- Demonstration of the P300 speller and of the subject adapted dry EEG cap to the local and national instances, M. Clerc, T. Papadopoulo, F. Turi, S. Guebba.
- Participation to the Cybathlon BCI Series, Graz. September 2019 [36].

9.3.1. *Articles and contents*

- An article mentioned the BCI projects of Athena in a special issue from magazine Le Point https://www.lepoint.fr/sante/connecter-son-cerveau-a-un-ordinateur-pour-quoi-faire-18-03-2019-2301895_40.php

9.3.2. *Interventions*

- National events: Brain Awareness Week, two wide audience talks in Biot, Mouans Sartoux, and demonstration of Brain-Computer interfaces, M. Clerc, T. Papadopoulo.

BIOVISION Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events

- Bruno Cessac was a member of the Local Committee of the Conference NeuroFrance 2019 <https://www.neurosciences.asso.fr/V2/colloques/SN19/> (22-24 May 2019) one of the most important congress organised by the Société des Neurosciences with 1260 registrations: researchers, medical doctors, students, industrials, from France and from 26 foreign countries.
- Bruno Cessac has co-organized the parallel topical meetings and plenary sessions "Nonlinear waves in biology" in the international conference "Waves Cote d'Azur" <http://wavescotedazur.org/> Nice, France, 4-7 June 2019.
- Hui-Yin Wu was in the Program Chair of the 8th Eurographics Workshop on Intelligent Cinematography and Editing, Genoa, Italy
- Hui-Yin Wu was member of the conference program committees IEEE Conference on Games, London, UK
- Hui-Yin Wu was member of the 3rd Conference on Computing Systems and Applications, Algiers, Algeria
- Bruno Cessac has co-organized the 1st meeting of the NeuroMod Institute, Frejus, 1-2 July 2019

10.1.2. Scientific Events: Organisation

- MOMI 2019 (Le MONde des Mathématiques Industrielles) was a two-day workshop on applied and industrial mathematics. The workshop took place on the 25th and 26th of February, 2019 at the Inria Sophia Antipolis-Méditerranée research center with a focus on Big Data and Machine Learning. It was supported and financed by Inria, by the Maison de la Modélisation, de la Simulation et des Interactions – MSI of Université Côte d'Azur, by the Graduate School "Digital Systems for Humans" (EUR project ANR-17-EURE-004 from the "Programme Investissements d'Avenir"), by the Agence pour les Mathématiques en Interaction avec l'Entreprise et la Société (AMIES) and by the companies OLEA Medical, Thales Alenia Space and Wildmoka. In total, 3 keynote speakers, 7 industrial speakers and 90 participants (researchers, PhDs, postdocs and engineers) attended MOMI 2019. Finally, a company fair was organized to promote networking and identify future opportunities and collaborations. Selma Souihel and Evgenia Kartsaki have actively participated to the organizing committee. Their duties involved writing funding proposals, budget handling, communication and traveling arrangements for the keynote speakers, company fair and social event organization.
- E. Kartsaki and S. Souihel are participating to the organization of the PhD Seminars of Inria Sophia Antipolis - Méditerranée, organized and held by PhD candidates every two weeks and aim to share knowledge, and to promote collaborations, all in a friendly and interactive way. Selma Souihel and Evgenia Kartsaki have been members of the organizing committee during the academic year 2018/2019 (Evgenia Kartsaki is still an ongoing member). Both have been involved in the scheduling, communication and diffusion of the seminars. These tasks include calls for presentations, calendar planning and promotion of each seminar. Finally, they were also involved in the organization of the MOMI 2019 conference.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

Pierre Kornprobst has been associate editor for the Computer Vision and Image Understanding Journal (CVIU) since Jul 2016.

10.1.3.2. Reviewer - Reviewing Activities

- A. Calabrèse has served as a peer-reviewer for the following international journals (IF):
 - Scientific Reports (4.644)
 - Investigative Ophthalmology and Vision Science (3.683)
 - PLoS ONE (3.344)
 - Acta Ophthalmologica (3.206)
 - Translational Vision Science and Technology (2.399)
 - Journal of Vision (2.141)
- Bruno Cessac has been reviewer for J. Math. Neuro (IF 2.091)
- Hui-Yin Wu has been reviewer for Multimedia Tools and Applications. (IF: 2.101)

10.1.4. Invited Talks

- E. Karstaki, The Rank Prize Funds - Symposium on The retinal processing of natural signals, Jun 2019, Grasmere, United Kingdom. Probing retinal function with a multi-layered simulator.
- E. Karstaki, First meeting of the NeuroMod Institute, Jul 2019, Fréjus, France. Probing retinal function with a multi-layered simulator.
- B. Cessac, D. Karvouniari, L. Gil, O. Marre., Multiscale dynamics in retinal waves, LACONEU 2019 Conference, Valparaiso, Chile, January 18th, 2019.
- B. Cessac, S. Souihel, "Anticipation in the retina and the primary visual cortex : towards an integrated retino-cortical model for motion processing", Workshop on Visuo-motor Integration, EITN, Paris, 6-7 Jun 2019. <https://visuomotor.sciencesconf.org/>.
- B. Cessac, M. Mantegazza (IPMC) "Modelling of physiological and pathological states in neuroscience: exchanges among theoreticians and experimentalists", First meeting of the NeuroMod Institute 1-2 July 2019, Fréjus.
- B. Cessac, S. Souihel, "Motion anticipation in the retina", Neurostic Conférence, Sophia Antipolis, 14-15 October 2019, <http://www.gdr-isis.fr/neurostic/?p=452>.
- Hui-Yin Wu, "Thinking Like a Director: Film Editing Patterns for Virtual Cinematographic Storytelling", 8th Eurographics Workshop on Intelligent Cinematography and Editing, Genoa, Italy. May 2019.
- Hui-Yin Wu, "Interactive and Multimedia Storytelling", PhD Seminars, UCA Inria. November 2019.

10.1.5. Research Administration

Bruno Cessac is a member of the scientific council of the Institut NeuroMod de "Modélisation en Neurosciences et Cognition".

Bruno Cessac is a member of the "Bureau" of the Institut NeuroMod de "Modélisation en Neurosciences et Cognition".

Bruno Cessac was a member of the Groupe de Travail for the creation of the Inria project team FACTAS.

Bruno Cessac was a member of the Groupe de Travail for the creation of the Inria project team ATLANTIS.

Pierre Kornprobst has been an elected member of the Academic Board of UCA (*Conseil Académique*, from Nov. 2015 to Aug. 2019).

Pierre Kornprobst has been a member of the Comité de Suivi Doctoral (CSD) since March 2017.

Pierre Kornprobst has been an elected member of the Academic Council of UCA (*Conseil d'Administration*, since Dec. 2019).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence :

- Selma Souihel "Advanced network administration and security: architecture of a company network, services installation and configuration, users management, system and network security, cryptography, virtual private networks and secured protocols, and supervision tools, Numeric transmission : data acquisition, satellite and cable transmission, numeric modulation", 1ere année de l'IUT, Département Réseaux et Télécommunications, 64h/year, 50 students.

Master 1: Bruno Cessac (with F. Lavigne), *Introduction to Modelling in Neuroscience*, 40 hours, Master Mod4NeuCog, Université Nice Sophia Antipolis, France.

10.2.2. Supervision

- PhD defended on December 18th, 2019. Selma Souihel, "Generic and specific computational principles for the visual anticipation of motion trajectories". Started in November 2016. Supervisor B. Cessac
- PhD in progress: Evgenia Kartsaki. "How Specific Classes of Retinal Cells Contribute to Vision: a Computational Model", Started in October 2017. Supervisor B. Cessac codirection with E. Sernagor, ION.

10.2.3. Juries

Pierre Kornprobst was member of the Comité de suivi de thèse of Alexandre Montlibert, from CERCO, Toulouse, France.

Pierre Kornprobst was reviewer of the PhD of Erwan David, entitled "L'impact des troubles du champ visuel sur les dynamiques spatio-temporelles de l'observation de scènes naturelles", from Université de Nantes, France.

Bruno Cessac was member of the Comité de suivi de thèse of Matthieu Sarazin from Paris VI and Halgurd Taher from EDSFA Nice.

CAMIN Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Organisation

Christine Azevedo, Jessica Rose (Univ. Stanford, USA), Kelly Greves (Cincinnati Children's Hospital Medical Center, USA) organized an Instructional course during the EACD Conference (May, 23rd, 2019) in Paris : "Multichannel Neuromuscular Stimulation: NMES-assisted gait for children with cerebral palsy".

9.1.1.1. Member of the Conference Program Committees

- Daniel Simon is member of the ICINCO conference program committee

9.1.1.2. Reviewer

- Daniel Simon was reviewer for the RTNS, IEEE SYSTOL and IFAC ICINCO conferences
- Christine Azevedo was reviewer for IEEE EMBC, IROS, IFESS conferences

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

- David Guiraud is member of the Editorial Board of Journal of Neural Engineering (JNE) and Medical and Biological Engineering and Computing (MBEC).
- David Guiraud is Associate Editor of Theme 6 (Neurorehabilitation) at IEEE EMBC conference.
- Christine Azevedo is member of the Editorial Board of Neuroprosthetics as Review Editor for Frontiers in Neurology and Frontiers in Neuroscience
- Christine Azevedo is member of ERCIM News' Editorial Board as Inria representant.

9.1.2.2. Reviewer - Reviewing Activities

- Daniel Simon was reviewer for Simulation: Transactions of the Society for Modeling and Simulation International.

9.1.3. Invited Talks

- Daniel Simon gave a talk on "Feedback schedulers in practice A video decoder example" at the 40th International Summer School of Automatic Control Grenoble, France, September 9th, 2019.
- Daniel Simon gave a talk on "Dynamic simulation of a hand under electrical stimulation" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- François Bonnetblanc gave a talk on "Awake neurosurgery and electrophysiological spreading in the human brain: towards clinical applications through brain mapping? A new insight in brain connectivity" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- David Guiraud gave a talk on "Bidirectional control of hand prosthesis for amputees. A new breakthrough with sensory feedback to the brain" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- Christine Azevedo gave a talk on "FES-assisted grasping" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- Christine Azevedo gave a talk on "Interest of IMU sensors in various FES usages" at Lyon CyberBike event (<https://lcb2019.sciencesconf.org/>), September 9th, 2019.
- Christine Azevedo gave a talk on "Restoring a sport activity by stimulating paralyzed muscles" during Inria Scientific Days (June 2019).

9.1.4. Leadership within the Scientific Community

Christine Azevedo is member of the board of directors of International Functional Electrical Stimulation Society (IFESS).

9.1.5. Scientific Expertise

- Christine Azevedo is member of LIRMM CNU 61 commission
- Christine Azevedo was member of the selection committee for a Lecturer position at ISIR laboratory (Université Pierre et Marie Curie), (April 15th, 2019)
- Christine Azevedo was member of the selection committee of Researcher Competition at Inria Bordeaux (May 2019)

9.1.6. Research Administration

Christine Azevedo was member of Inria Evaluation Committee (CE). She participated in the competitive examinations for junior researcher recruitment in Inria Bordeaux Center (April 2019) and Inria Grenoble Center (May 2018).

Christine Azevedo is member of Inria Ethical Committee (COERLE).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master Neuroprothèses : Daniel Simon, "Control basics", 6.5h, M2, Université de Montpellier, France

Master Neuroprothèses : François Bonnetblanc, "Neurophysiologie", 8h, M2, Université de Montpellier, France

9.2.2. Supervision

PhD : Maxence Blond, "Optimisation de la propulsion d'un véhicule sous-marin à propulseurs azimutaux", University of Montpellier, April 17th 2019, Daniel Simon

PhD : Anthony Boyer, "Électrophysiologie cérébrale associée à la chirurgie éveillée des tumeurs lentes : Couplage de l'ECOG et de la SED pour les investigations peropératoires et analyse de l'EEG postopératoire", University of Montpellier, September 24th 2019, François Bonnetblanc.

PhD in progress : XinYue Lu, "Cardiorespiratory Monitoring by Microphone via Tracheal Sounds in the Context of Implanted Phrenic Nerve Stimulation", University of Montpellier - Inria - NeuroResp, April 2017-March 2020, Christine Azevedo, Thomas Similowski, Serge Renaux

PhD in progress : Lucie William, "Selective implanted neural stimulation to recover the prehension for quadriplegic", University of Montpellier-Inria-NEURINNOV, october 2019-september 2022, supervised by David Guiraud and Christine Azevedo

PhD in progress : Hélène Moron, MD, "Jitter of MUAP measured through needle EMG used as a biomarker of the Botulin toxin effect", University of Montpellier-Inria, october 2019-september 2022, supervised by David Guiraud and Arnaud Dupeyron.

9.2.3. Juries

Christine Azevedo was external examiner for the PhD thesis of Sean Doherty (UCL, London, France) "Investigation of transcutaneous neuromodulation techniques and development of a wearable device for control of the bladder following spinal cord injury." (April 30th 2019).

Christine Azevedo was examiner for the PhD thesis of Osama Mazhar (University of Montpellier, LIRMM, France) "Recognition of human gestures based on vision for the human-robot interaction." (October 24th 2019).

Christine Azevedo was examiner for the PhD thesis of Andrii Shachykov (University of Lorraine, LORIA, France) "Neural modeling of human motor coordination inspired by biological signals aiming for parkinsonian gaits." (December 17th 2019).

9.3. Popularization

- Christine Azevedo presented FREEWHEELS project at Sport Unlimitech event in Lyon <https://sportunlimitech.com/> (September 2019)
- CAMIN team was present (demonstration and masterclass lecture) at FUTURES festival in Paris <https://futures.paris/> (June 13th 2019)
- CAMIN team was present (demonstration and lecture) during the visit of the Secretary of State for Persons with Disabilities at Inria Paris Center (November 19th 2019)

9.3.1. Education

- Christine Azevedo was mentor (2018-2019) for one Savanturiers project with Saussan school (CM1/CM2 level) <https://savanturiersdelahightech.wordpress.com/category/projets-2018-2019/ecole-elementaire-joseph-deteil/>
- Christine Azevedo is mentor (2019-2020) for one Savanturiers project with Montbazin school (CE1/CE2 level) <https://savanturiers-projects.cri-paris.org/projects/NhbsL7Uz/blogentries>
- Christine Azevedo organized initiation sessions to informatics using Thymio robot at École Valfalis (Montbazin, France) in CP, CE1, CE2, CM1 and CM2 levels, 5 sessions of 1 hours per level (March-June 2019).
- Christine Azevedo participated to a 1-day of training future trainers in robotics at school (DANE) (March 2019).

9.3.2. Interventions

- CAMIN team welcomed 1 week internships of 3 schoolchildren this year (4e, 3e)

EMPENN Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. General Chair, Scientific Chair

- Camille Maumet was chair of the Open Science Special Interest Group of the Organisation of Human Brain Mapping. <https://www.humanbrainmapping.org/m/pages.cfm?pageid=3712>
- Giulia Lioi was chair of a Scientific Symposium during the conference of Organisation of Human Brain Mapping, 2019 : "Multimodal Neurofeedback: The next generation of neurofeedback for advanced brain self-regulation"
- Brainhack Global Rennes 2019: <https://brainhack.irisa.fr>, November 14-15, Rennes, France (Julie Coloigner, Emmanuel Caruyer and Raphael Truffet).
- Christian Barillot is member of the Board of Directors of IPMI conference series (Information Processing in Medical Imaging)
- Camille Maumet is a member of the "Comité national pour la Science Ouverte (CoSO)" Working group of open software led by Roberto Di Cosmo.
- Camille Maumet is a member of Aperture, a new publishing platform, working group "workflows" led by Peter Bandettini.

10.1.1.2. Member of the Organizing Committees

- Brainhack Global Rennes 2018: <https://brainhack.irisa.fr>, May 25-26, Rennes, France (Julie Coloigner, Emmanuel Caruyer and Raphael Truffet).
- ARSEP workshop on multiple sclerosis, Feb 2, ICM (Élise Bannier).
- Élise Bannier is founding member of the REMI network for mutual aid in MRI studies (<https://remi.network/>) to facilitate setup and quality control of multicenter studies and share expertise between centers, with two meetings organized this year in Strasbourg and Paris.

10.1.2. Scientific Events: Selection

10.1.2.1. Member of the Conference Program Committees

- Emmanuel Caruyer has been a program committee member of the MICCAI CDMRI workshop since 2013.
- Camille Maumet is a member of programm committee of INCF Neuroinformatics 2019 <https://www.neuroinformatics2019.org/>, September 1-2, Warsaw, Poland.
- Camille Maumet is member of Program Committee: GEANT workshop: <https://neuroinfo.fr/#!/workshops/geant2019>, May 21, Marseille, France

10.1.2.2. Reviewer

- IEEE International Symposium on Biomedical Imaging (Emmanuel Caruyer, Olivier Commowick, Julie Coloigner)
- MICCAI (Olivier Commowick, Francesca Galassi)
- Workshop on Biomedical Image Registration (Olivier Commowick)
- Annual congress of the Organisation of Human Brain Mapping (Camille Maumet)
- ESMRMB (Élise Bannier)

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Camille Maumet is member of Editorial Boards of Neuroinformatics
- Christian Barillot is Chief editor of Frontier in Computer science.

10.1.3.2. Reviewer - Reviewing Activities

- NeuroImage (Emmanuel Caruyer, Camille Maumet, Pierre Maurel)
- Medical Image Analysis (Emmanuel Caruyer)
- IEEE TMI (Olivier Commowick)
- Neuroinformatics (Julie Coloigner)
- Med Image Anal (Olivier Commowick, Emmanuel Caruyer, Christian Barillot)
- Scientific Data (Camille Maumet)

10.1.4. Invited Talks

- Emmanuel Caruyer, "Nouveaux enjeux pour l'acquisition d'IRM de diffusion pour la microstructure" ; Journée Nouvelles Imageries INS2I ; December 2019; Lyon."
- Corentin Vallée, "Arterial Spin Labeling, Resting-State and Acquisition duration", Brainnetome center, Institute of Automation, Chinese Academy of Science, Beijing; June 11, 2019
- Corentin Vallée, "Arterial Spin Labeling, Resting-State and Acquisition duration", Brainnetome center, Institute of biophysics, Chinese Academy of Science, Beijing; June 25, 2019
- Giulia Lioi, "EEG-fMRI integration for Neurofeedback", Diagnosis and International Adaptive Imaging (IADI) Laboratory, Nancy, France; September 2019.
- Giulia Lioi, "Multimodal Neurofeedback for Stroke Rehabilitation", 4eme Journee Nationale Neurofeedback Evaluation and Training (NEXT), Bordeaux, France, May 2019.
- Giulia Lioi "Integrating EEG and fMRI for Neurofeedback", Conference Gen2Bio, Biogenouest, Angers, France, May 2019.
- Pierre-Yves Jonin, "Statistiques appliquées en psychométrie. Journées scientifiques de rééducation cognitive chez l'enfant", Lyon, June 14, 2019.
- Pierre-Yves Jonin, "Les méthodes psychométriques pour le cas unique:", Journée de formation de l'Association des Neuropsychologues en Drôme & Ardèche; Valence, France, November 22, 2019.
- Pierre Maurel, "Medical Image Processing: MRI and Brain", seminar at the Mechatronics Department of ENS-Rennes.
- Élise Bannier, "Multi-center (mono-vendor) longitudinal conventional and quantitative spinal cord MRI at 3 Tesla", Spinal Cord Workshop, UCL, London, January 21, 2019.

10.1.5. Leadership within the Scientific Community

- Emmanuel Caruyer: Member (by selection) of the "Bio Imaging and Signal Processing" (BISP) Technical Committee of the IEEE Signal Processing Society (Emmanuel Caruyer).
- Élise Bannier: Elected Member of the French Society for MRI (SFRMBM), starting in Jan 2020 for 6 years.

10.1.6. Scientific Expertise

- Expertise as a reviewer for "Agence Nationale de la Recherche" (ANR) (Emmanuel Caruyer)
- Élise Bannier: HCERES Evaluation Committees of the CERCO and TONIC units in Toulouse as expert, representing the research support staff.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

L2 informatique: Raphaël Truffet, Génie Logiciel, 24h and Complexity, 18h, L2, ISTIC, France,

L2 informatique: Raphaël Truffet, Génie Logiciel, 40h, L2, ISTIC, France

ENS Rennes: Raphaël Truffet, Algorithmic (20h)

L2 biologie: Antoine Legouhy, Bio-statistiques 34h, L2, Univ. Rennes 1, France.

M1 mathématiques: Antoine Legouhy, Optimisation 12h, M1, Univ. Rennes 1, France.

M1 biologie: Antoine Legouhy, statistiques 12h, M1, Univ. Rennes 1, France.

Master SIBM, M2, University of Angers-Brest-Rennes, France.

L1 INF1: Francesca Galassi, Functional and Immutable Programming (Scala) (TP : 40h), L1, ISTIC University of Rennes 1, France.

L3 bioinformatique: Corentin Vallée, Statistics, 32h, University of Rennes 1, France.

Master SIBM: Benoit Combès, Statistics (TD, TP: 12h), University of Angers-Brest-Rennes:

- Emmanuel Caruyer, "Introduction to diffusion MRI" (Plenary: 3h).
- Benoit Combès, "Méthodes de recalage linéaire et non-linéaires" (Plenary: 6h)
- Quentin Duché, "Traitements des données d'IRM fonctionnelle" (Plenary: 1h).
- Isabelle Corouge, "Bio-marqueurs d'imagerie et IRM métabolique et fonctionnelle" (Plenary: 3h).
- Camille Maumet, "Imaging processing pipelines" (Plenary: 3h).
- Élise Bannier, "IRM fonctionnelle BOLD" (Plenary: 1h).
- Benoit Combès, "Méthodes statistiques pour le traitement d'image" (Plenary: 3h).
- Claire Cury, "Evaluation des performances en imagerie médicale" (Plenary: 3h). item Julie Coloigner, "Méthodes d'analyse de la connectivité cérébrale" (Plenary: 3h).

Master 2 "Langage Cognition et Apprentissage: Pierre-Yves Jonin, "Méthodologie clinique & psychométrique de l'étude de cas" (4h); Université de Poitiers, February 2019

DIU Sémiologie des démences: Pierre-Yves Jonin, "Diagnostic précoce de la maladie d'Alzheimer: contribution neuropsychologique" (4h); Université de Caen Basse Normandie, March 2019

Master 2 Neuropsychologie: Pierre-Yves Jonin, "Apports et limites du bilan neuropsychologique à visée diagnostique dans les syndromes démentiels" (3,5h); Université de Savoie à Chambéry, March 2019

Licence 3 Psychologie, UES Handicap: Pierre-Yves Jonin "Déficit mnésique et handicap invisible. Détection en neuropsychologie" (8 h); Université de Rennes 2, February 2019

Master 2 Psychologie spécialité handicap: Pierre-Yves Jonin "Neuropsychologie clinique du sujet âgé" (10 h); Université de Rennes 2, January-April 2019

Medicine (4th & 5th year) UE Psychologie et Neurobiologie: Pierre-Yves Jonin, L'exploration neuropsychologique des maladies neurologiques et psychiatriques. 4ème & 5ème année de médecine (4h), Université de Brest, France.

Licence 3 de Psychologie: Pierre-Yves Jonin, Les syndromes neuropsychologiques. L3, (16h); Université de Rennes 2, France

Master 2 "Troubles de la Cognition et du Langage": Pierre-Yves Jonin, Evaluation neuropsychologique à visée diagnostique. Le cas des syndromes démentiels. Master 2 (2 x 6h) Université de Poitiers, France.

Master 2 Neurosciences Cliniques: Pierre-Yves Jonin, "La mémoire humaine" (3h); Université de Rennes 1, novembre 2019

IUT St-Malo: Mathis Fleury, statistics (64); 2019

Licences 2 & 3 Biologie: Xavier Rolland, "Introduction aux Biostatistiques" 1 (TP sur R: 64h), Université de Rennes 1

ESIR: Pierre Maurel, General image processing (60h), Algorithmics and complexity (60h), Medical imaging (60h), École Supérieure d'Ingénieur de Rennes (ESIR).

ENS Rennes: Pierre Maurel, Introduction to image processing (24h)

10.2.2. Supervision

10.2.2.1. PhD & HdR

HDR: Olivier Commowick, "Compartments imaging for the characterization of brain diseases from quantitative MRI", Univ. Rennes 1, defended on June 19, 2019, jury: Isabelle Bloch - Professeur, Telecom Paristech, Sébastien Ourselin - Professeur, King's College London, Jean-Philippe Thiran - Professeur, Ecole Polytechnique Fédérale de Lausanne, Christian Barillot - DR CNRS, Equipe Empenn, Alexander Leemans - Associate Professor, UMC Utrecht and Xavier Pennec - DR Inria, Equipe Epione[1].

PhD: Anne-Claire Binter, "Effects of prenatal exposure to neurotoxicants on the child's brain function evaluated by cerebral imaging", defended on December 4, 2019, Univ. Rennes, Élise Bannier.

PhD: Cédric Meurée, "Arterial spin labelling : quality control and super-resolution", defended on March 25, 2019, Univ. Rennes, Pierre Maurel, Christian Barillot.

PhD: Haykel Snoussi, "Population imaging and diffusion MRI for characterizing multiple sclerosis in the human spinal cord.", defended on May 2, 2019, Univ. Rennes, Christian Barillot and Emmanuel Caruyer[3].

PhD in progress: Antoine Legouhy, "Longitudinal brain atlas creation, application to development studies", CNRS, from Nov 2016, Defence planned for February 2020, Christian Barillot, François Rousseau, Olivier Commowick.

PhD in progress: Corentin Vallée, "Joint estimation of neuronal activation, resting-state and basal metabolism from Arterial Spin Labeling", Univ. Rennes, from Nov 2016, Christian Barillot, Isabelle Corouge, Pierre Maurel.

PhD in progress: Xavier Rolland, "Modeling analytic variability in brain imaging", CNRS, from Oct 2018, Christian Barillot, Camille Maumet.

PhD in progress: Raphaël Truffet, "Compressed sensing for microstructure-enabled diffusion MRI", Univ. Rennes / ENS Rennes, from Oct 2018, Christian Barillot, Emmanuel Caruyer.

PhD in progress: Giovanna Orrù, "Modeling brain structural and functional connectivity", Univ. Rennes, from Oct 2019, Julie Coloigner and Christian Barillot.

PhD in progress: Stéphanie Leplaideur, "Equilibre de la rééducation par vibrations cervicales, adaptation prismatique et association aux deux techniques, chez des patients cérébro-lésés droits-Protocole AVC POSTIM", started in October 2018, Isabelle Bonan, Élise Bannier.

10.2.2.2. Other supervisions

Master student SIF (Master mention Informatique, parcours Science informatique): Antoine Ackaouy, "Deep learning for segmentation of MS lesions from multimodal MRI", Apr-Oct 2018, Francesca Galassi.

3-months visit: Gregory Kiar, PhD student, "Analytical Stability in fMRI" April-June 2019, Camille Maumet in collaboration with Elisa Fromont (LACODAM, Inria Rennes / IRISA).

Co-supervised project : Alexander Bowring, "Exploring the Impact of Analysis Software on Task fMRI Results" 2019, Camille Maumet in collaboration with Thomas Nichols (LACODAM, Inria Rennes / IRISA).

Co-supervised project : Freya Acar, Best practices reporting for fMRI meta-analysis 2019, Camille Maumet in collaboration with Beatrijs Moerkerke (LACODAM, Inria Rennes / IRISA).

M1 Physique Médicale student: Marion Boulanger, "Evaluation of QC procedures at Neurinfo and optimisation".

L3 ESIR Ingénierie Biomédicale student: Chloé Mercier, "Implementation of a Java tool to perform MR Quality Control on a Eurospin test object".

10.2.3. Juries

- Emmanuel Caruyer. PhD committee: Yann Bihan-Poudec, Université Claude Bernard Lyon 1; December 17, 2019.
- Olivier Commowick. PhD committee: Junhao Wen, "Structural and microstructural neuroimaging for diagnosis and tracking of neurodegenerative diseases", Sorbonne Université; July 4, 2019, PhD supervisors: Olivier Colliot et Stanley Durrleman.
- Olivier Commowick. MD thesis committee: Charlotte Laurent "Intérêt pronostique de l'IRM en tenseur de diffusion dans les neuropathies optiques inflammatoires", Université de Rennes 1; Octobre 25, 2019.
- Olivier Commowick. PhD committee: Christian El Hajj "Estimation et classification des temps de relaxation multi-exponentiels en IRM. Application aux tissus végétaux.", Ecole centrale Nantes; December 16, 2019, PhD supervisors: Guylaine Collewet and Maja Musse.

10.3. Popularization

10.3.1. Brain awareness week: "Semaine du Cerveau"

Empenn team took part in Brain awareness week 2019. Giulia Lioi, Claire Cury and Élise Bannier coordinated this event for Empenn/Neurinfo.

- Camille Maumet and Christian Barillot: Talk "Le cerveau numérique: explorons-le!". March 2019, Rennes, France.
- Quiz on brain imaging, March 2019, Rennes, France.
- Lab visits for students (3e and 1ere S) about MRI, functional MRI, EEG and neurofeedback, and image processing.
- Pierre-Yves Jonin: Talk "Entre connaissances et souvenirs : voyage en terre mnésique", March 2019, Rennes, France

10.3.2. Journée Science et Musique (JSM)

This event was initiated in 2010 by IRISA. The idea is to offer a scientific and festive immersion in the research and new technologies of the music of neurosciences and sounds to the general public. Free workshops, conferences, demonstrations and concerts are available to all throughout the day (for more detail see <https://jsm.irisa.fr/>). Claire Cury organized the event this year with Nancy Bertin, PANAMA team.

10.3.3. Sciences en Cour[t]s

This event is a festival of short movies, which offers doctoral students the opportunity to make short films about their thesis work. Raphael Truffet, Antoine Legouhy and Xavier Rolland won the high school award <https://www.youtube.com/watch?v=IKgqv-iCwak>.

10.3.4. "J'peux pas j'ai informatique"

"J'peux pas j'ai informatique" is an outreach program to welcome secondary school students for a day at Inria Rennes / IRISA and introduce them to the various facets of computer science. Camille Maumet and Pierre Maurel helped out to run the hands-on tutorials in which students could learn how a computer works without computers.

10.3.5. Other interventions

- Pierre-Yves Jonin: Series of 2 talks on neuropsychology, Universités du Temps Libre de Bretagne, Jan-Dec, Rennes, France.

10.3.6. Education

- L codent L créent - An outreach program to send PhD students to teach Python to middle school students in 8 sessions of 45 minutes. Camille Maumet is a co-organizer of the local version of this program, initiated in Lille. The program is currently supported by: Fondation Blaise Pascal, ED MathSTIC, Inria and Fondation Rennes 1.

EPIONE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. General Chair, Scientific Chair

- X. Pennec organized the **Geometric Statistics workshop** in Toulouse from August 30 to September 5 2019, in the framework of the Associated team GeomStats with Stanford, the ERC G-Statistics and the thematic semester "Statistics with Geometry and Topology" of the CIMI Labex of Toulouse. The workshop featured 6 hours courses by Susan Holmes and Xavier Pennec and talks by Nina Miolane and Yann Thanwerdas.
- N. Ayache organized the scientific program of the conference "The Académie des Sciences in Nice and Sophia Antipolis" in June 20-21 2019.

9.1.2. Member of the Organizing Committees

- X. Pennec was a co-chair of the **MICCAI 2019 Workshop on Mathematical Foundations of Computational Anatomy (MFCA 2019)**, which was held in Shenzhen in October 2019 [57].
- M. Sermesant was a co-chair of the MICCAI 2019 Workshop Statistical Atlases and Computational Models of the Heart (STACOM 2019), which was held in Shenzhen, October 2019.
- H. Delingette co-organized the meeting on "Digital Sciences & Technologies" on April 3rd as well as the meeting on "Digital Sobriety" on Dec. 2nd as part of the scientific animation of the UCA Academy of Excellence on Digital Sciences. He was also member of the organizing committee of the 2019 SophIA summit in Sophia Antipolis that was held in Sophia Antipolis from Nov. 20-22nd.

9.1.3. Scientific Events Selection

9.1.3.1. Member of the Conference Program Committees

- X. Pennec was a program committee member and session chair of the Geometric Sciences of Information conference GSI' 2019 at ENAC in Toulouse.

9.1.3.2. Reviewer

- M. Lorenzi was a reviewer for the conferences Neural Information Processing Systems (NeurIPS 2019), International Conference on Machine Learning (ICML 2019), Medical Image Computing and Computer Aided Intervention (MICCAI 2019), International Conference on Learning Representations (ICLR 2020), Information Processing in Medical Imaging (IPMI 2019).
- M. Sermesant was a reviewer for Medical Image Computing and Computer Aided Intervention (MICCAI 2019), the MICCAI workshop STACOM and the Computing in Cardiology conference.
- X. Pennec was a reviewer for Medical Image Computing and Computer Aided Intervention (MICCAI 2019) and for Information Processing in Medical Images (IPMI 2019), the 35th Annual Symposium on Computational Geometry (CG Week 2019).
- H. Delingette was a reviewer for the International Symposium on Biomedical Imaging (ISBI' 19), the international conference on computer-aided interventions (IPCAI' 19), the International Conference on Computer Vision and Pattern Recognition (CVPR 2019).

9.1.4. Journal

9.1.4.1. Member of the Editorial Boards

- H. Delingette is a member of the editorial board of the journal Medical Image Analysis (Elsevier).

- M. Lorenzi is a member of the editorial board of the journal Scientific Reports (Nature Publishing Group); he is also member of the Board of Statisticians of the Journal of Alzheimer's Disease (IOS Press).
- X. Pennec is a member of the editorial board of the journal Medical Image Analysis (MedIA, Elsevier), of the International Journal of Computer Vision (IJCV, Springer), and of the Journal of Mathematical Imaging and Vision (JMIV, Springer).
- N. Ayache is the co-founder and the Co-Editor in Chief with J. Duncan (Professor at Yale) of Medical Image Analysis journal. This scientific journal was created in 1996 and is published by Elsevier.
- N. Ayache is a member of the editorial board of the following journals: Medical Image Technology (Japanese journal) and Journal of Computer Assisted Surgery (Wiley).
- I. Stobant is editorial coordinator for Medical Image Analysis, Elsevier (since october 2001).

9.1.4.2. Reviewer - Reviewing Activities

- M. Lorenzi was a reviewer for the following journals: Neurobiology of Aging, Alzheimer's and Dementia, Journal of Alzheimer's Disease, Medical Image Analysis, IEEE Transactions on Medical Imaging, NeuroImage, International Journal of Computer Vision, Journal of Mathematical Image and Vision, Scientific Reports.
- X. Pennec was a reviewer for the Journal of Computational Dynamics, Annals of Statistics, Communications in Statistics - Simulation and Computation, Linear Algebra and its Applications, Information geometry, Medical Image Analysis, IEEE Transactions on Medical Imaging.
- M. Sermesant was a reviewer for the following journals: Journal of Machine Learning Research, Journal of the American College of Cardiology, IEEE Transactions on Medical Imaging, IEEE Transactions on Biomedical Engineering, Medical Image Analysis and Computers in Biology and Medicine.
- H. Delingette was a reviewer for the following journals: Medical Image Analysis (Elsevier), IEEE Transactions in Medical Imaging, Pattern Recognition, and Computer Vision and Image Understanding.

9.1.5. Invited Talks

- **M. Lorenzi** was invited to give a lecture to: Nice Genomic Winter School, Dec 18th; Imaging-Genetics Winter School, University of Verona, Nov 25th-29th; SophIA Summit of Sophia Antipolis, Nov 19th; International Tau Workshop, Geneva University Hospital, Nov 11th; International Meeting "The future of Medicine Starts Now", Menarini Foundation, Genoa, Italy, Sep 27th; European Glaucoma Society Meeting, Bordeaux, Aug 30th; Big@UCA Summer School, Nice, Jun 26th; Lacassagne Hospital, Jun 20th; VUmc Hospital, Amsterdam, May 23rd; Collège de France, Paris, Apr 23rd; UCA Maison de la Simulation, Apr 18th; International Conference ISBI 2019, Venice, Apr 9th; UPF University, Barcelona, Feb 7th;
- **H. Delingette** was a keynote speaker at the University of Twente (NL) seminar on Nov 6th, at the regional Otology meeting "ORL PACA" on June 15th 2019, and at the Machine Learning Meets Medical Imaging workshop in Shenzhen, China, on Oct 13th.
- **X. Pennec** gave the following plenary invited talks:
 - IPAM program on Geometry and Learning from Data in 3D and Beyond (Los Angeles, USA, 02/04).
 - CARS 2019 conference in Rennes (19/06).
 - the Academie des Sciences en région in Nice and Sophia Antipolis (21/06).

He also gave invited lectures and seminars at: Copenhagen University (DK 18/03); the Institut Mathématique de Toulouse (27/05); the ENUMATH 2019 conference held in Egmond aan Zee (NL, 04/10); LJK-Deterministic Models and Algorithms: EDP-AIRSEA-CVGI Seminar, Univ Grenoble (16/12).

- **M. Sermesant** was an invited speaker at the European Heart Rhythm Association conference (18/03), eHealth Monaco (27/03), Cardiac Electromechanics workshop (15/04), EuroCMR (03/05), CVPR Medical Imaging workshop (16/05), Innovation Alzheimer summer school (26/06), Académie de Médecine working group on AI & Healthcare (10/09), Inria/SIMULA workshop (26/09), SOPH.I.A Summit (20/11) and TRM Forum (10/12).
- **N. Ayache** gave the following plenary invited talks:
 - AI for Healthcare: Hope & Challenges. Global Forum on AI for Humanity, Paris, 2019.
 - AI for Medical Imaging & Digital Twins, Keynote Lecture, Shezhen University, China 2019.
 - AI for e-medecine, 5th International Symposium on Multi-disciplinary Computational Anatomy, Fukuoka, Japan 2019.
 - Le jumeau numérique: images, modèles et IA. Académie nationale de médecine, Paris, 2019.
 - Intelligence Artificielle et médecine. Académie des Sciences, Nice, 2019.
 - La Santé à l'ère numérique, Institut de l'ENS, 2019.
 - Imaging in Cancer - Multimodal Analysis, iBV, Nice, 2019

9.1.6. Leadership within the Scientific Community

- **H. Delingette** is a member of the MICCAI Society Board of Directors.
- **H. Delingette** is elected as MICCAI Society's Fellows.

9.1.7. Scientific Expertise

- **M. Lorenzi** was reviewer of the funding agency ANR (Agence Nationale de la Recherche, France). He is providing scientific consulting for the company MyDataModels and Flexper through an Inria Tech research contract.
- **X. Pennec** was a reviewer for the funding agency Israel Science Foundation (ISF).
- **M. Sermesant** was an evaluator for the Wellcome Trust (UK), the NSF (USA) and the Netherlands research council.
- **H. Delingette** is a member of the scientific committee of the institute 3IA Côte d'Azur and was reviewer of the funding agency ANR (Agence Nationale de la Recherche, France).
- **N. Ayache** is a member of the following scientific committees:
 - 2016 -: Scientific advisory committee for Région Ile de France (20 members),
 - 2015 - 2019: Research Committee of Fondation pour la Recherche Médicale (18 members),
 - 2010 -: Scientific Advisory Boards in London (ICL,KCL,UCL), Oxford & Nottingham,
 - 2009 - 2019: Advisory Committee, Japan Initiative in Computational Anatomy, MEXT.

9.1.8. Research Administration

- **N. Ayache** is the scientific director of the 3IA Côte d'Azur since its creation in April 2019.
- **Marco Lorenzi** is a member of the local steering committee of the technological platforms (Comités Scientifiques de Pilotage des Plateformes) in charge of Cluster, Grid, Cloud, and HPC technologies. He is also member of the Scientific Board of the UCA NeuroMod Institute.
- **Xavier Pennec** is co-director of the Ecole doctorale STIC of Université Côte d'Azur. He is a member of the committee of EDSTIC, of the Doctoral follow-up Committee (CSD) at Inria Sophia Antipolis, and participated to the PhD fellowship granting committees of EDSTIC, Cofund at UCA, CORDI at Inria. He is a member of the "Comité de la Recherche Biomédicale en Santé Publique (CRBSP)" of the Nice University Hospital (CHU). At University Côte d'Azur / IDEX-JEDI, he is a member of the executive committee of the Academy 4 (Living systems Complexity and diversity), of the Scientific committee of the Academy 2 (Complex Systems), and of the Advanced Research Program Committee. He was elected member of the Evaluation Committee of Inria (Sep. 2019 to Aug. 2023) and participated to the promotion commission for CRCN, DR1, DR0.

- **M. Sermesant** is an elected member of the Inria Sophia Antipolis research centre committee.
- **Hervé Delingette** is a member of the local committee in charge of the scientific selection of visiting scientists (Comité NICE) and the local committee on the immersive platform. He is the director of the Academy of excellence on “Networks, Information and Digital Society” at the Université Côte d’Azur. He is the deputy director of the “Ecole Universitaire de recherche” entitled *Digital Systems for Humans* at Université Côte d’Azur. He is a representative of Inria at the Federation Hospitalo-Universitaire Oncoage led by the CHU Nice.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: H. Delingette and X. Pennec, Introduction to Medical Image Analysis, 21h course (28.5 ETD), Master 2 MVA, ENS Saclay, France.

Master: H. Delingette and X. Pennec, Medical Image Processing, 30h course, M2 Data Science & AI, Univ. Côte d’Azur, France.

Master: H. Delingette, Data Visualization, 6h course, M1 Data Science & AI, Univ. Côte d’Azur, France.

Master: M. Lorenzi, Bayesian Learning, 30h course, Master Data Science, Univ. Côte d’Azur, France.

Master: M. Lorenzi, Model Selection and Resampling Methods, 30h course, Master Data Science, Univ. Côte d’Azur, France.

X. Pennec is a member of the pedagogical council of the Computational biology master QCSBD, Univ. Côte d’Azur, France.

9.2.2. Theses Defended

- Qiao Zheng, Deep learning for cardiac image analysis, Université Côte d’Azur. Started in January 2016. Co-directed by N. Ayache and H. Delingette. Defended on March the 27th, 2019.
- Pawel Mlynarski, Tumor segmentation based on Random Forests and Convolutional Neural Networks trained on partially annotated data, Université Côte d’Azur. Started in December 2015. Co-directed by N. Ayache and H. Delingette. Defended on November the 15th, 2019.
- Raphaël Sivera, Analyse statistique de l’évolution de structures morphologiques partir de séquences temporelles d’IRM, Université Côte d’Azur. Started in October 2015. Co-directed by N. Ayache and H. Delingette and co-supervised by M. Lorenzi and X. Pennec. Defended on November the 29th, 2019.
- Shuman Jia, Population-based Model of Atrial Fibrillation: from Shape Statistics to Group-wise Physiology, Université Côte d’Azur. Started in 2016. Co-directed by M. Sermesant and X. Pennec. Defended on December the 18th 2019.

9.2.3. PhD in progress

- Clément Abi-Nader, Statistical Learning of Heterogeneous Data in Large-Scale Clinical Databases, Université Côte d’Azur. Started in 2017. Co-directed by P. Robert and N. Ayache and supervised by M. Lorenzi.
- Luigi Antelmi, Statistical learning on large databases of heterogeneous imaging, cognitive and behavioural data, Université Côte d’Azur. Started in 2017. Co-directed by P. Robert and N. Ayache and supervised by M. Lorenzi.
- Benoît Audelan, Joint biological and imaging markers for the diagnosis of severe lung diseases. Started in 2018. Co-directed by H. Delingette and N. Ayache.

- Tania-Marina Bacoyannis, Cardiac Imaging and Machine Learning for Electrostructural Tomography, Université Côte d'Azur. Started in 2017. Co-directed by M. Sermesant and H. Cochet.
- Jaume Banús Cobo, Heart & Brain: discovering the link between cardiovascular pathologies and neurodegeneration through biophysical and statistical models of cardiac and brain images, Université Côte d'Azur. Started in 2017. Directed by M. Sermesant and co-supervised by Marco Lorenzi.
- Nicolas Cedilnik, Personalised Modeling for Ventricular Tachycardia Ablation Planning, Université Côte d'Azur. Started in 2017. Co-directed by M. Sermesant and H Cochet.
- Florent Jousse, Analyse statistique de forme, de déformations et d'apparences de surfaces anatomiques pour l'aide à la dermatologie et à la chirurgie plastique. Started in 2019. Cifre fellowship with Quantificare. Co-directed by X. Pennec and H. Delingette.
- Buntheng Ly, Cardiac Image Analysis for Sudden Cardiac Death Prediction, Université Côte d'Azur. Started in 2019. Co-directed by M. Sermesant and H. Cochet.
- Nicolas Guigui, Statistical estimation on Riemannian and affine symmetric spaces with applications to the statistical survey of the brain anatomy, Université Côte d'Azur. Started in 2018. Directed by X. Pennec.
- Yann Thanwerdas, Statistical Dimension Reduction in Non-Linear Manifolds for Brain Shape Analysis, Connectomics & Brain-Computer Interfaces, Université Côte d'Azur. Started in 2019. Directed by X. Pennec.
- Wen Wei, Learning Brain Alterations in Multiple Sclerosis from Multimodal Neuroimaging Data, Université Côte d'Azur. Started in 2016. Co-directed by N.Ayache and O.Colliot.
- Julian Krebs, Robust image registration based on machine learning, Université Côte d'Azur. Started in 2016. Co-directed by H. Delingette and N. Ayache.
- Zihao WANG, Cochlear Implantation Modeling, Planning & Evaluation. Started in 2018. Directed by H. Delingette.
- Hind Dadoun, AI-Based Real Time Diagnosis of Abdominal Ultrasound, Université Côte d'Azur. Started in December 2019. Co-directed by N.Ayache and H.Delingette.
- Paul Tourniaire, AI-based selection of imaging and biological markers predictive of therapy response in lung cancer, Université Côte d'Azur. Started in 2019. Co-directed by N. Ayache and H. Delingette.

9.2.4. *Juries*

- Marco Lorenzi was invited jury member for the PhD defense of Remi Domingues (EURECOM, Sophia Antipolis).
- Xavier Pennec was reviewer and member of the jury for the PhDs of: Line Kuhnel, Univ. Copenhagen, DK, feb. 2019; Maxime Louis, UPMC, Sorbonne Universités, Paris, sep. 2019; Emilie Buessler, Univ. Grenoble-Alpes, Dec. 2019. He was President of the PhD jury of Emmanuelle Poulain, Univ Cote d'Azur, Oct. 2019, and President of the HDR jury of Olivier Commowick, Univ. Rennes, Jun. 2019.
- Maxime Sermesant was a reviewer for the PhD of Kenny Rumindo (Lyon).
- Hervé Delingette was a reviewer and member of the jury in the PhD thesis committee of H. Bertrand (ENST), defended on Jan. 8th 2019, of H. Oliveri (ENS LYon) defended on May 28th 2019.

9.3. Popularization

9.3.1. *Interventions*

- Maxime Sermesant did three 45 minutes interventions on Mathematics and Healthcare at the Jules Ferry High School in Cannes.
- Tania Bacoyannis and Nicolas Cedilnik presented AI for high school teachers and interacted with them on this topic during a day.

MATHNEURO Project-Team

7. Dissemination

7.1. Promoting Scientific Activities

7.1.1. Scientific Events: Organisation

7.1.1.1. General Chair, Scientific Chair

Mathieu Desroches was one of the Program Chairs of the **Waves Côte d'Azur conference**, held in Nice, 4-7 June, 2019.

7.1.1.2. Member of the Organizing Committees

Mathieu Desroches was on the Scientific Committee of the **Waves Côte d'Azur conference**, held in Nice, 4-7 June, 2019.

Olivier Faugeras and Romain Veltz were on the Advisory Board of the **5th International Conference on Mathematical Neuroscience**, held in Copenhagen (Denmark), June 24 - 26, 2019.

7.1.2. Journal

7.1.2.1. Member of the Editorial Boards

Olivier Faugeras is the co-editor in chief of the open access **Journal of Mathematical Neuroscience**. This journal has a 2-year Impact Factor of 2.091.

Mathieu Desroches was Guest Editor of a **Special Issue on "Excitable Dynamics in Neural and Cardiac Systems"** of the journal **Communications in Nonlinear Science and Numerical Simulation**. This journal has 5-year Impact Factor of 3.637.

7.1.2.2. Reviewer - Reviewing Activities

Fabien Campillo acts as a reviewer for Journal of Mathematical Biology.

Mathieu Desroches acts as a reviewer for Physica D, SIAM Journal on Applied Dynamical Systems (SIADS), PLoS Computational Biology, Chaos: An International Journal of Nonlinear Science, Journal of Mathematical Biology, Journal of Neurophysiology, Journal of Mathematical Neuroscience, Nonlinear Dynamics.

Olivier Faugeras acts as a reviewer for the Journal of Mathematical Neuroscience, the Journal of Computational Neuroscience, the SIAM Journal on Applied Dynamical Systems (SIADS).

Martin Krupa acts as a reviewer for Nonlinearity, Proceedings of the National Academy of Sciences of the USA (PNAS), the SIAM Journal of Applied Dynamical Systems (SIADS).

Romain Veltz acts as a reviewer for Neural Computation, eLIFE, SIADS, PNAS, Journal of the Royal Society Interface, Plos Computational Biology and Acta Applicandae Mathematicae.

7.1.3. Invited Talks

Emre Baspinar, "A geometric model with frequency-phase and its application to image enhancement", conference "Shape Analysis in Biology", Sorbonne Université, Paris, November 2019

Emre Baspinar, "A sub-Riemannian cortical model with frequency-phase and its application to orientation map construction.", 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.

Emre Baspinar, "A sub-Riemannian model of the visual cortex based on frequency-phase and its applications" [poster], 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Emre Baspinar, "A sub-Riemannian cortical model with frequency-phase and its application to orientation map construction.", Waves Côte d'Azur Conference, Nice (France), June 2019.

Mathieu Desroches, “Canards in excitatory networks”, XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Mathieu Desroches, “Canards and spike-adding in neural bursters”, International Congress on Industrial and Applied Mathematics (ICIAM), Valencia (Spain), July 2019.

Mathieu Desroches, “Canards in excitatory networks”, SIAM Conference on Application of Dynamical Systems, Snowbird (USA), May 2019.

Mathieu Desroches, “Slow-fast analysis of bursting oscillations: old and new”, Bilateral International Meeting UK-France, Royal Society, Chicheley Hall, Milton Keynes (UK), February 2019.

Olivier Faugeras, “The meanfield limit of a network of Hopfield neurons with correlated synaptic weights”, Bilateral International Meeting UK-France, Royal Society, Chicheley Hall, Milton Keynes (UK), February 2019.

Louisiane Lemaire, “Modeling the initiation of cortical spreading depression triggered by the hyperactivity of GABAergic neurons” [poster], 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.

Louisiane Lemaire, “Modeling the initiation of cortical spreading depression triggered by the hyperactivity of GABAergic neurons” [poster], 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Martin Krupa, “Neuronal mechanisms for sequential activation of memory items”, International Congress on Industrial and Applied Mathematics (ICIAM), Valencia (Spain), July 2019.

Martin Krupa, “Modeling cortical spreading depression induced by the hyperactivity of interneurons”, Waves Côte d’Azur Conference, Nice (France), June 2019.

Simona Olmi, “Cross frequency coupling in next generation inhibitory neural mass models”, Eugene Wigner Colloquium (Physics Colloquium), TU Berlin, Berlin (Germany), December 2019.

Simona Olmi, “Cross frequency coupling in next generation inhibitory neural mass models”, XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Simona Olmi, “Influence of network topology on spreading of epileptic seizure”, Waves Côte d’Azur Conference, Nice (France), June 2019.

Simona Olmi, “Influence of network topology on spreading of epileptic seizure”, XXIV Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi, Parma (Italy), June 2019.

Simona Olmi, “Enhancing power grid synchronization and stability through time delayed feedback control”, EPS conference “Statistical Physics of Complex Systems”, Stockholm (Sweden), May 2019.

Simona Olmi, “The Kuramoto model with inertia: from fireflies to power grids”, School and Workshop on Patterns of Synchrony: Chimera States and Beyond, Trieste (Italy), May 2019.

Yuri Rodrigues, “A stochastic model of postsynaptic plasticity based on dendritic spine Ca^{2+} and downstream proteins”, PhD Seminar, Inria Sophia Antipolis, December 2019.

Yuri Rodrigues, “Towards a stochastic model of excitatory synapse”, 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.

Yuri Rodrigues, “A stochastic model of postsynaptic plasticity based on dendritic spine Ca^{2+} and downstream proteins” [poster], 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Halgurd Taher, “Heuristic mean-field model for short term synaptic plasticity” [poster], XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Halgurd Taher, “Enhancing power grid synchronization and stability through time delayed feedback control”, XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Halgurd Taher, “Mean-field model for short-term synaptic plasticity” [poster], 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.

Romain Veltz, “Dynamics of a mean field limit of interacting 2D nonlinear stochastic spiking neurons”, 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Romain Veltz, “Analysis of a mean field of 2d spiking neurons, theory and numerics”, Bilateral International Meeting UK-France, Royal Society, Chicheley Hall, Milton Keynes (UK), February 2019.

7.1.4. Scientific Expertise

Fabien Campillo was member of the local committee in charge of the scientific selection of visiting scientists (Comité NICE)

Mathieu Desroches was on the Advisory Board of the Complex Systems Academy of the UCA^{JEDI} Idex.

Olivier Faugeras was the President of the study group “Intelligence artificielle” of the *Académie des Sciences de Paris*. As such, he led the audition of experts of this research field, namely for 2019, Jean Ponce, Stéphane Mallat and Francis Bach. This study group has also produced a report for the 2019 G7 meeting.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

Master / Doctorat: Fabien Campillo, **Introduction to Piecewise Deterministic Markov Processes and applications to Neuroscience**, 10 hours, Basque Center for Applied Mathematics (BCAM), Bilbao, Spain.

Master : Mathieu Desroches, **Modèles Mathématiques et Computationnels en Neuroscience (Lectures, example classes and computer labs)**, 30 hours, M1 (BIM), Sorbonne Université, Paris, France.

Master / Doctorat: Mathieu Desroches, **Slow-fast dynamics in bursting neurons**, Tutorial of 3 hours, ICMNS Conference, June 2019.

Master: Romain Veltz, **Mathematical Methods for Neurosciences**, 20 hours, M2 (MVA), Sorbonne Université, Paris, France.

7.2.2. Supervision

PhD in progress : Louisiane Lemaire, “Multi-scale mathematical modeling of cortical spreading depression”, started in October 2018, co-supervised by Mathieu Desroches and Martin Krupa.

PhD in progress: Yuri Rodrigues, “Towards a model of post synaptic excitatory synapse”, started in March 2018, co-supervised by Romain Veltz and Hélène Marie (IPMC, Sophia Antipolis).

PhD in progress: Halgurd Taher, “Next generation neural-mass models”, started in November 2018, co-supervised by Simona Olmi and Mathieu Desroches.

PhD in progress: Quentin Cormier, “Biological spiking neural networks”, started in September 2017, co-supervised by Romain Veltz and Etienne Tanré (Inria TOSCA).

PhD in progress: Pascal Helson, “Study of plasticity laws with stochastic processes”, started in September 2016, co-supervised by Romain Veltz and Etienne Tanré (Inria TOSCA).

PhD in progress: Samuel Nyobe, “Inférence dans les modèles de Markov cachés : Application en foresterie”, started in October 2017, co-supervised by Fabien Campillo, Serge Moto (University of Yaoundé, Camerun) and Vivien Rossi (CIRAD).

7.2.3. Juries

Fabien Campillo was reviewer and member of the jury of the PhD of Nicolas Thomas (École doctorale des sciences mathématiques de Paris centre (ED 386)), thesis of Sorbonne Université entitled “Stochastic numerical methods for Piecewise Deterministic Markov Processes. Applications in Neuroscience”, 20 June 2019.

Mathieu Desroches was examiner and member of the Jury of the HDR of Arnaud Tonnelier (Inria Tripop, Grenoble) entitled “Piecewise linear dynamical systems and excitability”, Inria Rhône Alpes, 20 June 2019.

Mathieu Desroches was reviewer and member of the Jury of the PhD of Marina Esteban (University of Seville, Spain) entitled “Dynamics and Bifurcations of Nonlinear Systems with Hysteresis”, University of Seville (Spain), 4 March 2019.

Mathieu Desroches was member of the Jury of the PhD of Gabriela Capo Rangel (Basque Center for Applied Mathematics, Bilbao) entitled “Computational predictive modeling of integrated cerebral metabolism, electrophysiology and hemodynamics”, University of the Basque Country (Leioa, Spain), 12 February 2019.

MIMESIS Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Reviewer - Reviewing Activities

Members of the teams regularly provide reviews for:

- International conferences and journals on Image Processing and Computer-Assisted Interventions (MICCAI, IPCAI, IJCARS, Medical Image Analysis, Transactions on Medical Imaging)
- International conferences and journals on Computer Graphics and Physics-based modeling (Eurographics, VRIPHYS)
- International conferences on Robotics (IROS, ICRA, EuroHaptics)

10.1.2. Invited Talks

- **Nava Schulmann:** talk on "Bayesian data assimilation" at the Data-driven computational mechanics workshop, New York (USA), February 2019.
- **Hadrien Courtecuisse:** Next Generation Intelligent Surgical Systems workshop, Verona (Italy), November 2019
- **Stéphane Cotin:** Next Generation Intelligent Surgical Systems workshop, Verona (Italy), November 2019
- **Stéphane Cotin:** International Conference on Nonlinear Solid Mechanics, Roma (Italy), June 2019.
- **Stéphane Cotin:** talk on "Digital Twin for medicine" at the Data-driven computational mechanics workshop, Luxembourg, September 2019
- **Stéphane Cotin:** talk on "Patient-specific simulation in medicine" at the Data-driven computational mechanics workshop, February 2019.

10.1.3. Scientific Expertise

Stéphane Cotin provides scientific expertise for Insimo (www.insimo.com).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

- Master: Igor Peterlik, Modélisation des systèmes vivants, 17h, M2, University of Strasbourg
- Master: Igor Peterlik, Visualisation des données et simulation, 10h, M1, University of Strasbourg
- Master: Hadrien Courtecuisse, Real time simulation, 30h, M2, University of Strasbourg
- Master: Hadrien Courtecuisse, Visualisation des données et simulation, 10h, M2, University of Strasbourg
- Master: Hadrien Courtecuisse, Visualisation des données et simulation, 10h, M1, University of Strasbourg

10.2.2. Supervision

PhD : Jaime Garcia Guevara, Augmented ultrasound imaging for hepatic surgery, supervised by Stéphane Cotin, Marie-Odile Berger. Defended on Dec 2nd 2019.

PhD in progress: Raffaella Trivisonne, Computer-aided vascular interventions, started 01/09/2015, supervised by Stéphane Cotin and Erwan Kerrien.

PhD in progress: Nicolas Golse, Navigation using the augmented reality during hepatic surgery, started 01/09/2016, supervised by Stéphane Cotin.

PhD in progress: Sergei Nikolaev, Characterization of boundary conditions for biomechanical modeling of liver, started 01/05/2017, supervised by Stéphane Cotin, co-supervised by Igor Peterlik and Hadrien Courtecuisse.

PhD in progress: Jean-Nicolas Brunet, Characterization of boundary conditions for biomechanical modeling of liver, started 01/09/2017, supervised by Stéphane Cotin.

PhD in progress: Andrea Mendizabal, Numerical simulation of soft tissues and machine learning, 01/09/2017, supervised by Stéphane Cotin.

PhD in progress: Paul Baksic, Robotic assistance for percutaneous surgical interventions in deformable structures – Application to radiofrequency ablation, started 01/10/2018, supervised by Hadrien Courtecuisse.

PhD in progress: Ziqiu Zeng started 01/07/2019, SPERRY - Supervised Robotic Surgery - Application to needle insertion, supervised by Hadrien Courtecuisse.

PhD in progress: Guillaume Mestdagh, started 01/09/2019, Real-Time Tumor Tracking as an Optimization Problem, co-supervised by Stéphane Cotin.

10.2.3. Juries

Stephane Cotin was president of the Ph.D. committee for Lorenzo Sala (September 27, 2019). Mathematics laboratory, Strasbourg

Stephane Cotin was in the Ph.D. committee for Jaime Guevara (December 2, 2019). LORIA, Nancy.

10.3. Popularization

10.3.1. Articles and contents

Stephane Cotin wrote a chapter for the book entitled "Virtual Reality and Augmented Reality - Myths and Realities", which is an easy access book on the usages and developments of Virtual Reality and Augmented Reality for various domains. ISBN 978-1-78630-105-5.

10.3.2. Education

We are developing a training system dedicated to flexible endoscopy, used in university diplomas and masters programs for clinicians.

MNEMOSYNE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Selection

10.1.1.1. Chair of Conference Program Committees

X. Hinaut: Co-organizer of the workshop on language learning at IEEE ICDL-EPIROB 2019, Oslo, Norway, August 2019; of the "Day of the NeuroRobotics Working Group", Nov 2019, Bordeaux, France; Session chair at the CogSci conference, Montréal, Canada. Jul 2019.

N.Rougier: co-chair for the track on Neuroscience and Cognitive science during the SciPy conference (Austin, Texas, USA)

10.1.1.2. Member of the Conference Program Committees

X. Hinaut: IROS Workshop on Deep Probabilistic Generative Models for Cognitive Architecture in Robotics, Macau, China. Nov 2019. International Workshop on Cognitive and Neural Systems, Granada, Spain. Oct 2019.

10.1.1.3. Reviewer

X. Hinaut: CogSci'19, ICANN'19, ICDL-Epirob'19, IWANN'19; S. Pagliarini: ICDL-Epirob'19;

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- Frédéric Alexandre: Academic Editor for PLOS ONE; Review Editor for Frontiers in Neuro-robotics;
- Nicolas Rougier: Editor in chief for ReScience, Academic editor for PeerJ, review editor for Frontiers in Neurorobotics.
- Xavier Hinaut: guest editor in the Journal Advanced Robotics of a special issue on "Machine Learning Methods for High-Level Cognitive-Capabilities-in-Robotics"; guest editor for Frontiers Robotics and AI special issue on "Language and Robotics" <https://www.frontiersin.org/research-topics/8861/language-and-robotics> ; Member of the Editorial Board of Frontiers in Neurorobotics as Review Editor.

10.1.2.2. Reviewer - Reviewing Activities

- F. Alexandre: Elife; EMBC; Frontiers in Neurobotics; Cognitive Computation; PLoS ONE
- Xavier Hinaut: Cognitive Computation, Entropy, Front. in Neurorobotics, Neural Networks, PeerJ, ReScience, IEEE Transactions in Cognitive Developmental Systems (TCDS).
- N.Rougier: Current Biology, PLoS Computational Biology, Journal of Open Science Software, PeerJ

10.1.3. Invited Talks

F. Alexandre:

- Invited speaker at the joint workshop between Inria and LIAMA (The Sino-European Laboratory of Computer Science, Automation and Applied Mathematics), Paris, April 3rd, for the talk: "Setting the basis of a bio-inspired Reinforcement Learning";
- talk to the Interdisciplinary and Translational Neuroscience research network (IT-Neuro) of the University of Lorraine, Nancy, April 25th: "Modeling the frontal cortex for motivated decision making";

- Invited talk “A computational model to study the dynamics of representations of rewards in the orbital and medial frontal cortex”, on October 2nd to the 2019 Bordeaux Neurocampus Conference on Reward <http://brainconf.u-bordeaux.fr/>;
- Invited talk “Trusted AI in medicine” and participation to a round table on december 11th in Merignac at MediSpace congress on transfers of technologies and best practices between space, aeronautical and medical industries <https://www.medispace2019.com/en/presentation-2/>

X. Hinaut:

- “How to ground sensorimotor sequence of symbols ? From robot learning languages to songbirds”, ICDL- Epirob workshop on Language Learning (M. Spranger), Olso, NW. Aug 2019.
- “Random recurrent networks for language and bird song learning”, B. Golosio, Physics dept., University of Cagliari, IT.
- “Modélisation de l’encodage neuronal pour l’apprentissage de séquences complexes : applications à l’interaction homme-robot et aux chants des oiseaux”. LIRIS, Lyon, June 2019.
- “Modèles Neuronaux Récurrents pour le Traitement de Séquences Complexes”, Journée GT-ACAI-Neurorobotique: Neuroscience et multimodalité dans les interactions humain-humain, humain-agent ou humain-robot, ACAI-GT8 common working group day, Telecom ParisTech, Paris, FR.
- “Modélisation de l’encodage neuronal pour l’apprentissage de séquences complexes”, “Acoustic Perception” seminar from ETIS lab, University of Cergy-Pontoise, FR. March 2019.
- “Little Mechanisms of AI: from Ants to Language”, PhD Retreat of Center for Research and Interdisciplinarity of Paris. Arcachon, June 2019.
- “How to ground sensorimotor sequences of symbols? From robot learning languages to songbirds”, ICDL-epirob workshop on Language learning, Oslo, Aug. 2019.
- Symposium organised by regional chair on technological systems for human augmentation, March 28—29, 2019, Bordeaux, France.
- “Echo State Networks”, invited lecture at the International MSc “Intelligent Adaptive Systems”, KT lab, University of Hamburg, Germany, June 2019.

N.Rougier: Invited talk at the “Robotics, development and neurosciences” conference (Cergy, France)

10.1.4. Leadership within the Scientific Community

X. Hinaut:

- Co-Head of the "NeuroRobotics" CNRS Working Group Organisation of several workshops throughout the year
- IEEE Task Force (TF) member: "Reservoir Computing", "Cognitive and Developmental Systems Technical Committee": "Language and Cognition" TF and "Action and Perception" TF.
- President of the association MindLaBDX: “open citizen lab” in Cognitive Sciences and Artificial Intelligence in Bordeaux.

Nicolas Rougier: Editor in chief for ReScience

10.1.5. Scientific Expertise

F. Alexandre is the french expert for Mathematics and Computer Science of the PHC (Hubert Curien Program) Utique for scientific cooperation between France and Tunisia.

Thierry Vieville has been required as expert to review a large neuroscience lab by the HCERES agency. He has also contributed to a large audience report on « AI in the media and creative industries » [25].

10.1.6. Research Administration

- F. Alexandre is member of the steering committee of Inria Bordeaux Sud-Ouest Project Committee; Corresponding scientist for Bordeaux Sud-Ouest of the Inria COERLE ethical committee; Member of the national Inria committee for international chairs; Member of the steering committee of the regional Cluster on Information Technology and Health; of the regional Cluster on Robotics; Expert of the ITMO 'Neurosciences, Sciences Cognitive, Neurologie, Psychiatrie'
- X. Hinaut: Member of the "Committee for Technological Development" of Inria, Bordeaux, FR
- N. Rougier is vice-head of the Mnemosyne team-project; elected member of the Inria Evaluation Committee; IES referent for Inria Bordeaux Sud-Ouest; Member of the committee for researcher recruitment; Member of the steering committee for the BioComp CNRS consortium; Editor in chief and co-founder of ReScience.
- Thierry Viéville is involved in the <http://classcode.fr> project and in charge, for Inria of the **MSc SmartEdTech** at Univ. Cote d'Azur (UCA).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Many courses are given in french universities and schools of engineers at different levels (LMD) by most team members, in computer science, in applied mathematics, in neuroscience and in cognitive science. Thierry Viéville is teaching computational thinking in the **Msc #CreaSmartEdtech** ("Digital Expertise", "Educational Informatics" including Artificial Intelligence and Ontologies, "Digital Intedisciplinary Project ") and is co-organizing this Master of Science. He has been involved in the production of the "Science Numérique et Technologie" (SNT) new high-school course teacher formation, via the creation of a MOOC, with more than 18000 inscriptions, and has collaborated to the qualitative analysis of the course outcomes [18].

In addition, this year, F. Alexandre gave a lecture at the Barcelona Cognition, Brain and Technology Summer School <https://bcbt.specs-lab.com/bcbt19/>.

10.2.2. Juries

In addition to several juries in France, we can note this year a reviewing and participation to a PhD defense in Germany (F. Alexandre)

10.3. Popularization

10.3.1. Articles and contents

- F. Alexandre published an article about AI and neuroscience in The Conversation <https://theconversation.com/de-quelles-facons-lintelligence-artificielle-se-sert-elle-des-neurosciences-124402>
- N. Rougier published article: Pourquoi votre chat est nul aux échecs et pourtant plus intelligent qu'une IA, The Conversation (FR); article: Why your cat is lousy at chess yet way smarter than even the most advanced AI, The Conversation (US); Interview: Et le cerveau dans tout ça ? U magazine (Univ. Bordeaux)

10.3.2. Education

F. Alexandre: A lesson about AI (2 hours) and an unplugged activity about learning and memory (1 hour) given to a high-school class of 2nd on november 14th in Dax for the "1 scientist 1 class : Chiche !" MENJ program.

N. Rougier: Science outreach day at the Montendre high-school on unplugged AI (Montendre, France)

Several people in the team (F. Alexandre, T. Firmo-Drumond, N. Rougier, T. Vieville) participated (talks and demonstrations) to the Day “Activities for teaching AI” organized between Inria Bordeaux and LINE laboratory in Sciences of Education in Nice, June 21st;

10.3.3. Interventions

F. Alexandre:

- Intervention at the annual conference of the Bishops of France (Lourdes, April 2nd), with a conference (“What can medicine expect from AI”) and the organization of a workshop on Robotics for AI;
- Participation to a round table discussion at the Robot Makers Day Festival, Talence, April 12th: “AI: threats and opportunities for our companies: what training for tomorrow’s engineers?”
- conference to the ESME-Sudria School of Engineers, Bordeaux, May 21st: “Is the brain a good model of intelligence ?”
- Conference “Should we be afraid of artificial intelligence?”, at the “Université de tous les savoirs” in Saint Jean de Luz on November 13th http://www.utl-luz.fr/index_002.htm
- Conference: “What can we expect from AI ?”, in the special day “AI and me” organized on November 15-16 by the city of Pontonx-sur-Adour <https://www.pontonx.fr/Pontonx-sur-l-Adour/Agenda-et-actualites/Toutes-les-actus-de-Pontonx/L-intelligence-artificielle>

A. Garenne: intervention about “Artificial Neural Networks and Machine Learning” at a club of companies, Pessac, decembre 12

X. Hinaut:

- "Pint of Science" invited talk, Bordeaux, FR, May 2019.
- "Les petits mécanismes de l'IA", invited talk at the Library of "Le Haillan", FR, April 2019.
- Invited jury member of the world scale hackathon "Créathon", Poitiers, FR, May 2019.
- Invited talk at the Science Fest Day, Cap Sciences, Bordeaux, FR, Oct 2019.

N. Rougier:

- Reboot conference “Will robots dominate us ?” (Bordeaux, France)
- Discussion with the general public about science, fiction and AI at Cap-Sciences (Bordeaux, France)

Thierry Viéville is an active member of [Femmes et Sciences](#), has been invited speaker at [Un rêve pour les filles et les garçons : LA SCIENCE](#) and is involved in dedicated science outreach actions [15].

Several people in the team (F. Alexandre, T. Firmo-Drumond, N. Rougier) participated to the “Trial of AI” on november 20, in the project “The controversy of Bordeaux Macropole” during the festival Facts, program Arts and Sciences of University of Bordeaux. <https://www.youtube.com/watch?v=UI4B4TteRmA> and <https://twitter.com/bdxmacropole>

Intervention by A. Garenne and T. Firmo-Drumond at the inter-university seminar "artificial intelligence and clinical sense", Bordeaux, march 11-12

10.3.4. Creation of media or tools for science outreach

Thanks to fundings from the Bordeaux Museum of Science Cap Sciences (<http://www.cap-sciences.net/>) and from the Fondation Blaise Pascal (<https://www.fondation-blaise-pascal.org/>), we have designed a software tool to run small demonstrative scenarios, to help everyone discover the brain functions at the origin of our sensorimotor and vital cognitive behaviors (instinctive and motivated behavior, selection of embodied action, emotional decision-making, seat of self-awareness, etc.). This resource is for a wide audience to whom we can show scenarios, but also co-build multi-media resources to share methods and knowledge (participatory scientific mediation approach) and to discuss these topics. It is also at the disposal of scientific mediators (researchers and beyond) who wish to co-construct such resources, or to present research results involving the animation of anatomy of the nervous system as well as of users or authors of computer code who want to reuse shared technologies to derive other applications, in particular become familiar with the specification languages (here JSON and markdown).

NEUROSYS Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

Laurent Bougrain is a member of the steering committee of the research network in neuroscience of the university of Lorraine.

Laure Buhry is an elected member of the "Pôle Scientifique AM2I" council of university of Lorraine.

9.1.1. Scientific Events: Organisation

Laurent Bougrain is a member of the organization committee of the scientific days of the research network in neuroscience of the university of Lorraine, April 25th 2019 (topic: emotions, motivation and addictions) & December 5th 2019.

9.1.2. Leadership within the Scientific Community

Laurent Bougrain is a member of the Board of Directors of the scientific society CORTICO for the promotion of Brain-Computer Interfaces in France.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Engineering school: L. Bougrain, Brain-Computer Interfaces, 4.5h, 3rd year, Supelec, France

Engineering school: L. Bougrain, Artificial Intelligence, 61h, 3rd year, Telecom Nancy, France

Engineering school: A. Aussel, Python, Ecole des Mines, Nancy, France

Master: L. Buhry, Algorithms for Artificial Intelligence, 31h, Master of cognitive science, M1, University of Lorraine, France

Master: L. Buhry, Fundamental Artificial Intelligence and data mining, 18h, Master of cognitive science, M1, University of Lorraine, France

Master: L. Buhry, Formalisms for representation and reasoning, 25h, Master of cognitive science, M1, University of Lorraine, France

Master: L. Buhry, Memory and Machine Learning, 38h, Master of cognitive science, M1, University of Lorraine, France

Master: L. Buhry, Computational Neurosciences, 25h, Master of cognitive science/SCMN, M2, University of Lorraine, France

Master: L. Bougrain, Learning and reasoning in the uncertain, 32h, Master of computer science, M2, University of Lorraine, France

Master: S. Rimbart, Brain-Computer Interface, 17h, Master of cognitive sciences, M2, University of Lorraine, France

Master: A. Aussel, Computational Neuroscience, Master of cognitive sciences, M2, University of Lorraine, France

Licence: S. Rimbart, Introduction to Neurosciences, 15h, Licence of cognitive sciences, L1 University of Lorraine, France

Licence: L. Buhry, Programmation Python, 37h, level L1 MIASHS, University of Lorraine, France

Licence: L. Buhry, Probability and statistics, 30h, L1 MIASHS, University of Lorraine, France

Licence: L. Buhry, Artificial Intelligence and problem solvings, 25h, L3 MIASHS, University of Lorraine, France

Licence: L. Bougrain, programming on mobile devices, 17h, Licence of computer science, L3, University of Lorraine, France

Licence: N. Azevedo Carvalho, Mathematics, 64h, L1 SPI, University of Lorraine, France

9.2.2. Supervision

PhD: Amélie Aussel, Extraction of electrophysiological markers and mathematical modelling of the epileptic hippocampus, October 14 2019, Laure Buhry and Radu Ranta (CRAN).

PhD in progress: Sébastien Rimbart, Study of the dynamic of cerebral motor patterns during general anesthesia, January 1st 2016, Axel Hutt and Laurent Bougrain.

PhD in progress: Oleksii Avilov, methods for on-line detection of neural rythm changes in the motor system: application to brain-computer interfaces, June 1st 2018, Patrick Hénaff, Laurent Bougrain and Anton Popov (Kiev Polytechnic institute).

PhD in progress: Nathalie Azevedo Carvalho, a biologically plausible computer model of pathological neuronal oscillations observed in Parkinson's disease, November 1st 2018, Dominique Martinez and Laure Buhry.

9.2.3. Juries

Amélie Aussel, Extraction of electrophysiological markers and mathematical modelling of the epileptic hippocampus, October 14 2016, Univ Lorraine, (Laure Buhry and Radu Ranta, supervisors)

Committee of selection for an assistant professor position MCF69/19 University of Toulouse (2019), Laurent Bougrain

OPIS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. General Chair, Scientific Chair

- F. Malliaros. Organizer of the Summer School in Artificial Intelligence, CentraleSupélec, France, 2019.

10.1.1.2. Member of the Organizing Committees

- H. Talbot. Member of the organizing committee for ICCV 2023 in Paris.
- F. Malliaros. Member of the organizing committee of the International Workshop of Deep Learning for Graphs and Structured Data Embedding (DL4G-SDE), The Web Conference (WWW), San Francisco, California, 2019.
- F. Malliaros. Member of the organizing committee for the special session on Machine Learning with Graphs: Algorithms and Applications, 28th International Conference on Artificial Neural Networks (ICANN), Munich, Germany, 2019.

10.1.2. Scientific Events: Selection

10.1.2.1. Chair of Conference Program Committees

- E. Chouzenoux. Elected member of the EURASIP Signal and Data Analytics for Machine Learning technical committee (since 2018), and of the IEEE Signal Processing Theory and Methods technical committee (since 2017).

10.1.2.2. Member of the Conference Program Committees

- E. Chouzenoux. Organization of a special session at the 45th International Conference on Acoustics, Speech, and Signal Processing, ICASSP 2020.
- M. Castella. Organization of a special session at the 27th European Signal Processing Conference, EUSIPCO 2019.
- F. Malliaros. Member of the program committee at International Conference on Artificial Neural Networks, ICANN 2019.
- J.C. Pesquet. Member of the program committee at GRETSI 2019.
- H. Talbot. Member of the board and program committee at the International Symposium in Mathematical Morphology, which took place in Saarbrücken, Germany, July 2019.
- H. Talbot. Member of the program committee at the conference Discrete Geometry for Computer Imagery, which took place in Noisy-le-Grand, France, March 2019.
- M. Vakalopoulou. Member of the program committee at the Joint Urban Remote Sensing Event (JURSE), 2019.

10.1.2.3. Reviewer

The members of the team reviewed numerous papers for several international conferences, such as for the annual conferences on Computer Vision and Pattern Recognition (CVPR), Medical Image Computing and Computer Assisted Intervention (MICCAI), Neural Information Processing Systems (NIPS) and International Conference on Learning Representations (ICLR), IEEE International Conference and Acoustics Speech and Signal Processing (ICASSP), IEEE International Conference on Image Processing (ICIP), IEEE Statistical Signal Processing workshop (SSP), European Signal Processing Conference (EUSIPCO), AAAI Conference on Artificial Intelligence (AAAI), The Web Conference (WWW), Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), International Conference on Web and Social Media (ICWSM), International Conference on Machine Learning (ICML), Conference on Neural Information Processing Systems (NeurIPS), International Conference on Complex Networks and Their Applications (Complex Networks), International Workshop on Graph-Based Natural Language Processing (TextGraphs).

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Emilie Chouzenoux: Associate Editor at IEEE Transactions on Signal Processing
- Jean-Christophe Pesquet: Associate Editor of the SIAM Journal on Imaging Sciences
- Hugues Talbot: Editor in Chief, Mathematical Morphology, Theory and Applications (De Gruyter).
- Hugues Talbot: Senior area editor for IEEE Signal Processing Letters.

10.1.3.2. Reviewer - Reviewing Activities

- E. Chouzenoux: IEEE Trans. on Image Processing, IEEE Trans. Signal Processing, SIAM Journal on Imaging Science, Journal of Optimization Theory and Applications, Journal of Global Optimization, Journal of Mathematical Imaging and Vision, Inverse Problems.
- J.-C. Pesquet: IEEE Trans. on Signal Processing, IEEE Trans. on Image Processing, IEEE Trans. on Information Theory (IEEE-TI), Signal Processing, SIAM Journal on Optimization, SIAM Journal on Imaging Sciences, Journal of Mathematical Imaging and Vision, Journal of Optimization Theory and Applications, Mathematical Programming.
- F. Malliaros: IEEE Transactions on Knowledge and Data Engineering (TKDE), Applied Network Science, International Journal on Artificial Intelligence Tools (IJAIT).
- H. Talbot: IEEE Pattern Analysis and Machine Intelligence, IEEE Transaction on Image Processing, Computer Vision and Image Understanding, J. on Mathematical Imaging and Vision, Signal Processing Letters, Transactions on Signal Processing. Reviewer for the conferences ACCV, BMVC, CVPR, ICIP, ICML, ISBI, and NeurIPS (ex-NIPS),.
- M. Vakalopoulou: International Journal of Computer Assisted Radiology and Surgery (IJARS), IEEE Trans. on Geoscience and Remote Sensing (TGRS), Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS), ISPRS Journal of Photogrammetry and Remote Sensing, Computer Methods and Programs in Biomedicine (CMPB), Pattern Recognition Letters, Computer Vision and Image Understanding (CVIU), SPIE Optical Engineering (OE), Remote Sensing MDPI.

10.1.4. Invited Talks

- E. Chouzenoux:
 - Polish academy of science, Warsaw, Poland, November 2019
 - University of Edinburgh, UK, October 2019
 - AIP 2019, Grenoble, France, July 2019
 - SPARS 2019, Toulouse, France, 4 July 2019
 - Inria Rennes PANAMA, April 2019
 - Imagine ENPC, Champs-sur-Marne, April 2019
 - Univ. Paris-Dauphine, Paris, March 2019
 - Imaging in Paris, IHP, Paris, February 2019
- J.C. Pesquet:
 - BASP Frontiers Workshop, Villars-sur-Ollon, Suisse, February 2019
 - Modern Maximal Monotone Operator Theory workshop, Vienna, February 2019
 - Workshop on Operator Splitting Methods in Data Analysis, New York, US, March 2019
 - Marseille Université, Juin 2019
 - International Conference on Optimisation, Berlin, August 2019
 - EUSIPCO, A Coruña, Spain, September 2019
 - French-German-Swiss Conference on Optimization, Nice, September 2019
 - Wavelet and Applications workshop, Brussels, November 2019

- H. Talbot:
CentraleSupélec: March 2019, November 2019
Institut Henri Poincaré, Paris, February 2019
- M. Vakalopoulou:
ARTORG Center for Biomedical Engineering Research, University of Bern, March 2019
European Society of Thoracic Imaging 2019, May 2019
Department of Computer Science, Stony Brook University, June 2019
Electrical & Computer Engineering, University of Houston, June 2019
France is AI, October 2019
Intelligence Artificielle et Santé, Faculté de Médecine Paris-Sud, November 2019
Annual Symposium of Belgian Association for Neuro-Oncology, December 2019

10.1.5. Leadership within the Scientific Community

J.-C. Pesquet is senior member of the Institut Universitaire de France and a Fellow of IEEE.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

- Master : E. Chouzenoux. Foundations of Distributed and Large Scale Computing, 26h, M.Sc. in Data Sciences and Business Analytics, 3rd year CentraleSupélec, MVA ENS Cachan, Master Optimization Paris Sud and ESSEC Business School, FR
- Master: E. Chouzenoux. Advanced Machine Learning, 18h, 3rd year CentraleSupélec, FR
- Master: F. Malliaros. Machine Learning, 27h, M.Sc. in Data Sciences and Business Analytics, CentraleSupélec and ESSEC Business School and M.Sc. in Artificial Intelligence, CentraleSupélec, FR.
- Master: F. Malliaros. Introduction to Machine Learning, 33h, 2nd year course at CentraleSupélec, FR.
- Master: F. Malliaros. Mathematical Modeling of Propagation Phenomena – Propagation on Graphs, 15h, 1st year course at CentraleSupélec, FR.
- Master: Oyallon, Edouard. Deep Learning, 24h, 3rd year CentraleSupélec, FR
- Master: Oyallon, Edouard. Reinforcement Learning, 24h, 3rd year CentraleSupélec, FR
- Master : J.C. Pesquet. Advanced course on Optimization, 33h, M1, CentraleSupélec, FR
- Master: J.C. Pesquet. Introduction to Optimization, 6h, MVA ENS Cachan, FR
- Master: Talbot, Hugues. Discrete Optimisation, 2nd year course, CentraleSupélec, 30h, EN
- Master: Talbot, Hugues. Big Data, Techniques and Platforms, M.Sc in Data Science and Business Analytics, CentraleSupélec and ESSEC Business School, 30h, EN
- Master: Talbot, Hugues. Optimisation for AI, M.Sc in AI, CentraleSupélec and ESSEC Business School, 30h, EN
- Master: M. Vakalopoulou. Introduction to Visual Computing, 25h, 3rd year CentraleSupélec, FR
- Master: M. Vakalopoulou. Deep Learning, 25h, 3rd year CentraleSupélec, FR
- Master: M. Vakalopoulou. Introduction to Machine Learning, 33h, 2nd year CentraleSupélec, FR

10.2.2. Lecturing activities

- F. Malliaros. Summer School Artificial Intelligence, July 1-12, 2019, CentraleSupélec.
- J.C. Pesquet. Erwin Schrödinger Institute for Mathematics and Physics in Vienna, 4-6 March 2019, Austria.
- M. Vakalopoulou. Summer School on Artificial Intelligence, July 1-12n 2019, CentraleSupélec.

- E. Chouzenoux. Summer School Sparsity for Physics, Signal and Learning, June 24-27, 2019, Inria Paris.

10.2.3. Supervision

- PhD (defended) : Huu Dien Khue Le, Algorithme des directions alternées non convexe pour graphes: inférence et apprentissage, 2016-2019, supervised by N. Paragios.
- PhD (defended) : Riza Alp Guler, Apprentissage de Correspondances Image-Surface, 2016-2019, supervised by I. Kokkinos and N. Paragios.
- PhD (defended) : Marie-Caroline Corbineau, Fast online optimization algorithms for machine learning and medical imaging, 2016-2019, supervised by E. Chouzenoux and J.-C. Pesquet.
- PhD (defended) : Loubna El Gueddari, Parallel proximal algorithms for compressed sensing MRI reconstruction - Applications to ultra-high magnetic field imaging, 2016-2019, supervised by J.-C. Pesquet and Ph. Ciuciu (Inria PARIETAL).
- PhD (in progress) : Abdulkadir Çelikkanat, Representation learning methods on graphs, 2017-2020, supervised by F. Malliaros and N. Paragios.
- PhD (in progress): Yunshi Huang, Majorization-Minimization approaches for large scale problems in image processing, 2018-2021, supervised by E. Chouzenoux and V. Elvira (Univ. Edinburgh).
- PhD (in progress) : Samy Ammari, Imagerie médicale computationnelle en neuro oncologie, 2019-2022, supervised by C. Balleyguier (Institut Gustave Roussy) and E. Chouzenoux.
- PhD (in progress) : Georgios Panagopoulos, Influence maximization in social networks, 2018-2021, supervised by F. Malliaros and M. Vazirgiannis (École Polytechnique).
- PhD (in progress): Surabhi Jagtap, Graph-based learning from multi-omics data, 2019-2022, supervised by F. Malliaros, J.-C. Pesquet, and L. Duval (IFP Energies Nouvelles).
- PhD (in progress): Kavya Gupta, Neural network solutions for safety of complex systems, 2019-2022, supervised by F. Malliaros, J.-C. Pesquet and F. Kaakai (Thales Group).
- PhD (in progress): Maria Papadomanolaki, Change Detection from Multitemporal High Resolution Data with Deep Learning, 2017-2021, supervised by M. Vakalopoulou and with K. Karantzas.
- PhD (in progress): Mihir Sahasrabudhe, Unsupervised and Weakly Supervised Deep Learning Methods for Computer Vision and Medical Imaging, 2016-2020, supervised by N. Paragios.
- PhD (in progress): Théo Estienne, Improving anticancer therapies efficacy through Machine Learning on Medical Imaging & Genomic Data, 2017-2020, supervised by M. Vakalopoulou and N. Paragios.
- PhD (in progress): Enzo Battistella, Development of novel imaging approaches for tumour phenotype assessment by noninvasive imaging 2017-2020, supervised by M. Vakalopoulou and N. Paragios.
- PhD (in progress): Roger Sun, Deep learning and computer vision approaches on medical imaging and genomic data to improve the prediction of anticancer therapies' efficacy, 2017-2020, supervised by M. Vakalopoulou and N. Paragios.
- PhD (in progress): Ana Neacsu, Méthodes d'apprentissage profond inspirées d'algorithmes de traitement du signal, 2019-2022, supervised by J.-C. Pesquet and C. Burileanu (Politehnica Bucarest).
- PhD (in progress): Sagar Verma, Modélisation, contrôle et supervision de moteurs électriques par réseaux de neurones profonds, 2019-2022, supervised by M. Castella and J.-C. Pesquet.
- PhD (in progress): Maïssa Sghaier, clinical Task-Based Reconstruction in tomosynthesis, 2017-2020, supervised by J.-C. Pesquet and S. Muller (GE Healthcare).
- PhD (in progress): Marion Savanier, Reconstruction 3D interventionnelle, 2019-2022, supervised by E. Chouzenoux and C. Riddell (GE Healthcare).

- PhD (in progress): Arthur Marmin, Rational models optimized exactly for chemical processes improvement, 2017-2020, supervised by M. Castella (Telecom Paristech) and J.-C. Pesquet.
- PhD (in progress): Sylvain Lempereur. Analyse quantitative de la morphologie de poissons aux stades larvaire et juvénile. 2017-2020. Supervised by Hugues Talbot and Jean-Stéphane Joly (CNRS).
- PhD (in progress): Daniel Antunes: Contraintes géométriques et approches variationnelles pour l'analyse d'image. 2016-2019. Supervised by Hugues Talbot and Jacques-Olivier Lachaud (U. Savoie-Mont Blanc)
- PhD (in progress): Marie-Charlotte Poilpre: Méthode de comparaison faciale morphologique, adaptée aux expertise judiciaires, basée sur la modélisation 3D. 2017-2020. Supervised by Hugues Talbot and Vincent Nozick (U. Paris-Est)
- PhD (in progress): Thank Xuan Nguyen. Détection et étude morphologique des sources extragalactiques par analyse variationnelle. 2018-2021. Supervised by Hugues Talbot and Laurent Najman (ESIEE)
- PhD (in progress): Marvin Lerousseau. Apprentissage statistique en imagerie médicale et en génomique pour prédire l'efficacité des thérapies anti-tumorales. 2018-2021. Supervised by Nikos Paragios (Therapanacea), Eric Deutch (IGR) and Hugues Talbot.
- PhD (in progress): Mario Viti. Low-dose assessment of coronal vessel health on CT. 2019-2022. Supervised by Hugues Talbot.

10.2.4. Juries

The faculty members of the team participated to numerous PhD Thesis Committees, HDR Committees and served as Grant Reviewers. Moreover, they serve regularly as a jury Member to Final Engineering Internship and the Research Innovation Project for students of CentraleSupélec, FR.

PARIETAL Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. General Chair, Scientific Chair

Bertrand Thirion co-organized the “Imagerie médicale et intelligence artificielle ” colloque at Collège de France on April, 23rd, 2019.

Thomas Moreau co-organized the Palaisien seminar: a monthly scientific seminar in statistics and statistical learning bringing together researchers in this field working on the Saclay Plateau. The seminar started in November and brings together about fifty researchers (<http://palaisien.herokuapp.com>).

10.1.1.2. Member of the Organizing Committees

Demian Wassermann: MICCAI 2019, ISMRM 2019

Gaël Varoquaux: PyParis 2019

10.1.2. Scientific Events: Selection

10.1.2.1. Member of the Conference Program Committees

- Philippe Ciuciu: Chairman of scientific oral sessions in ISBI 2019 (Venice, Italy), program committee of EUSIPCO 2019.
- Gaël Varoquaux: program committee of NIPS, ICML, ICLR, senior program committee IJCAI.
- Alexandre Gramfort: program committee of NIPS, ICML, ICLR.
- Demian Wassermann: ISMRM 2019
- Thomas Moreau: JDSE 2019

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Philippe Ciuciu: Senior Area Editor of IEEE OJSP
- Alexandre Gramfort: Editor, NeuroImage, Journal of Machine Learning Research (JMLR), Frontiers in Brain Imaging Methods
- Bertrand Thirion: Editor, Frontiers in Brain Imaging Methods
- Gael Varoquaux: Editor, elife

10.1.3.2. Reviewer - Reviewing Activities

- Philippe Ciuciu is reviewer for Nature Communication, Biological Psychiatry, Plos Computational Biology, Neuroimage, Scientific Reports, Journal of Neuroscience, IEEE TSP/TIP/TMI/TCI/SPL, Frontiers in Neuroscience, MRM, SIAM Imaging Science
- Gaël Varoquaux: Nature Methods, JMLR, PLOS Bio, NeuroImage, NeuroImage Clinical, IEEE TMI, Annals of Applied Statistics, Biological Psychiatry, MedIA, Science
- Alexandre Gramfort: JMLR, PLOS Computational Biology, NeuroImage, IEEE TBME, IEEE TMI, IEEE TSP, MedIA, NIPS, ICML, ICLR, ICASSP, Scientific Reports, Frontiers in Brain Imaging Methods, Journal of Neuroscience Methods
- Bertrand Thirion: Nature communications, Neuroimage, Medical Image Analysis, IEEE TMI, PNAS, PLOS Comp Bio, Brain Structure and Function, NIPS, ICML, IPMI, AISTATS

- Denis Engemann: Brain, PLOS Biology, PLOS Computational Biology, Psychological Medicine, Scientific Reports, Neuroimage, Neuroimage Clinical, Human Brain Mapping, Journal of Machine Learning Research, Brain Topography, Brain Connectivity, Journal of Alzheimer's Disease, Neuroscience of Consciousness, PLOS ONE, Frontiers in Neuroscience, Journal of Computational Neuroscience, Psychiatry and Clinical Neurosciences, Sensors
- Demian Wassermann: NeuroImage, MRM, JMRI, Brain Structure and Function, Cortex, MedIA.
- Thomas Moreau: ICML, NeurIPS, EUSIPCO, JDSE, AISTAT, JMLR, TSP, LSP, JMIV
- Olivier Grisel: JMLR

10.1.4. Invited Talks

- Philippe Ciuciu, Ecole Centrale Nantes, Nov. 2019
- Philippe Ciuciu, I3S/CNRS (Sophia-Antipolis), Oct. 2019
- Philippe Ciuciu, Wavelets & Sparsity XVIII, San Diego, Aug. 2019
- Philippe Ciuciu, Collège de France, Apr. 2019
- Denis Engemann, Max Planck Institute AES, Frankfurt, Germany, Jan. 2019
- Denis Engemann, University of Birmingham, Birmingham, UK, Apr. 2019
- Denis Engemann, University of Glasgow, Glasgow, UK, Jun. 2019
- Denis Engemann, Max Planck Institute CBS, Leipzig, Germany, Nov. 2019
- Alexandre Gramfort at IHP, Paris, France, April. 2019
- Alexandre Gramfort at Univ Genoa, Italy, Sept. 2019
- Alexandre Gramfort at Univ Jyväskylä, Finland, May. 2019
- Alexandre Gramfort at Institut Pasteur, Paris, France, June 2019
- Alexandre Gramfort at National Institute of Health, Washington, USA, Oct. 2019
- Bertrand Thirion at Donders Institute, Netherlands Feb. 2019
- Bertrand Thirion at MRC CBU, Cambridge, UK, Nov. 2019
- Bertrand Thirion at INT, Marseille, Nov. 2019
- Bertrand Thirion at GFAIH, Paris, Oct. 2019
- Bertrand Thirion at Université Paris-Sud, faculté de médecine, Nov. 2019
- Bertrand Thirion at Alan Turing Institute, London, June 2019
- Gael Varoquaux at MNI (Montréal), Nov. 2019
- Gael Varoquaux at SparkAISummit, Amsterdam, Oct. 2019
- Gael Varoquaux at PyData Amsterdam, Oct. 2019
- Gael Varoquaux at Mila (Montréal), Sept. 2019
- Gael Varoquaux at Etalab (Paris), June 2019
- Gael Varoquaux at MGH (Harvard), June 2019
- Gael Varoquaux at Yale, June 2019
- Demian Wassermann at NYU, February 2019
- Demian Wassermann at ERC, June 2019
- Demian Wassermann at BWH (Harvard), June 2019
- Demian Wassermann at Stanford, October 2019
- Thomas Moreau **ISMRM, Educational Session, Montreal, Canada, 2019**: "Best Practices & Pitfalls in Applying Machine Learning to Magnetic Resonance Imaging".
- Thomas Moreau **Télécom ParisTech, SMILE seminar, Paris, France, 2019**: "Multivariate Convolutional Sparse Coding for Electromagnetic Brain Signals".

- Thomas Moreau **ENS Paris-Saclay, Centre de Mathématiques et de leurs Applications, MLMDA seminar, Cachan, France, 2019**: "Multivariate Convolutional Sparse Coding for Electromagnetic Brain Signals".
- Thomas Moreau **Telecom ParisTech, Laboratoire Traitement et Communication de l'Information, seminar, Paris, France, 2019**: "Using the Dictionary Structure for efficient Convolutional Dictionary Learning".
- Thomas Moreau **Centre pour l'Énergie Atomique Saclay, Cosmostat, annual seminar day, Saclay, France, 2019**: "Learning Recurring Patterns in Large Signals with Convolutional Dictionary Learning".

10.1.5. Leadership within the Scientific Community

- Demian Wassermann: Organising committee of the BrainHack community — Paris Chapter
- Demian Wassermann: ISMRM and MICCAI action organization towards reducing gender and minority biases.

10.1.6. Scientific Expertise

- Philippe Ciuciu has been reviewer for NWO, The Netherlands (Veni/Vidi/Vici call)
- Philippe Ciuciu has been hired as H2020 expert evaluator for the H2020-WIDESPREAD-2020-5 Twinning RCA programme since Dec 2019.
- Denis Engemann has been reviewer for the Swiss National Science Foundation in 2019
- Alexandre Gramfort has been member of an NSF panel in the USA in January 2019.
- Demian Wassermann FET-OPEN ERCA Action, and DataIA
- Gaël Varoquaux was expert for DataIA

10.1.7. Research Administration

- In Nov 2018, Philippe Ciuciu Elected Vice-Chair of the SAT Biomedical Image & Signal Analytics (EURASIP technical committee) for 2019-2020.
- In Dec 2019, Philippe Ciuciu has been renewed as the IEEE Signal Processing Society Representative for the 2020 IEEE ISBI conference.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master: Alexandre Gramfort, Optimization for Data Science, 20h, Msc 2 Data Science Master Ecole Polytechnique, France

Master: Alexandre Gramfort, DataCamp, 20h, Msc 2 Data Science Master Ecole Polytechnique, France

Master: Alexandre Gramfort, Source Imaging with EEG and MEG, 7h, Msc 2 in Biomedical Imaging at Télécom Paristech

Doctoral School: Alexandre Gramfort, Practical machine learning, 6h, **The mathematics of imaging: the CIRM pre-school**, Marseille, France

Master: Bertrand Thirion, Functional neuroimaging and BCI, 12h, Master MVA, ENS Paris-Saclay, France

Master: Bertrand Thirion, Kshitih Chawla, Thomas Bazeille: tutorial on Nilearn, 8h, INT, Marseille.

Master: Philippe Ciuciu, fMRI course: From acquisition to data Analysis, 6h, Msc 2 in Biomedical Imaging, Université Paris-Sud

Bachelor: Demian Wassermann, CSE201 class, 15h, C++ programming, Ecole Polytechnique

Master: Demian Wassermann, 7h Biomedical Engineering, Msc 2 Biomedical Engineering

Extension: Demian Wassermann, Data Science, 20h, Ecole Polytechnique

Master: Gaël Varoquaux, Machine learning in Python, 3h, ENSAE

Master: Gaël Varoquaux, Functional brain connectivity, 7h, Msc 2 in Biomedical Imaging at Télécom Paristech

Doctoral school: Gaël Varoquaux, representation learning with limited sample, 4h30, Deep Learning Summer School, Warsaw

Doctoral school: Gaël Varoquaux, machine learning for neuroimaging, 3h, Unique days, Montréal

Doctoral school: Gaël Varoquaux, machine learning with scikit-learn, 4h, IBPRIA, Madrid

Master: Thomas Moreau, **Formation continue Telecom ParisTech (7h)** TP pour Machine learning and Python.

Master: Thomas Moreau, **Master Spécialisé courses, Telecom ParisTech (20h)** Assistant TP pour le cours de machine learning avancé.

Master: Thomas Moreau, **Executive Master Statistique et Big Data, Université Paris-Dauphine (9h)** Cours Python pour le machine learning.

Master: Thomas Moreau, **Master Data Science, Université Paris-Saclay (25h)** Cours machine learning associé à un challenge.

Master: Olivier Grisel, **Master Data Science, Université Paris-Saclay (40h)** Cours de Deep Learning.

10.2.2. Supervision

Demian Wassermann has defended his habilitation thesis in May 2019.

The following PhD defenses have taken place

Guillermo Gallardo, "Inferring and comparing structural parcellations of the human brain using diffusion MRI", defended Jan 2019, co-directed by Demian Wassermann

Patricio Cerda, "encoding high-cardinality string categories", defended Nov 2019, directed by Gaël Varoquaux

Jérôme Dockes, "large-scale predictive neuroimaging meta-analyses" defended Nov 2019, directed by Gaël Varoquaux & Fabian Suchanek (Telecom)

Pierre Ablin, defended Nov 2019, directed by Alexandre Gramfort

Mathurin Massias defended Dec 2019, directed by Alexandre Gramfort

Loubna El Guedari, defended Dec 2019, directed by Philippe Ciuciu

Ongoing PhD theses

Kamalakar Daddi, "predictive population analysis for mental health", defense planned Oct 2020, directed by Gaël Varoquaux, Denis Engemann & Bertrand Thirion

Alexis Cvetkov Iliev, "embeddings of database entries", defense planned Oct 2022, directed by Gaël Varoquaux & Alexandre Allauzen (ESPCI)

Hicham Janati, 01/10/2017, coadvised by Alexandre Gramfort and Marco Cuturi

Quentin Bertrand, 01/10/2018, coadvised by Alexandre Gramfort and Joseph Salmon

Hubert Banville, 01/10/2018, coadvised by Alexandre Gramfort and Denis Engemann

David Sabbagh, 01/10/2018, coadvised by Alexandre Gramfort and Denis Engemann

Jérôme-Alexis Chevalier, 01/10/2017, coadvised by Bertrand Thirion and Joseph Salmon

Hugo Richard, 01/10/2018, coadvised by Bertrand Thirion and Olivier Grisel

Thomas Bazeille, 01/10/2018, advised by Bertrand Thirion

Tuan Binh Nguyen, 01/10/2018, coadvised by Bertrand thirion and Sylvain Arlot

Valentin Iovene, 01/10/2018, advised by Demian Wassermann

Antonia Machlouzarides Shalit, 01/10/2018, coadvised by Demian Wassermann and Bertrand Thirion

Hamza Cherkaoui, 01/10/2017, co-advised by Philippe Ciuciu and Thomas Moreau

Zaccharie Ramzi, 01/02/2019, co-advised by Philippe Ciuciu and Jean-Luc Starck

Anaïs Artiges, 01/10/2019, co-advised by Philippe Ciuciu and Cyril Poupon

Guillaume Daval-Fr erot, 01/11/2019, advised by Philippe Ciuciu

Maeliss Jallais, 01/10/2018, advised by Demian Wassermann

Lucas Martin, 01/10/2019, advised by Bertrand Thirion and Julie Josse.

Chengran Fan, 01/10/2019, co-advised by Demian Wassermann and Jing-Rebecca Li

Gaston Zanitti, 01/11/2019, advised by Demian Wassermann

10.2.3. *Juries*

Bertrand Thirion has been involved in the following committees:

- PhD - Florian Tilquin / University of Strasbourg
- PhD - Han Bossier / University of Ghent
- Habilitation - Laurent Oudre / Universit  Paris XIII

Philippe Ciuciu has been involved in the following committees:

- PhD - Marica Pesce (reviewer) / Heriot-Watta University, Edinburgh
- PhD - Christian El Hajj (reviewer) / Ecole Centrale Nantes.

Denis Engemann has been involved in the following committees:

- PhD - Laura Sophie Imperatori, IMT School for Advanced Studies Lucca, Lucca, Italy
- MD - Cyril Touchard, Universit  Paris Diderot (Paris 7)

Gael Varoquaux has been involved in the following committees:

- PhD - Beyrem KHALFAOUI / Mines ParisTech

Alexandre Gramfort has been involved in the following committees:

- PhD - Benjamin Donnot / LRI, Universit  Paris-Sud
- PhD - Belhal Karimi / CMAP, Polytechnique
- PhD - Pedro Rodrigues (reviewer) / GIPSA Lab, Grenoble
- PhD - Kostiantyn Maksymenko (reviewer) / Inria, Sophia
- MD - Cyril Touchard, Universit  Paris Diderot (Paris 7)

Demian Wassermann has been involved in the following committees:

- PhD-midterm - Katrin Rojkova / Universit  Paris-Sorbonne
- Habilitation - Daniel Margulies / Universit  Paris-Sorbonne

10.3. Popularization

10.3.1. *Internal or external Inria responsibilities*

- Philippe Ciuciu has been member of the Inria Saclay scientific commission since 2016
- Denis Engemann has been managing the Twitter accounts of Parietal and the MNE software since 2017
- Alexandre Gramfort is in charge of the Paris-Saclay Center for Data Science
- Alexandre is a Member of the technical development committee of Inria Saclay since Dec 2018
- Bertrand Thirion, head of the Dataia Convergence Institute since January 1st, 2019

- Gaël Varoquaux was Member of the technical development committee of Inria Saclay until Dec 2018
- Gaël Varoquaux is member of the doctoral monitoring committee of Inria Saclay
- Gaël Varoquaux is member of the steering committee of the Paris-Saclay Center for Data Science
- Thomas Moreau: Co-organisation of the weekly Parietal team seminar bringing together the 45 members of the team for short presentations and a longer scientific presentation.
- Gaël Varoquaux is in charge of the scikit-learn consortium

10.3.2. Internal action

- Guillaume Lemaître, Marie Telenczuk, et Lucie Liu have taught a 1-day training on data-science with Python in Nov 2019.

10.3.3. Creation of media or tools for science outreach

- Guillaume Lemaître, Gael Varoquaux, Olivier Grisel started developing new teaching material for MOOC of Scikit-learn to be hosted in 2020 on the FUN platform in collaboration with Loic Esteve and the team members of the Inria Learning Lab).

AIRSEA Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Journal

9.1.1.1. Member of the Editorial Boards

F. Lemarié is associate editor of the Journal of Advances in Modeling Earth Systems (JAMES)

9.1.1.2. Reviewer - Reviewing Activities

E. Blayo: reviewer for Ocean Modelling, Journal of Scientific Computing

F. Lemarié reviewed papers for Q. J. Roy. Meteorol. Soc. , Ocean Model. and J. Adv. Mod. Earth Sys.

9.1.2. Invited Talks

E. Blayo: Journées Tarantola : défis en géosciences, Paris, juin 2019

E. Blayo: Workshop Modélisation océan-atmosphère, Rennes, septembre 2019

F.-X. Le Dimet: The Mathematics of Climate and the Environment, IHP Paris 2019, Nov. 12-15

F. Lemarié has given an invited talk at the Banff International Research Station during the Physics-Dynamics Coupling in Earth System Models workshop [21]

9.1.3. Leadership within the Scientific Community

L. Debreu is the chair of the CNRS-INSU research program LEFE-MANU on mathematical and numerical methods for ocean and atmosphere <https://insu.cnrs.fr/fr/methodes-mathematiques-et-numeriques-manu> since April 2018.

L. Debreu is the coordinator of the national group COMODO (Numerical Models in Oceanography).

L. Debreu is a member of the steering committee of the CROCO ocean model <https://www.croco-ocean.org>

9.1.4. Scientific Expertise

E. Blayo was the head of the HCERES evaluation committee for the Maison de la Simulation (Jan. 2019)

F. Lemarié is a member of the CROCO (<https://www.croco-ocean.org/>) scientific committee in charge of the « numerical methods » topic.

F. Lemarié is a member of the NEMO (<https://www.nemo-ocean.eu/>) Developers Committee as external expert.

9.1.5. Research Administration

E. Blayo is a deputy director of the Jean Kuntzmann Lab.

L. Debreu is a member of the scientific evaluation committee of the French Research Institute for Development (IRD).

E. Arnaud is in charge of the AMAC (Algorithmes, Modeles, Analyses, Calcul) department of the Jean Kuntzmann Lab.

C. Prieur is a member of the Scientific Council of the Mathematical Society of France (SMF).

C. Prieur is a member of the Research Council of UGA.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Licence: E. Blayo, Mathematical analysis, 80h, L1, University Grenoble Alpes, France
- License: E. Arnaud, Mathematics for engineer, 50h, L1, University Grenoble Alpes, France.
- License: E. Arnaud, statistics for biologists, 40h, L2, University Grenoble Alpes, France.
- Licence: C.Kazantsev, Mathematical tools for scientists and engineers, 100h, L1, University Grenoble Alpes, France
- Licence: C.Kazantsev, Mathematics for engineer, 60h, L2, University Grenoble Alpes, France
- Master: E. Blayo, Partial Differential Equations, 45h, M1, University Grenoble Alpes, France
- Master: E. Arnaud, A. Vidard: Inverse problem and data assimilation, 28h, M2, Univ. Grenoble-Alpes, France
- Master: E. Arnaud: Advising students on apprenticeship, 28h, M2, University of Grenoble, France.
- Doctorat: E. Blayo, A. Vidard, Introduction to Data Assimilation, 20h, University Grenoble Alpes, France
- E-learning: E. Arnaud, Mathematics for engineer, L1, Pedagogical resources on <http://math.u-ga.fr> and videos for <http://tinyurl.com/youtube-mat207>
- E-learning: E. Arnaud, Inverse problem and data assimilation, L2, Pedagogical resources on <http://math.u-ga.fr>

9.2.2. Supervision

- Intern : Simon Clément, Study of discretized Schwarz waveform relaxation algorithms, M2R, applied mathematics, UGA, 6 months, E. Blayo and F. Lemarié
- PhD in progress : Sophie Théry, Numerical study of coupling algorithms and boundary layer parameterizations in climate models. October 2017, E. Blayo and F. Lemarié.
- PhD in progress : Emilie Duval, Coupling hydrostatic and nonhydrostatic ocean circulation models. October 2018, L. Debreu and E. Blayo.
- PhD in progress : Long Li, Assimilation d'image pour le suivi de polluants, September 2017, A. Vidard, J.-W. Ma (Harbin University, China).
- PhD in progress: Victor Trappler, Parameter control in presence of uncertainties, October 2017, E. Arnaud, L. Debreu and A. Vidard.
- PhD in progress : Rishabh Batth, Asynchronousparallel in time schemes for data assimilation, December 2019, L. Debreu and A. Vidard.
- PhD in progress : Simon Clément, Numerical analysis for reconciling in space and time the air-sea exchanges and their parameterization. October 2019, E. Blayo and F. Lemarié.
- PhD in progress: Adrien Hirvoas, Development of a data assimilation method for the calibration and continuous update of wind turbines digital twins, May 2018, E. Arnaud, C. Prieur, F. Caleyron
- PhD: Mohamed Reda El Amri, Analyse d'incertitudes et de robustesse pour les modèles à entrées et sorties fonctionnelles,[1], Univ.Grenoble Alpes, April, 29, 2019. Clémentine Prieur, Céline Helbert (Centrale Lyon), funded by IFPEN, in the OQUAIDO chair program.
- Post Doc in progress : Anass El Aouni, Multi-resolution techniques for ocean data assimilation, October 2019, A. Vidard

9.2.3. Juries

Arthur Vidard

Feb. 2019: PhD thesis of Olivier Guillet, INPT Toulouse (reporter)

E. Blayo:

Feb. 12, 2019: PhD thesis of Benoît Pinier, University of Rennes (reporter)

Apr. 5, 2019: HDR thesis of Sophie Ricci, University of Toulouse (reporter)

Oct. 21, 2019: PhD thesis of Jai Chowdhry Beeman, University Grenoble Alpes (president)

Dec. 18, 2019: PhD thesis of Alexandre Devers, University Grenoble Alpes (president)

Arthur Vidard was part of Inria CRCN recruitment juries in Bordeaux–Sud-ouest and Lille-Nord Europe

E. Arnaud is in charge of ATER recruitment in computer sciences, University Grenoble Alpes

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

E.Kazantsev is a member of the Local Commission for Permanent Formation of Inria Grenoble - Rhône-Alpes.

9.3.2. Education

Ch. Kazantsev and E. Blayo are strongly involved in the creation and dissemination of pedagogic suitcases with mathematical activities designed for primary and secondary school (used by 10,000 – 12,000 pupils in 2018-2019). This is done in collaboration with the Rectorat de Grenoble.

E. Arnaud has animation of a "laboratoire des mathématiques", Pablo Neruda School, Saint Martin d'Hères

C. Kazantsev is a member of an IREM group for creation of scientific activities for professional development of secondary schools teachers.

C. Kazantsev is a member of an International Inter-IREM commission, which work on the multi-languages problem for children in the mathematical learning. Three meetings take place in Paris during the year, the first was on September 28.

C. Kazantsev participated to the collaboration program with the Ecole Normale Supérieure de Bamako, Mali. She spent ten days in Bamako to present the modelisation teaching and the purpose and activities of "La Grange des Maths" group. Bamako, ENSup, January, 13-25

C. Kazantsev participated to the "Colloque du cinquantenaire des IREM" with a presentation of the activities of "La Grange des Maths", Besançon, May, 9-11

9.3.3. Interventions

National events:

Ch. Kazantsev and E. Blayo are strongly involved in the creation of "La Grange des maths", a science popularization center that will be located in Varcès (south of Grenoble), which will offer a huge variety of mathematical hands-on exhibits. See <http://www.la-grange-des-maths.fr/>

Ch. Kazantsev participated at the "Culture and mathematical games Salon", Place St Sulpice, Paris, 23-26 May.

Ch. Kazantsev and E. Blayo participated in the "Fête de la Science", October, 12.

E. Arnaud. gave a presentation "(Se) tromper avec les chiffres" at the conference "Sciences et esprit critique, interroger les certitudes", Maison pour la sciences, Académie de Grenoble, 8 nov. 2018, Grenoble.

Public exhibitions

C.Kazantsev participated in the "Oriel des Maths" and in the "Forum des associations" with the presentation of the "La Grange des Maths" center and its activities. Varcès, March, 10.

C.Kazantsev participated at the "Remue-méninges festival" with the presentation of the "Maths à modeler" activities. Echirolles, April, 11.

C.Kazantsev participated to the "Sou des écoles", with the presentation of the "La Grange des Maths" activities. Varcès, June, 15.

C.Kazantsev participated at the "Raout de Domène" with the presentation of mathematical animations. Domene, September, 1.

In educational institutions

E. Blayo gave several outreach talks, in particular for middle school and high school students, and for more general audiences.

C.Kazantsev presented mathematical animations to pupils of the Jean Mermoz scholl in Poisat for about 80 children during 3 hours. Poisat, May, 29.

E. Arnaud gave a talk "(Se) tromper avec les chiffres" for pupils of secondary schools on the 8th of March 2019 and the 2nd of May 2019.

9.3.4. Creation of media or tools for science outreach

C.Kazantsev participated in the edition of the Teachers notebooks which explain and advise how to use the "La Grange Suitcases" (sets of mathematical games, problems and animations) destined for primary and secondary schools teachers as well as for the general public.

C.Kazantsev participated in the creation of mathematical activities that can be autonomously used by schoolchildren of primary and secondary schools and by the general public.

E. Arnaud, in charge of the UGA Idex project math@uga : implementation of a collaborative moodle platform <http://math.u-ga.fr> to share pedagogical resources within teachers and towards students.

E. Arnaud, participation to UGA Idex projects Caseine and data@ugat

ANGE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

Some members of ANGE were in the organizing committees of scientific events.

- J. Sainte-Marie took part of the organization of the 7th EGRIN summer school that took place at Le Lioran from 24th to 27th of June and that gathered 40 researchers ⁰.
- J. Sainte-Marie belongs to the "Groupe de travail Recherche et développement durable" at french ministry of research.
- Y. Penel and N. Aguillon organize the monthly ANGE seminar ⁰. The speakers were : F. Allaire, M. Peruzzetto (IPGP), L. Boittin, S. Junca (Nice), H. Martin, A. Leprevost, M. Parisot, C. Donadello (Besançon), A. Lesieur, M. Rigal, M. Ancellin (Sorbonne Univeristé).
- J. Salomon co-organises the LJLL-Inria meetings ⁰ (twice a month).
- M. Parisot and J. Salomon organized the conference "EmrSim2019" ⁰ from 2nd to 4th July.
- Y. Penel and J. Sainte-Marie organized the session "challenges in geosciences" in the framework of Tarantola days ⁰ from 6 to 7 June.
- C. Guichard co-organized the "Journée d'Accueil des nouveaux recrutés en Mathématiques", at IHP ⁰
- E. Godlewski is the president of the CFEM (commission française pour l'enseignement des mathématiques).
- E. Godlewski took part of the organization of the 50th birthday of the "laboratoire J-L. Lions" by giving a talk "Le rayonnement de l'école Lions. Vers une politique scientifique".

10.1.2. Journal

The summary of the reviewing activities of the team is given in the next table.

Member	Journals
JS	CRAS, SIAM SISC, JCP
CG	Computers and Mathematics with Applications, Numerische Mathematik
EG	M2AN, JCP, AIDE, JEP
MP	Journal of Hydraulic Research, DCDS, JCP, Journal of Computational Science
VM	JCP
JSM	M2AN, JCP, Applied Mathematical Modeling

⁰<https://indico.math.cnrs.fr/event/4391/>

⁰<https://team.inria.fr/ange/gdt-slides/>

⁰<https://project.inria.fr/rencontresljll/fr/>

⁰<https://emrsim2019.sciencesconf.org/>

⁰<https://ange-geophysics.sciencesconf.org/>

⁰<http://postes.smai.emath.fr/apres/accueil/>

10.1.3. Invited Talks

Member	Conference	Location	Date
JS	Colloque d'ouverture 50 ans du LJLL	Roscoff	4-8/3
NA	Séminaire Centrale Paris	Saclay	05/12
NA	journée de clôture MANON	Paris	March
NA	journée Tarantola : défis en géosciences	Paris	June
VD	CEMRACS	Marseille	13/08
VD	Congrès SMAI	Guidel	16/05
VD	EGRIN	Le Liorant	25/06
CG	journée Tarantola : défis en géosciences	Paris	June
FA	GdT ANGE	Inria Paris	23/01
YP	séminaire de l'équipe ACSIOM	Montpellier	19/02
YP	séminaire d'analyse appliquée	Amiens	14/01
YP	Congrès SMAI	Guidel	16/05
YP	Ecole EGRIN	Le Liorant	24/06
YP	ICIAM	Valencia (Spain)	16/07
MP	séminaire de l'IRMAR	Rennes	28/02
MP	Cours sur les modèles dispersif	Aachen	22-24/10
MP	Séminaire d'équipe d'analyse numérique	Aachen	31/10
VM	Nommer, modéliser, représenter le hasard dans les arts et les sciences	Arras	15/03
VM	AI for Climate	Paris	20/09
VM	Séminaire du laboratoire Jacques-Louis Lions	Paris	25/10
VM	AI, data and models for sustainable development, COP25	Madrid	3/12
JSM	"Geophysical flows - From hydrostatic to non-hydrostatic models"	Malaga	22/09

10.1.4. Research Administration

- J. Sainte-Marie is now "Adjoint au Directeur Scientifique" of Inria, in charge of the topic "Sciences de la planète, de l'environnement et de l'énergie".
- J. Salomon belongs to Inria's "Commission des emplois scientifiques".

10.2. Teaching - Supervision - Juries**10.2.1. Teaching****10.2.2. Supervision and Jury**

Table 3. Teaching (1/2)

Member	Topic	Duration	Level	Institution	Type (CM,TD,TP)
JS	Méthodes numériques pour des modèles incluant des EDP	45	M2	Université d'Abomey-Calavi, Bénin	CM
JS	Méthodes numériques pour des modèles incluant des EDP	45	M2	Univ. Paris-Dauphine	CM
VD	Mathématiques appliquées	32	L3	Polytech Sorbonne	TP
VD	Traitement numérique	14+22	M1	Polytech Sorbonne	CM+TP
VD	Initiation Latex	4	L3	Polytech Sorbonne	CM
LL	Méthodes numériques pour les équations différentielles	24	L3	Sorbonne Université	TP
LL	Mathématiques pour les études scientifiques I	102	L1	Sorbonne Université	TD
LL	Mathématiques pour DU RESPE S2	12	L0	Sorbonne Université	CM+TD
LL	Mathématiques pour DU RESPE S1	10	L0	Sorbonne Université	CM+TD
NA	Topologie et calcul différentielle	111	L2	Sorbonne Université	CM+TD
NA	Projet	15	L3	Sorbonne Université	TD
CG	Fondements des méthodes numériques	58	M1	SU	TP
CG	Méthodes numériques	31	M2	SU	CM+TD
CG	Co responsable de la majeure Ingénierie Mathématiques pour l'Entreprise		M2	SU	
BDM	Analyse et TP Python Sage algèbre et analyse	72	L2	Univ. Corse	C+TD+TP
BDM	Analyse numérique matricielle	54	L3	Univ. Corse	C+TD+TP
EG	Modèles hyperboliques d'écoulements complexes dans le domaine de l'énergie	10	M2	SU	CM
NB	Analyse2	15	L1	Paris13	TD
NB	Analyse3: Intégrales et séries	30	L2	Paris13	TD

Table 4. Teaching (2/2)

Member	Topic	Duration	Level	Institution	Type (CM,TD,TP)
JS	VM	Simulation de la dispersion atmosphérique	3	M2	ENPC
VM	Assimilation de données pour la géophysique	7	M2	ENPC	TP
JH	Méthodes numériques pour les équations différentielles	25	L3	Sorbonne Université	TP
JH	Analyse Appliquée	40	L3	Sorbonne Université	TD
EA	Equations différentielles	30	L3	Paris13	TD
EA	Optimisation différentiable	30	M1	Paris13	TD
EA	Mécanique des fluides	18	M1	Paris13	CM
EA	Calcul scientifique	30	L2	Paris13	CM+TD
YP	Equations différentielles	15	L2	Paris 13	CM+TD

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- J. Salomon is a member of the "Commission Mentorat" in view of introducing a mentoring procedure in Inria-Paris,
- Y. Penel and C. Guichard belong to the "Groupe de travail Developpement Durable d'Inria Paris",
- J. Sainte-Marie took part of the committee MakeSenSe, that produced the report [14].

10.3.2. Education

- Congrès MATH.en.JEANS (CentraleSupélec, Modélisation de certains écoulements),
- E. Godlewski and J. Salomon dealt with secondary-school pupils in the framework of observation training course at LJLL and Inria, respectively,
- N. Aguillon was in the organizing committee of "Mathematic Park",
- N. Aguillon was in the organizing committee of "Cycle SMAI-Musée des arts et métiers",
- J. Salomon co-organized the stand "Logiciel Libre" at the "Salon Culture et Jeux mathématiques, 2019".

10.3.3. Interventions

- J. Sainte-Marie organized a round-table discussion about "Mathématiques et environnement" at the "Forum Emploi-Math 2019" (14/11).
- J. Sainte-Marie organized a debate "la sobriété numérique" at "cité des Sciences et de l'industrie" (15/11).

Table 5. Supervision of thesis and intership (1/2)

Member	Other advisors	Type	Student	Institution	Period	Title
JS		PhD	Sebastian Reyes-Riffo	Paris-Dauphine	2016-2019	Méthodes numériques pour les énergies marines renouvelables
JS, VM		PhD	Antoine Lesieur	Inria	2017-2020	Estimation d'état et modélisation inverse appliquées à la pollution sonore en milieu urbain
JS		PhD	Nadia Jbili	Paris-Dauphine	2016-2019	Contrôle optimal pour la résonance magnétique nucléaire
JS, JSM		PhD	Liudi Lu	Inria	2018-2021	Approches Lagrangiennes pour la modélisation et l'optimisation du couplage hydrodynamique-photosynthèse
JSM, VM		PhD	Frédéric Allaire	Inria	2017-2020	Quantification du risque incendie par méta-modélisation de la propagation de feux de forêt
YP, CG, JSM		PhD	Virgile Dubos	SU	2017-2020	Numerical methods for the elliptic/parabolic parts of non-hydrostatic fluid models
NA, EA, MP		PhD	Nelly BOULOS	Paris 13	2018-2021	Modélisation et simulation numérique de la dynamique d'un aquifère érodable
VM	Isabelle Herlin	PhD	Ngoc Bao Tran Le	Inria	2016-2019	Uncertainty quantification based on model reduction for atmospheric dispersion
VM		Post Doc	Janelle Hammond	Inria	2017-2020	Uncertainty quantification, metamodeling and data assimilation applied to urban air quality
EA,MP,JSM		PhD	Léa Boittin	inria	2016-2019	Modelling, analysis and efficient numerical resolution for erosion processes

Table 6. Supervision of thesis and intership (2/2)

NA		Stage M2	Mathieu Rigal	UPMC	2019	Schéma exact sur les chocs isolés pour les équations de St Venant avec topographie
NA, JSM	Nathalie Ayi	PhD	Mathieu Rigal	UPMC	2019-2022	Low Froude regime and dispersive effects in kinetic formulations
BDM, JSM		Stage M2	Chourouk El Hassanieh	Inria	04-08/2019	Multilayer Shallow Water Equations: Derivation, Properties, and Well Posedness
BDM, JSM	Samer Israwi	PhD	Chourouk El Hassanieh	Inria	2019-2022	Mathematical and numerical analysis of some dispersive models in fluids mechanics

Table 7. Participation to committees

Initiales	Mois	Type (PhD, HdR)	Rôle (rapp., prés., mbre)	Prénom Nom candidat	Etablissement	Titre
JS	Novembre	PhD	rapporteur	Pierre-Yves Wuillaume	Ecole Centrale de Nantes	Simulation numérique des opérations d'installation pour les fermes d'éoliennes offshore
NA	juillet	PhD	examinatrice	Mostafa Kadiri	Normandie Université	Optimisation de forme et applications aux ouvrages hydrauliques
CG	mars	PhD	examinatrice	Patrik Daniel	SU et Inria	Adaptive hp-finite elements with guaranteed error contraction and inexact multilevel solvers
CG	septembre	PhD	examinatrice	Pierrick Quemar	Paris 13 et EDF	MODELING AND NUMERICAL ANALYSIS OF FREE SURFACE FLOWS
CG	novembre	PhD	invitée	Karine LAURENT	IFPEN et Univ. Paris Saclay	Étude de nouveaux schémas numériques pour la simulation des écoulements à rapport de mobilités défavorable dans un contexte EOR
JSM	novembre	PhD	examinateur	Sebastian Reyes Riffo	PSL	Méthodes mathématiques pour l'extraction d'énergie marine
JSM	décembre	PhD	rapporteur	H. Boukili	univ. Marseille	Schémas de simulation d'un modèle à trois phases immiscibles pour application à l'explosion vapeur
EG	novembre	thèse (PhD)	présidente	Jean-François Abadie	SU	Estimations fiables d'une fonction et de ses dérivées & Étude théorique et numérique d'un problème de "shape from shading"
YP	novembre	PhD	rapporteur	Victor Osoro	Univ. Concepcion, Chile	On multilayer shallow water systems for polydisperse sedimentation

CASTOR Project-Team

6. Dissemination

6.1. Promoting Scientific Activities

6.1.1. Journal

6.1.1.1. Member of the Editorial Boards

- J. Blum is member of the editorial board of the Journal Scientific Computing.
- F. Rapetti is member of the editorial board of the Advances in Computational Mathematics (ACOM) journal by Springer
- C. Boulbe is managing editor of the SMAI Journal of Computational Mathematics

6.1.1.2. Reviewer - Reviewing Activities

- H. Guillard has been reviewer for the Journal of Computational physics, Computers and Fluids and International Journal for Numerical methods in Fluids.

6.1.2. Invited Talks

- F. Rapetti: Keynote speaker at the Enumath conference (Egmond aan Zee), oct 2019, "High-order Whitney forms on simplices"

6.1.3. Leadership within the Scientific Community

- H. Guillard is coordinator of the topic "Turbulence and transport of edge plasma" within the Fédération FR-FCM

6.2. Teaching - Supervision - Juries

6.2.1. Teaching

Licence : F. Rapetti, Mathématiques 2,30h équivalent TD, L2, Université Cote d'Azur, France

Master : F. Rapetti, Méthodes numériques, 70h équivalent TD, M1, Université Cote d'Azur, France

Ecole d'ingénieur, C. Boulbe, Analyse Numérique 2, 45 équivalent TD, niveau L3, Université Cote d'Azur

Ecole d'ingénieur, C. Boulbe, Analyse numérique 1, 71h équivalent TD, niveau L3, Université Cote d'Azur

Ecole d'ingénieur, C. Boulbe, Algèbre linéaire et Scilab, 26h équivalent TD, Université Cote d'Azur

Ecole d'ingénieur, C. Boulbe, Projet 1, 41h équivalent TD, Université Cote d'Azur

Licence: A. Sangam, Mathématiques Fondements 1, 60h, Semestre 1 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Méthodes Mathématiques - Approche Continue, 30h, Semestre 1 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Mathématiques Compléments 1, 5h, Semestre 1 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Mathématiques Fondements 2, 6h, Semestre 2 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Analyse 2, 2h, L2, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Analyse Numérique, 70h, L3, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Calcul Différentiel, 20h, L3, Université Nice Sophia Antipolis, France

Ecole d'ingénieur/Master: B. Nkonga, Méthode des éléments finis, 24h, M2, Polytech Nice Sophia, France

Ecole d'ingénieur/Master: B. Nkonga, Eléments finis mixtes, 24h, M2, Polytech Nice Sophia, France

6.2.2. Supervision

PhD : Xiao Song, Model-based Control-oriented Scenario Construction in Tokamaks, Université Cote d'Azur, 6 décembre 2019, Blaise Faugeras, Holger Heumann

PhD in progress : Ali Elarif, "Simulation numérique des instabilités magnétohydrodynamique dans les Tokamaks", October 2017, Hervé Guillard

6.2.3. Juries

- Hervé Guillard has been part of the jury for the Phd defence of Corentin Prigent, "Etude numérique et modélisation du modèle d'Euler bi-température : point de vue cinétique", Bordeaux University, 24/10/2019.
- Hervé Guillard was referee for the Phd jury of Clément Colas, "Formulation intégrale implicite pour la modélisation d'écoulements fluides en milieux encombrés", AMU University, 14/11/2019.
- Hervé Guillard has been part of the jury for the Phd defence of Quentin Carmouze, "Modélisation et simulation numérique des écoulements diphasiques denses et dilués", Nice University, 28/12/2019.
- F. Rapetti: Juan Antonio Soler Vasco, Univ. Aix-Marseille, Sep. 2019.
- F. Rapetti: Anouk Nicolopoulos-Salle, Univ. Sorbonne Paris, Déc. 2019.
- B. Faugeras, H. Heumann, H. Guillard and J. Blum: Xiao Song, Université Cote d'Azur, Dec. 2019

COFFEE Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Journal

8.1.1.1. Member of the Editorial Boards

Thierry Goudon is Co-Ed. in Chief SMAI J. Comput. Math.

8.1.1.2. Reviewer - Reviewing Activities

The team members serve regularly as reviewers for journals in applied mathematics, scientific computing, numerical analysis, mathematical analysis.

8.1.2. Scientific Expertise

T. Goudon has been chair of the international panel of experts for the evaluation of all the Research Units of Mathematics in Portugal, nominated by the **Fundação para a Ciência e a Tecnologia**. Not only the panel had to write an assessment (see <https://www.fct.pt/apoios/unidades/avaliacoes/2017/docs/Mathematics.pdf>) on the scientific production and activities of the research units, but it was also in charge of the attribution of the funding, PhD and postdoc fellowships, for a total amount of 5.5 MEUR (see https://www.fct.pt/apoios/unidades/avaliacoes/2017/docs/Mathematics_table.pdf).

T. Goudon is Scientific Officer at the Ministry of Research.

T. Goudon is member of the scientific boards of CIRM and FSMP.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Florent Berthelin, Master2 Mathématiques fondamentales, Université Côte d'Azur, 120h.

Florent Berthelin, Chair of the Master 2 Mathématiques fondamentales, Université Côte d'Azur.

Florent Berthelin, Analysis, L2, Université Nice Sophia Antipolis, 72h.

Laurent Monasse, Numerical analysis, L3, Université Nice Sophia Antipolis, 40h.

Thierry Goudon is President of the national competition to hire teachers (agregation de mathématiques).

8.2.2. Supervision

- PhD: Giulia Lissonni, DDFV methods and domain decomposition: applications in fluid mechanics, 04 October 2019, Stella Krell and Thierry Goudon.
- PhD in progress: Kevin Atsou, Mathematical modeling of tumor growth, analysis and simulation, 01 October 2017, Thierry Goudon
- PhD in progress: Billel Guelmame, Conservation laws in mechanics, 01 October 2017, Stéphane Junca
- PhD in progress: Leo Vivion, Dynamical model of a Lorentz gas: kinetic approach, analysis and asymptotic issues, 01 September 2017, Thierry Goudon
- PhD in progress: Frédéric Marazzato, Modeling of fracture and fragmentation using a Discrete Element method, 01 October 2016, Alexandre Ern, Karam Sab and Laurent Monasse.
- PhD in progress: Nadine Dirani, Effect of a shock wave on a structure with contact, 01 November 2018, Thierry Goudon and Laurent Monasse.

8.2.3. Juries

T. Goudon has been reviewer for the PhD theses:

- Z. Karaki, "Équations cinétiques avec champ magnétique", Nantes, Dec. 2019.
- M. Mezache, "Processus oscillatoires lors de l'agrégation et la fragmentation des fibres amyloïdes", Sorbonne Univ., Dec. 2019.

FLUMINANCE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Selection

Jocelyne Erhel is member of

- the international advisory committee of the parallel CFD conferences (Antalya, May 2019).
- the program committee of the workshop Visualization in Environmental Sciences 2019 (co-event of EuroVis).
- the scientific Committee of the workshop "Parallel solution methods for systems arising from PDEs" (Marseille, September 2019).
- the scientific Committee of the conference SimRace (IFPEN, Rueil-Malmaison, scheduled in December 2019 and postponed in 2020).

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

Jocelyne Erhel

- member of the editorial board of ETNA.
- member of the editorial board of ESAIM:Proceedings and Surveys.

Etienne Mémin

- Associate editor for the Int. Journal of Computer Vision (IJCV)
- Associate editor for the Image and Vision Computing Journal (IVC)

9.1.2.2. Reviewer - Reviewing Activities

Jocelyne Erhel: Reviewer for the journals Computational Geosciences, SISC, M2AN, JCAM, PARCO

Dominique Heitz: Reviewer for Exp. in Fluids, AMI Région Auvergne Rhone Alpes

Etienne Mémin: Reviewer for Tellus-A, Quat. J. of the Roy. Met. Soc., Journ. of Fluid Mech., Im. Vis. Comp., Exp. in Fluids, Journ. of Comp. Phys.

Gilles Tissot: Reviewer for Journal of Sound and Vibration, Fluid Dynamics Research.

9.1.3. Invited Talks

Werner Bauer

- European Numerical Mathematics and Advanced Applications Conference 2019, Egmond aan Zee, The Netherlands.
- Seminar talk at IRMAR, University of Rennes, France.
- Seminar talk at the Journée Rennes-Nantes d'Analyse 2019, University of Nantes, France.

Jocelyne Erhel

- Workshop on "Reactive transport modeling", IPGP, Paris, June 2019.
- Workshop on "Parallel Solution Methods for Systems Arising from PDEs", Marseille, France, September 2019.
- Workshop on "Advances in the Simulation of reactive flow and TRANsport in porous Media (SITRAM)",

Etienne Mémin

- Workshop Big data, data assimilation, and uncertainty quantification, IHP, Paris (France), 12-15 November 2019
- Workshop on stochastic parameterizations and their use in data assimilation 1-5 July 2019 Imperial College London
- Equadif 2019, Leiden The Netherland, July 2019
- EGU, Vienna, Austria, April 2019
- Workshop on Conservation Principles, Data & Uncertainty in Atmosphere-Ocean Modelling”, Potsdam, Germany April 2019

9.1.4. Leadership within the Scientific Community

- J. Erhel is scientific coordinator of the website Interstices (since June 2012). <https://interstices.info>.

9.1.5. Scientific Expertise

- J. Erhel is a member of the scientific council of IFPEN, since April 2016.

9.1.6. Research Administration

Jocelyne Erhel

- the Inria administrative commission (CAP) for researchers, 2016-2019.
- the maths thesis committee of IRMAR, 2017-2019.
- the selection committee for PhD grants of OSUR, 2019.

Dominique Heitz

- Responsible of the Irstea ACTA Team
- Member of Irstea OPAALE research unit Executive Committee
- Member of Pôle Cristal scientific council
- D. Heitz is a member of scientific council of CSTB’s Jules Verne Wind Tunnel

Roger Lewandowski

- President du Comité de liaison du groupe GAMNI-SMAI
- President of the Blaise Pascal award jury
- President of GAMNI-SMAI PhD thesis award
- Corresponding person of the SMAI in Rennes
- Responsible of the group "Mathematical modeling" of IRMAR
- Member of the scientific council of IRMAR,
- Member of Mathematical teaching council of U. Rennes I
- Member of the scientific council of the Henri Lebesgue Centre

Etienne Mémin

- Member of the scientific council of LEFE-MANU action of CNRS INSU
- Member of the comity GAMNI-SMAI

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: Jocelyne Erhel, Optimisation, 12h, niveau L3, ENSAI Rennes

Licence : Dominique Heitz, Mécanique des fluides, 30h, niveau L2 INSA Rennes

Master: Jocelyne Erhel, arithmétique flottante, 4h, niveau M1, INSA Rennes

Master : Dominique Heitz, Mécanique des fluides, 25h, niveau M1, Dep GMA INSA Rennes

Master: Roger Lewandowski, Euler and the Navier-Stokes equations, M2, master « fondamentale mathematics ».

Master : Etienne Mémin, Analyse du mouvement, Master Informatique, 15h, niveau M2, Université de Rennes 1.

Master : Etienne Mémin, Vision par ordinateur , 15h, niveau M2, ESIR Université de Rennes 1.

Master : Etienne Mémin, Motion analysis , 9h, Master 2 SISEA Université de Rennes 1.

Master : Gilles Tissot, mathematics for acoustics, 20h, niveau M1, Université du Mans.

9.2.2. Supervision

PhD in progress: Bastien Hamlat, University of Rennes 1, October 2016, co-advisors Jocelyne Erhel and A. Michel.

PhD in progress : Long Li, Data assimilation and stochastic transport for the upper ocean dynamics, started November 2017, Etienne Mémin.

PhD in progress : Yacine Ben Ali, Variational assimilation of RANS models for wind engineering, started November 2017, Dominique Heitz, Etienne Mémin, Gilles Tissot.

PhD in progress : Dinh Duong Nguyen, Regular and singular solutions of Navier-Stokes equations with eddy viscosity, started September 2017 , Roger Lewandowski.

PhD in progress : Robin Billard, Modelling of non-conventional perforated acoustic liners, Université du Mans, started December 2017, Gilles Tissot.

9.2.3. Juries

Jocelyne Erhel

- Etienne Ahusborde, HdR, Univ. Strasbourg (rapporteur)
- Benoit Pinier, PhD, Univ. Rennes (examinatrice)
- Quentin Tournois, PhD, Univ. Rennes (examinatrice)

Etienne Mémin

- Anthony Fillion, Ecoles des Ponts, U. Paris-Est (Rapporteur)
- Alban Farchi, Ecoles des Ponts, U. Paris-Est (Examineur)
- Arthur Pajot, Sorbonne Université, (Rapporteur)

9.3. Popularization

9.3.1. Education

Jocelyne Erhel

- présidente du jury du rallye de mathématiques du CNED, since 2017.

9.3.2. Interventions

Jocelyne Erhel

- conference about spreading epidemics, "les amphis lycéens 2018-2019", March 2019.
- conference about spreading epidemics, "les amphis lycéens 2019-2020", December 2019. [46].

9.3.3. Creation of media or tools for science outreach

Jocelyne Erhel

- was scientific coordinator of the website Interstices (June 2012 - September 2019). She is now member of the editorial board, from October 2019.

LEMON Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Selection

9.1.1.1. Member of the Conference Program Committees

Gwladys Toulemonde is member of the scientific committee of Spatial Statistics 2019 (Sitges, Spain)

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

Gwladys Toulemonde is guest editor of a special issue of the Journal Spatial Statistics entitled Space-time modeling of rare events and environmental risks. This special issue is related to the conference METMA 9 organized in 2018 in Montpellier by Gwladys Toulemonde and Liliane Bel.

Antoine Rousseau is associate editor of Discrete and Continuous Dynamical Systems series S **DCDS-S**.

9.1.2.2. Reviewer - Reviewing Activities

Carole Delenne is a reviewer for Journal of Hydraulic Research, Water, Computers Environment and Urban Systems (1 to 3 manuscripts/year)

Vincent Guinot is a reviewer for Journal of Hydrology, Advances in Water Resources, Mathematical Problems in Engineering (3 manuscripts/year)

Antoine Rousseau is a reviewer for Journal of Hydrology and Environmental Modeling & Assessment (3 manuscripts/year)

Pascal Finaud-Guyot is a reviewer for Journal of Hydroinformatics, Advances in Water Resources, Environmental Modelling and Software, Journal of Hydrology (2 manuscripts/year)

Gwladys Toulemonde is a reviewer for computational statistics and data analysis, Dependence modeling, Extremes, Journal of applied Statistics, Journal of Statistical Theory and Practice, Statistics and Computing, Water Ressources research (1 to 3 manuscripts/year)

9.1.3. Invited Talks

Gwladys Toulemonde was invited in a session of the Extreme Value Analysis (EVA) conference in July, 2019 (Zagreb, Croatia).

Gwladys Toulemonde was invited in a session of the ERCIM-CMStatistics conference in December, 2019 (London, UK).

Antoine Rousseau was invited at side event on AI and numerical modelling at COP25 (Madrid, Spain) in December 2019.

9.1.4. Leadership within the Scientific Community

Antoine Rousseau is the scientific coordinator of the the research line *advanced modeling for marine energy* at MERIC (Santiago, Chile).

9.1.5. Scientific Expertise

Gwladys Toulemonde is appointed by the Occitanie region to the scientific board in charge of innovation projects in the field of intelligent systems and digital data chain

Antoine Rousseau is member of the international scientific board of the Climat-AmSud program

9.1.6. Research Administration

Vincent Guinot is head of the ETH team at HSM (10 staff members),

Vincent Guinot is a member of the HSM steering board,

Carole Delenne is elected member of the HSM board (UMR 5569),

Antoine Rousseau is head of the LEMON team at Inria CRI-SAM (5 staff members),

Antoine Rousseau is a member of the Inria CRI-SAM steering board (*Comité des Projets*)

Antoine Rousseau is a member of the Inria CRI-SAM scientific board (*Bureau du Comité des Projets*)

Gwladys Toulemonde is elected member of the IMAG board (UMR 5149)

Gwladys Toulemonde is elected member of the MIPS Scientific Department (Mathematics, Computer Science, Physics and Systems), a component of the University of Montpellier

Gwladys Toulemonde is elected member of the French Statistical Society board (*Société Française de Statistique, SFdS*) and vice-president since July 2019

Gwladys Toulemonde is elected member of Environment group of the French Statistical Society board (*Société Française de Statistique, SFdS*)

Gwladys Toulemonde is elected member of the liaison committee of the MAS Group (*Modélisation Aléatoire et Statistique*), SMAI (*Société de Mathématiques Appliquées et Industrielles*)

Gwladys Toulemonde was appointed in 2019 external member of a MCF recruitment at the university of Compiègne (MCF 4121, section CNU 26).

Gwladys Toulemonde was appointed in 2019 external member of a MCF recruitment at the university of Nice (MCF 4576, section CNU 26).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Four LEMON permanent members (out of five) are university staff and have teaching duties. Most of their lectures are given at master level at Polytech Montpellier in the departments Informatics and Management (IG), Water Sciences and Technologies (STE) and Water and Civil Engineering (EGC) as well in other courses of University of Montpellier. The teaching load is summarized in Table 1.

Gwladys Toulemonde is responsible for student recruitment at the IG department (Polytech Montpellier).

Table 1. Teaching

Antoine Rousseau	Teaching M1 level: 0 to 30 hrs/year Student supervision: 50 hrs/year
Carole Delenne	Teaching L1-M2 level: 200-250 hrs/year hydraulics, applied mathematics, informatics Student tutorship and supervision: 50-100 hrs/year
Gwladys Toulemonde	50% CNRS delegation in 2019 Teaching L3/M1/M2 level: 128 hrs in 2019 mathematics, probability, statistics, data mining
Pascal Finaud-Guyot	Teaching L3/M1/M2 level: 200-250 hrs/year hydraulics, applied mathematics, informatics Student tutorship and supervision: 50-100 hrs/year
Vincent Guinot	Teaching L3/M1/M2 level: 290 hrs/year Student tutorship and supervision: 50-100 hrs/year

9.2.2. Supervision

PostDoc: Gwladys Toulemonde advises a post-doctoral fellow (F. Palacios-Rodriguez) from october 2017 to september 2019 on spatio-temporal extreme processes to assess flood hazards [11], [12] (NUMEV funding until Oct 2018)

PhD : Gwladys Toulemonde has co-supervised a PhD thesis defended in september 2019 in an established collaboration with Sanofi and is also involved in two other industrial collaborations (BALEA, Twin Solutions)

PhD in progress :

- Vita Ayoub, "Assimilation of satellite derived flood information for better parameterizing and controlling large scale hydraulic models over data scarce areas", november 2018, Carole Delenne and R. Hostache (LIST, Luxembourg).
- Yassine Bel-Ghaddar, "Data fusion for urban network mapping. Application to sanitation networks", may 2019, Carole Delenne and A. Begdouri (LSIA, Fès, Morocco).
- Joseph Luis Kahn Casapia, "Coupling hydro-ecological reduced models for the simulation of fresh water ecosystems", September 2018, Antoine Rousseau and C. Casenave (INRA, Montpellier).
- Joao Guilherme Caldas Steintraesser, "Coupling large and small scale shallow water models with porosity in the presence of anisotropy", October 2019, Antoine Rousseau and Vincent Guinot.
- Cécile Choley, "Experimental and numerical study of the street-building exchange during urban floods", November 2019, Pascal Finaud-Guyot.

9.2.3. Juries

Gwladys Toulemonde has participated to the PhD thesis jury of Abdul-Fattah Abu-Awwad defended in June 2019 at the University of Lyon.

Carole Delenne was invited member of the PhD thesis jury of Gabrielle Rudi Chovelon, defended in May 2019 at SupAgro Montpellier.

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Gwladys Toulemonde is involved in the board of the CFEM (commission française pour l'enseignement des mathématiques) since october, 2019, representing the SFdS.

Gwladys Toulemonde is involved in the board of Animath since october, 2019, representing the SFdS.

Gwladys Toulemonde is a member of the organizing committee of the Forum Emploi Math (FEM 2019, Paris).

Antoine Rousseau is member of the scientific board of [Fondation Blaise Pascal](#)

Antoine Rousseau is member of the *MakeSEnS* group at Inria, instructed by Inria's management to make proposals for the institute to tackle current environmental issues: see [7]

Antoine Rousseau is co-editor of the national blog [binaire](#), published by [Le Monde](#)

9.3.2. Articles and contents

- *Pour une écologie numérique* (in french), [blog post on binaire](#), Antoine Rousseau, 2019.
- *Ces océans qu'on modélise* (in french), [blog post on binaire](#), Antoine Rousseau and coauthors, 2019.

9.3.3. Education

In 2019, Antoine Rousseau gave public lectures in the junior school of Aubais, France (30 kids, 10 years old): 2.5 days of introduction to coding.

9.3.4. Interventions

Antoine Rousseau gave a 2h lecture in Lycée Joffre (high school), Montpellier, France (60 students, 18-20 years old). The conference was linked to the 2019-2020 topic for the french engineering schools competition (TIPE): mathematical modelling for oceans. Antoine Rousseau also dedicated one full day to help young students to design their TIPE project.

MAGIQUE-3D Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. Member of the Organizing Committees

- Hélène Barucq co-organized committee of "Journées Ondes du Sud-Ouest" (JOSO 2019), March, 12-14. <https://hal.archives-ouvertes.fr/JOSO2019>
- Hélène Barucq, Florian Faucher and Ha Pham organized the "Ants workshop on computational helioseismology" in Bordeaux, December, 3-5, <https://project.inria.fr/antsworkshop201912/>
- Hélène Barucq coorganized a minisymposium on "Geophysical Applications" at ICIAM 2019 in Valence, July, 15-19, <https://iciam2019.org/>
- Julien Diaz and Sébastien Tordeux coorganized a minisymposium on "Advanced numerical tools for wave propagation simulation" at ICIAM 2019 in Valence, July, 15-19, <https://iciam2019.org/>
- Julien Diaz coorganized an autumn school on "High performance numerical simulation", <https://project.inria.fr/hpcschool2019/>, in Bordeaux, November, 4-8. This school gathered 30 participants, mainly PhD students and post-doc. It aimed at simulating a physical problem, from its modeling to its implementation in an high performance computing (HPC) framework. The physical problem considered was the harmonic wave propagation. The hands-on sessions were conducted on the Federative Platform for Research in Computer Science and Mathematics (PlaFRIM) machine.

10.1.2. Scientific Events: Selection

10.1.2.1. Member of the Conference Program Committees

- Hélène Barucq and Julien Diaz were members of the scientific committee of Waves 2019 <https://waves2019.at>
- Sébastien Tordeux was member of the scientific committee of The international Russian-french workshop, Differential equations and Mathematical Modeling, Khanty-Mansiisk, Russia 25-29 août 2019

10.1.3. Journal

10.1.3.1. Reviewer

Members of Magique 3D have been reviewers for the following journals:

- Computer Methods in Applied Mechanics and Engineering
- Geophysics
- Journal of Computational Physics
- Journal of Scientific Computing
- Numerical Methods in Engineering
- Geophysical Journal International
- Computational Geosciences (COMG)

10.1.4. Leadership within the Scientific Community

Hélène Barucq is elected member of the Liaison Committee of SMAI-GAMNI (Society of Applied and Industrial Mathematics - Group for promoting the Numerical Methods for Engineers).

10.1.5. Scientific Expertise

- Julien Diaz was expert for the evaluation of Millennium Science Initiative project for the government of Chile.
- Since 2017, H el ene Barucq has been chairwoman of a committee which evaluates research projects in Mathematics, Computer Science, Electronics and Optics to be funded by the Regional Council New Aquitaine
- Since 2018, H el ene Barucq has been scientific officer for E2S project. She participates in the evaluation of each E2S call. She is also member of a committee having in charge the recruitment of non permanent researchers for E2S.

10.1.6. Research Administration

- Julien Diaz is elected member of the Inria Technical Committee and of the Inria Administrative Board. Since 2018, he has been the head of the Mescal team of LMAP.
- Justine Labat is elected member of Laboratory Committee of LMAP.
- Victor P eron is appointed member of the CER (Commission des emplois de recherche) of Inria Bordeaux Sud-Ouest.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : Julien Diaz, Transform ees, 24h Eq. TD, M1, EISTIA, France

Licence : Rose-Clo e Meyer, Math ematiques appliqu ees, 22.5h Eq. TD, L1, UPPA, France

Licence : Rose-Clo e Meyer, D eveloppements limit es, suites et s eries, 19.5h Eq. TD, L2, UPPA, France

Licence : Marc Durufl e,  Equations diff erentielles, 20h Eq. TD, L3, Enseirb-MatMeca, France

Licence : Marc Durufl e, Algorithmique Num erique, 50h Eq. TD, L3, Enseirb-MatMeca, France

Licence : Marc Durufl e, Outils Math ematiques 3-D, 37h Eq. TD, L3, Enscpb, France

Master : Marc Durufl e, Calcul scientifique en C++, 96h Eq. TD, M1, Enseirb-MatMeca, France

Licence : Marc Durufl e, Calcul scientifique en Fortran90, 20h Eq. TD, L3, Enseirb-MatMeca, France

Licence : Nathan Rouxelin, Math ematiques appliqu ees, 22.5h Eq. TD, L1, UPPA, France

Licence : Nathan Rouxelin, Mod eles math ematiques pour l'informatique, 19.5h Eq. TD, L1, UPPA, France

Master : Florian Faucher, Inversion / optimisation, 10.5h Eq. Cours et TD, M2, Universit e de Pau et des Pays de l'Adour, France

Licence : Justine Labat, Alg ebre pour l'informatique, 19.5h Eq. TD, L1, UPPA, France

Licence : Justine Labat, Introduction aux Probabilit es, 12.5h Eq. TD, L2, UPPA, France

Licence : Victor P eron, Analyse 2, 39 Eq. TD, L1, UPPA, France

Licence : Victor P eron, Math ematiques appliqu ees, 15 Eq. TD, L1, UPPA, France

Licence : Victor P eron, Math ematiques appliqu ees, 19.5 Eq. TD, L1, UPPA, France

Licence : Victor P eron, Analyse num erique des syst emes lin eaires, 48.75 Eq. TD, L3, UPPA, France

Licence: G eom etrie analytique, 20h Eq. TD, UPPA, France

Master : Victor P eron and S ebastien Tordeux, Analyse num erique des EDP 1: diff erences finies, 75 eq. TD, Master1, UPPA, France

Master : Victor P eron and S ebastien Tordeux, Introduction aux ph enom enes de propagation d'ondes, 38 eq. TD, Master 2, UPPA, France

Master : Robin Tournemene, Math-Info, 64h eq. TD, L3+M1, ENSAM Bordeaux, France

10.2.2. Supervision

PhD : Aurélien Citrain, Méthode d'éléments finis hybride pour la simulation des ondes sismiques : couplage des discrétisations Galerkin Discontinue et éléments spectraux, December 16th, Hélène Barucq and Christian Gout (Insa Rouen).

PhD : Justine Labat, Modélisation multi-échelle de la diffraction des ondes électromagnétiques par de petits obstacles, November 28th, Victor Péron and Sébastien Tordeux.

PhD in progress : Alexandre Gras, Hybrid resonance for sensing applications, IOGS, October 2017, Philippe Lalanne(IOGS), Marc Duruflé, Hélène Barucq (Magique 3D)

PhD in progress : Pierre Jacquet, Time domain Full Waveform Inversion involving hybrids numerical method to characterize elasto-acoustic media. ,October 2017, Hélène Barucq and Julien Diaz.

PhD in progress: Victor Martins Gomez, Experimental characterization and modeling of seismo-electromagnetic waves, Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and daniel brito (LFCR)

PhD in progress : Rose-Cloé Meyer, Modeling of conducting poro-elastic media using advanced numerical methods , Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and Julien Diaz

PhD in progress : Nathan Rouxelin, Advanced numerical modeling of acoustic waves propagating below the surface of the Sun, Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and Juliette Chabassier

PhD in progress : Chengyi Shen, Approches expérimentale et numérique de la propagation d'ondes sismiques dans les roches carbonatées, October 2016, Julien Diaz and Daniel Brito (LFCR).

PhD in progress : Margot Sirdey, Méthode de Trefftz pour l'électromagnétisme, October 2019, Sébastien Tordeux and Sébastien Pernet (Onera).

PhD in progress : Vinduja Vasanthan, Tent Pitcher algorithm for space-time integration of wave problems, October 2019, Hélène Barucq and Julien Diaz.

PhD in progress : Stefano Frambati, Isogeometric analysis of sharp boundaries in full waveform inversion, January 2019, Hélène Barucq and Julien Diaz.

Master 2 internship : Ilyas Bouchni, Optimisation de maillage pour l'imagerie sismique, Université de Montpellier, Sept. 2019.

Master 2 internship : Vinduja Vasanthan, Couplage élasto-acoustique en domaine fréquentiel par des méthodes de type Galerkin Discontinues Hybride , Insa Rouen, Sept. 2019.

10.2.3. Juries

- Victor Péron : Jérôme Tomezyk (Université Polytechnique Hauts-de-France), Résolution numérique de quelques problèmes du type Helmholtz avec conditions au bord d'impédance ou des couches absorbantes (PML), July 2nd 2019
- Julien Diaz : Soumaya Oueslati (Université de Cergy-Pontoise), "A new variational formulation for electromagnetic scattering problem using integral method with high order impedance boundary condition – Small perturbation of an interface for Stokes system", PhD thesis, June 12th 2019
- Julien Diaz : Aurélien Citrain (Insa de Rouen), "Méthode d'éléments finis hybride pour la simulation des ondes sismiques : couplage des discrétisations Galerkin Discontinue et éléments spectraux", PhD thesis, December 16th 2019
- Sébastien Tordeux : Pierre Schickele (Université de Toulouse),"Modélisation de l'émission EM de faisceaux de câbles complexes dans un environnement 3D", december 18th 2019

10.3. Popularization

10.3.1. Interventions

- Justine Labat participated in scientific 'speed datings' during the 'Filles et Maths' day at Pau in February 2019.
- Juliette Chabassier participated to the festival Club Med'iation in May 2019.
- Juliette Chabassier participated to many interventions of Louis 14.0, a scientific and artistic show.
- Juliette Chabassier animated a workshop around the virtual piano in La Couronne in Nov 2019.
- Juliette Chabassier, Augustin Ernoult and Alexis Thibault participated to the "Articulations workshop" in Dec 2019.
- Juliette Chabassier participated to a workshop around the Meta-Piano-Teq with Jean Haury in Dec 2019.
- Sébastien Tordeux gave a talk on numerical analysis in the Cercle Sofia Kovalevskaïa of Toulouse in May 2019
- Sébastien Tordeux was member of the judging committee for the "Tournois Français des Jeunes Mathématiciennes et Mathématiciens" in May 2019

10.3.2. Creation of media or tools for science outreach

Juliette Chabassier co-created with the Ensemble Les Précieuses the show Louis 14.0 that presents how ancient instruments can be restored via numerical techniques, and played in real time in a musical and theatral show.

SERENA Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. Member of the Organizing Committees

Michel Kern was co-organizer of the **SITRAM19** workshop (Advances in the SIMulation of reactive flow and TRANsport in porous Media), December 2–3, Pau, France.

10.1.2. Scientific Events: Selection

10.1.2.1. Chair of Conference Program Committees

Guillaume Enchéry and Martin Vohralík have organized a 1-day workshop **Journée contrat cadre IFP Energies Nouvelles/Inria**.

10.1.2.2. Member of the Conference Program Committees

Alexandre Ern is a member of the Scientific Committee of the European Finite Element Fair (EFEF) and of the European Numerical Mathematics and Advanced Applications Conference (ENUMATH).

Géraldine Pichot is a member of the Scientific Committee of FRAME2020 - FRActured MEDIA: Numerical methods for fluid flow and mechanics, September 21-24, 2020.

Michel Kern and Martin Vohralík were members of the Scientific Committee of the **SimRace 2019** conference.

Michel Kern was a member of the Program Committee of **JCAD2019**, Journées Calcul et Données .

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

Alexandre Ern is a member of the editorial boards of **SIAM Journal on Scientific Computing**, **ESAIM Mathematical Modelling and Numerical Analysis**, **IMA Journal of Numerical Analysis**, and **Computational Methods in Applied Mathematics**.

Martin Vohralík is a member of the editorial boards of **SIAM Journal on Numerical Analysis**, **Acta Polytechnica**, and **Applications of Mathematics**.

10.1.3.2. Reviewer - Reviewing Activities

Alexandre Ern and Martin Vohralík served as reviewers for dozens of papers in different journals.

Michel Kern served as reviewer for **BIT**, **Numerical Mathematics**, **Computational Geosciences**, **SIAM Journal on Scientific Computing**, **Applicable Analysis**, and **Journal of Mathematical Study**.

Géraldine Pichot served as reviewer for **Computational Geosciences**.

10.1.4. Invited Talks

Alexandre Ern was invited as one of the two keynote lecturers at the **Workshop on Computational Modeling and Numerical Analysis**, Petropolis, Brésil, Feb 2019.

Michel Kern was invited as one of the keynote speakers at the **HPC TerrSys** fall school, Bonn, Germany, Sep. 2019.

Martin Vohralík was an invited speaker at **GAMM section on Numerical methods of differential equations**, Vienna, Austria, February 2019, **Modern Finite Element Technologies 2019**, Bad Honnef, Germany, July 2019, and **Reliable Methods of Mathematical Modeling**, Vienna, Austria, Sep 2019.

10.1.5. Leadership within the Scientific Community

Alexandre Ern is the coordinator of the Master Mathématiques et applications, Ecole nationale des ponts et chaussées.

Michel Kern is a member of the **SIAM** “Committee on Committees and Appointments”.

Michel Kern is a member of the Scientific Board of **ORAP** (Organisation Associative du Parallélisme).

Michel Kern is a member of the Scientific Advisory Board of GDR CNRS **Groupe Calcul**.

Michel Kern is a member of the steering committee of **Géosciences franciliennes**.

Martin Vohralík is a member of the steering committee of **Summer schools CEA–EDF–Inria**.

Martin Vohralík is in charge of the topic “Numerical schemes, mesh generation algorithms, and error control” in the **ANDRA, BRGM, CEA, EDF, IFP Energies Nouvelles**, and **Total** working group on *High-Performance Numerical Simulation in the Geosciences* (identification of common challenges and collaboration opportunities).

10.1.6. Research Administration

François Clément is a member of the *Comité local d’hygiène, de sécurité et des conditions de travail* of the Inria Research Center of Paris.

Michel Kern is a member of the *Comité de Centre* of the Inria Research Center of Paris.

Martin Vohralík is a member of the Inria Paris *Committee on scientific positions* (evaluation of applications for Ph.D. theses (CORDI-S), post-docs, and délégations).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence : Alexandre Ern, Numerical analysis, 77h, L3/M1, Ecole Polytechnique, France.

Licence : Alexandre Ern, Optimal control, 10h, L3, Ecole nationale des ponts et chaussées, France.

Master : Alexandre Ern, Discontinuous Galerkin methods, 20h, M2, Sorbonne University, France.

Master: Michel Kern, Models and numerical methods for subsurface flow, 30h, M2, Université Paris Saclay, France

Master: Michel Kern, Inverse Problems, 24h, M1, Mines-ParisTech, France

Master: Michel Kern, Introduction to Partial Differential Equations, 30h, & Advanced numerical analysis, 30h, M1, Institut Galilée, Université Paris-Nord, France.

10.2.2. Supervision

PhD defended on June 3, 2019: Jad Dabaghi, A posteriori error estimates and adaptive stopping criteria for formulations with complementarity constraints, Martin Vohralík and Vincent Martin.

PhD defended on March 22, 2019: Patrik Daniel, Adaptive *hp*-finite elements with guaranteed error contraction and inexact multilevel solvers, Martin Vohralík and Alexandre Ern.

PhD in progress: Joëlle Ferzly, A posteriori error estimates and adaptivity for complementarity problems, started 15 October 2019, Martin Vohralík.

PhD in progress: Frédéric Marazzato, Discrete element methods for fracture and fragmentation, started 01 October 2016, Alexandre Ern.

PhD in progress: Riccardo Milani, Compatible Discrete Operator schemes for Navier–Stokes equations, started 01 October 2017, Alexandre Ern.

PhD in progress: Ani Miraci, Robust a posteriori error control and adaptivity with inexact solvers, started 01 October 2017, Martin Vohralík and Alexandre Ern.

PhD in progress: Idrissa Niakh, Reduced models for variational inequalities in computational mechanics, started 01 November 2019, Alexandre Ern and Virginie Ehrlacher (ENPC).

PhD in progress: Stefano Piccardo, High-fidelity simulation of droplets in complex shear flows, started 01 October 2019, Alexandre Ern and Antonio Huerta (UPC).

PhD defended on October 22, 2019: Nicolas Pignet, Hybrid high-order methods for nonlinear solid mechanics, Alexandre Ern.

10.2.3. Juries

Alexandre Ern, Examiner and Chairman, PhD V. Mamet, INP Grenoble, Jan 2019.

Alexandre Ern, Referee, PhD A. Rupp, Erlangen FA University, Mar 2019.

Alexandre Ern, Examiner, HDR C. Millet, University Paris-Sud, Mar 2019.

Michel Kern, Examiner, PhD Daniel Salas, Université de Strasbourg, Sep. 2019.

Michel Kern, Examiner, PhD Kevish Napal, Université Paris Saclay, Dec. 2019.

Géraldine Pichot, Referee, PhD Fabio Vicini, Politecnico di Torino, April 2019.

Martin Vohralfk, Examiner and Chairman, PhD Hoang Phuong Thai, ENS Paris-Saclay, Jun 2019.

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- + Géraldine Pichot is a member of the editorial committee of Interstices since November 2019.

STEPP Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Selection

Jean-Yves Courtonne co-organized a special session entitled *Advances in understanding the physical structures of economies: Materials, energy, and the services they provide* at the 13th International Conference of the European Society for Ecological Economics, Turku, Finland, June 2019. <https://eese2019turku.fi/specialsessions>

9.1.1.1. Member of Conference Program Committees

- Peter Sturm, ORASIS 2019 (Journées francophones des jeunes chercheurs en vision par ordinateur), Saint-Dié-des-Vosges, France, <https://orasis2019.sciencesconf.org>
- Peter Sturm: Inria Science Days (Journées Scientifiques Inria), Lyon, France.

9.1.2. Invited Talks

- Jean-Yves Courtonne and Guillaume Mandil: *Durabilité forte : état des lieux et programme de recherche pour l'évaluation d'alternatives socio-techniques*, Colloque Soutenabilité des systèmes socio-techniques, Université Technologique de Troyes, France.
- Pierre-Yves Longaretti, *Global environmental collapse risks: is digital technology a problem or a solution?*, Keynote speech at LIG, Grenoble, France, June 2019.

9.1.3. Scientific Expertise

Jean-Yves Courtonne and Guillaume Mandil participate in the Steering Committee (COFIL) of the CODEC (Contrat d'Objectifs Déchets et Économie Circulaire) of Grenoble Alpes Métropole (Grenoble Metropolitan Area, <https://www.lametro.fr/>).

Team members intervened in training programs dedicated to IT professionals and teachers organized by EcoInfo⁰, a French network dedicated to eco-responsible digital sciences and technologies:

- Guillaume Mandil provided a training session on Life Cycle Analysis for EcoInfo members, Grenoble, May 2019.
- Pierre-Yves Longaretti, Guillaume Mandil, and Peter Sturm gave lectures/training sessions at the week-long training seminar *Impact Environnemental du Numérique – Comprendre et Agir*, Autrans, France, September 2019.

9.1.4. Research Administration

- Emmanuel Prados and Guillaume Mandil are members of the Grenoble section of the *Labos 1.5* initiative: an international, cross-disciplinary collective of academic researchers who share a common goal: to better understand and reduce the environmental impact of research, especially on the Earth's climate, <https://labos1point5.org/en/home/>
- Emmanuel Prados is member of the working group on sustainable development of the LJK lab, whose goal is to define an environmental charter and an environmental scientific policy for the lab.
- Peter Sturm is Deputy Scientific Director of Inria, in charge of the domain Perception–Cognition–Interaction.

⁰<https://ecoinfo.cnrs.fr>

- Peter Sturm co-founded and co-animated (with Céline Serrano) a national working group at Inria whose goal was to provide suggestions for the institute concerning environmental issues, in particular: (i) research to address the increasing environmental challenges (including directions of research and administrative aspects), (ii) how to reduce the ecological impact of the institute, and, more generally, (iii) ways of fostering responsible science (“sciences impliquées”). The working group produced a report [9] and several of its recommendations have already been taken up by Inria.
- Peter Sturm is member (representative of personnel) of the CLHSCT of Inria Grenoble Rhône-Alpes (Local Committee for Hygiene, Security and Working Conditions).
- Peter Sturm is member of the CLDD of Inria Grenoble Rhône-Alpes (Local Sustainable Development Commission).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Jean-Yves Courtonne, Serge Fenet, Fausto Lo Feudo, Pierre-Yves Longaretti, Guillaume Mandil, Régis Perrier, Emmanuel Prados, Peter Sturm, and Françoise Berthoud (CNRS): *Les véritables enjeux environnementaux – compréhension, modélisations et outils quantitatifs*, 18 hours, graduate course, Université Grenoble Alpes, <https://team.inria.fr/steep/seminars/cours-ed-2019/>

Jean-Yves Courtonne: *Méthodes d'évaluation environnementale*, 1h30, Ensimag (Grenoble INP)

Jean-Yves Courtonne: *Méthodes d'évaluation environnementale*, 2h, Programme IDEX Green University, Université Grenoble Alpes

Pierre-Yves Longaretti: *Global changes, planetary limits and collapse risks*, 3h, Evry ENSIIE engineering school, May 2019.

Pierre-Yves Longaretti: *Global changes, planetary limits and collapse risks*, 3h, Grenoble ENSIMAG engineering school, October 2019.

Serge Fenet, Guillaume Mandil and Régis Perrier have regular teaching duties at the universities employing them.

9.2.2. Supervision

PhD in progress: Michela Bevione, *Enjeux socio-écologiques, métabolisme territorial, création de richesse : application à la vallée de la Maurienne*, started in October 2016, supervised by Pierre-Yves Longaretti and Nicolas Buclet (PACTE laboratory)

PhD in progress: François-Rémi Mazy, *Vers une théorie et une implémentation algorithmique cohérentes des modèles statistiques de changement d'usage des sols*, started in October 2019, supervised by Pierre-Yves Longaretti

PhD in progress: Mathilde Jochaud du Plessix, *Robustesse et validité des modèles dynamiques de risques systémiques globaux*, supervised by Serge Fenet and Pierre-Yves Longaretti

9.2.3. Juries

- Pierre-Yves Longaretti was external expert of Grégoire Chambaz masters' thesis (UNIL, Lausanne): *The Evolutionary Dynamics of Societies Critical Synthesis of the Work of J.A. Tainter et al. on Sustainability, Collapse, Resilience and Energy Transitions*.
- Peter Sturm was reviewer of the Habilitation thesis of Gilles Simon (Université de Lorraine) and of the PhD thesis of Yilin Zhou (Université Paris-Est) and chaired the PhD thesis committee of Julien Salotti (Université de Lyon).

9.3. Popularization

9.3.1. Education

- Guillaume Mandil gave a half-day training course to a group of high school teachers (Lycée Mounier - CLEPT), July 2019.
- Peter Sturm gave a lecture on the environmental impact of ICT, during a training week of high school teachers of the Hauts-de-France Region, Lille, France, June 2019.

9.3.2. Conference-debate series and YouTube-channel “Understanding and Acting”

Following a dynamics of exponential growth in a finite world, humanity today faces a number of unprecedented and tightly interlinked challenges. With a growing number of environmental limits being largely and irreversibly exceeded (GHG concentrations in the atmosphere, biodiversity loss, soil erosion, freshwater shortages...), social, economic, geopolitical, humanitarian (etc.) consequences are becoming more urgent than ever to address, while the threat of an uncontrolled global collapse is now more than a prospect. It is urgent to initiate deep, structural, socioeconomic changes on virtually all aspects of our increasingly global societies (economics, industrial and agricultural production, consumption, education, all requiring major new local and global policies).

In view of these facts, the STEEP research team has initiated in 2016 a series of conferences-debates entitled “Understanding & Acting” (*Comprendre et Agir*) that examines these issues in order to help researchers and citizens to increase their awareness of the various issues at stake in order to initiate relevant individual and collective actions. From now on, the scientific community at large must realize that its duty also lies in helping citizens to better understand these issues. If the fraction of people in society whose privilege is to be paid to think about society’s problems do not seize this opportunity in the critical times we face, who will? Researchers must become more involved in the search of socioeconomic alternatives and help citizens to implement them. The interactions between researchers and citizens must also to be reinvented.

The presentations of this series of conferences typically last between 30 to 45 minutes; they are followed by a 45 minute public debate with the audience. The presentations are captured on video and then made directly accessible on the YouTube Channel “Comprendre et Agir”. At the end of 2019 the YouTube channel has about 5,400 subscribers and reached a total of about 425,000 viewings.

The conference-debates of 2019:

- Olivier Vidal, Université Grenoble Alpes: Resources and energy at the global scale in the context of the energy transition (*Matières premières et énergie à l'échelle mondiale dans le contexte de la transition énergétique*)
- Grégoire Chambaz, Lausanne: How real is the risk of a blackout? (*Le risque de blackout est-il réel ?*)
- Christophe Bonneuil, CNRS and École des hautes études en sciences sociales: When the whites intended to preserve the planet – A history of geo-power, 1865-1914 (*Quand les blancs voulurent conserver la planète. Une histoire du géopouvoir, 1865-1914*)
- Peter Sturm, STEEP: Environmental challenges and what is blocking acting on them (*Enjeux environnementaux et blocages à l'action*)
- Sophie Wahnich, CNRS and Institut interdisciplinaire d’anthropologie du contemporain: Why was King Louis XVI destituted in 1792? Social imaginaries from 1770 to 1792 (*Pourquoi le roi Louis XVI a-t-il été destitué en 1792 ? Imaginaires sociaux de 1770 à 1792*)
- Denis Dupré, STEEP: Collapses and finance (part I) – Is Finance a collapse pyromaniac? (*Effondrements et finance (partie I) – La Finance : pyromane des effondrements ?*)

Link to the web page of the series (program, abstracts, dates, complements etc.): <https://team.inria.fr/steep/les-conferences-debats-comprendre-et-agir/>

Link to the YouTube channel: https://www.youtube.com/channel/UCJbcXCcOA63M8VMysAbmt_A

9.3.3. Interventions

Guillaume Mandil participated in the preparation of an exposition at Cité des Sciences (Paris).

Team members gave the following general audience talks:

- Serge Fenet: Talk *Design et anthropocène : business as unusual – Une cartographie des risques par le prisme de la systémique* at the *Biennale Internationale du Design*, St-Étienne, France, May 2019.
- Serge Fenet: *Effondrements et anthropocène à la lumière de la dynamique des systèmes* at ESC Clermont-Ferrand, France, May 2019.
- Serge Fenet: *Technologies numériques et catastrophe environnementale : des liens complexes* at École Centrale de Lyon, for a general audience of master students.
- Pierre-Yves Longaretti: Seminar *Voluntary minimal consumption: stakes, obstacles, levers*. EcoInfo thematic school, November 2019.
- Pierre-Yves Longaretti: Seminar *Climate Change and strategic surprise*, Swiss military history and prospective center, December 2019.
- Pierre-Yves Longaretti: Round table discussion, *Will we all be farmers tomorrow? (Demain, tous paysans ?)*, Transition Towns biennial meeting, Grenoble, March 2019.
- Pierre-Yves Longaretti: Round table discussion, *Agriculture: global and local stakes (Agriculture : enjeux locaux et globaux)*, Forum citoyen alimentation & santé : La transition agro-alimentaire dans nos assiettes, Grenoble, November 2019.
- Emmanuel Prados: Institutional Conference *Veille techno à Polytech*, Grenoble, France, December 9-16, 2019. Organized by the MSTII Graduate School of Université Grenoble Alpes (Bernard Tourancheau).
- Emmanuel Prados: Institutional Conference organized by UniLaSalle (Hervé Leyrit), Beauvais, France, October 17, 2019.
- Emmanuel Prados: Conference at the back-to-school day of EPITA LYON (computer intelligence engineering school), Lyon, France, September 10, 2019. Organizer: Epita (Lamia Derrode).
- Emmanuel Prados: Conference on environmental transition for elected politicians of the Grésivaudan community of communes, open to the general public, Le Versoud, France, June 3rd, 2019. Organizer: Le Versoud City Hall (Claire Desmaris).
- Emmanuel Prados: General public conference, Crolles, France, June 22, 2019. Organizer: Association *Ecocitoyens*.
- Emmanuel Prados: Conference at the *CitizenCampus* entitled *Transition, démocratie, effondrement : la quadrature du cercle ?*, Grenoble, France, March 29, 2019. Organizer: Université Grenoble Alpes. <https://twitter.com/YannToma/status/1112094922499330049>
- Emmanuel Prados: Conference/debate *Quelles transitions dans un contexte d'effondrement ?*, Palais des Sports de Grenoble, France, March 13, 2019. Organizer: Ville de Grenoble. <http://villessentransition.grenoble.fr/events/quelles-transitions-dans-un-contexte-deffondrement/>
- Emmanuel Prados: Conference within the ISN cycle, *Le numérique face aux enjeux environnementaux et sociétaux*, Grenoble, France, April 10, 2019. Organizer: Inria. https://www.canal-u.tv/video/inria/le_numerique_face_aux_enjeux_environnementaux_et_societaux.50079
- Emmanuel Prados: Invited conference at the Loria colloquium, *Le numérique face à la catastrophe environnementale et sociétale*, Nancy, France, February 8, 2019. Organizer: Loria (<http://www.loria.fr>). <https://www.loria.fr/fr/communication/colloquium-loria-exposes-et-videos/>
- Peter Sturm made a “Tour de France” by bicycle, to raise awareness on environmental issues. During this trip (May 15 to July 4), he visited all Inria centers and gave a talk on *Environmental challenges and what is blocking acting on them* in ten locations (Sophia Antipolis, Montpellier, Bordeaux, Rennes, Saclay, Rocquencourt, Paris, Nancy, Lyon, Grenoble). His visits were accompanied by various events, including seminars by local researchers, meetings with sustainable development commissions, social gatherings, etc. This initiative is described at <https://project.inria.fr/inriavelo/fr/>, see also the daily blog <https://www.polarsteps.com/PeterSturm3/1692663-inri-a-velo>.

TONUS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Member of the Organizing Committees

Philippe Helluy: Workshop on Compressible Multiphase Flows : Derivation, closure laws, thermodynamics, IRMA, May 2019.

Yannick Privat with Raphaël Côte and Thomas Duyckaerts: Workshop Control and dynamics of PDEs, Strasbourg, October 2019.

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

Yannick Privat is a member of the editorial boards of:

- AIMS Applied Mathematics,
- Evolution Equations and Control Theory.

Philippe Helluy is member of editorial board in:

- Computational and Applied Mathematics,
- International Journal of Finite Volume.

10.1.2.2. Reviewer - Reviewing Activities

- Emmanuel Franck was a reviewer for:
 - Numerical Methods for Partial Differential Equations.
- Yannick Privat was a reviewer for:
 - Applied Math. and Optimization,
 - Esaim Control Optimization and Calculust of Variations,
 - Discrete and Continuous Dynamical Systems,
 - Esaim Proceeding,
 - Journal de Mathématiques Pures et Appliquées,
 - Journal of Math. Biology,
 - Proceedings of the Royal Society A,
 - SIAM Journal on Control and Optimization,
 - Zeitschrift für angewandte Mathematik und Physik.
- Philippe Helluy was a reviewer for:
 - Journal of Computational Physics,
 - Computers and Fluids,
 - Numerical Methods for Partial Differential Equations,
 - European Journal of Mechanics / B Fluids.
- Matthieu Boileau was a reviewer for:
 - Proceedings of the Combustion Institutes.

10.1.3. Invited Talks and participations to conference as speaker

Yannick Privat:

- New Trends in PDE-Constrained Optimization, Linz, Austria. October 2019.
- Shape optimization and application days, Ecole Polytechnique, France. October 2019.
- "Groupement Euro-Maghrébin de Mathématiques et leurs Interactions". Madrid, Spain. November 2019.
- Dynamics, Equations and Applications (organizer of a mini-symposium), Cracovia, Poland. September 2019.

Emmanuel Franck:

- ICIAM 2019 (organizer mini-symposium), Valencia, Spain. July 2019.
- Workshop Multi-scale, Inria Nancy, June 2019.
- Jorek Meeting 2019, Munich, May 2019.

Laurent Navoret:

- ICIAM 2019 (organizer of a mini-symposium), Valencia, Spain. July 2019.

P. Helluy:

- ICNAAM 2019, Rhodes, September 2019
- NUMHYP, Malaga, June 2019.
- NUMKIN, Garching, October 2019.

Laura Mendoza:

- ICIAM 2019, Valencia, Spain. July 2019.
- Iter codeCamp, Cadarache, April 2019.
- EuroScipy 2019, Bilbao, September 2019.
- PyConFr, Bordeaux, November 2019.

Matthieu Boileau:

- Computation and learning days. April 2019. Lyon.
- Workshop Compressible multiphase flows, Strasbourg 2019.

10.1.4. Research Administration

Philippe Helluy:

- Director of the IRMA mathematics institute.

Mickael Gutnic:

- Director of the mathematics department (IRMA) in Strasbourg university.

Yannick Privat:

- Member of CNU section 26,
- Member of expert committee at IRMA Strasbourg

Matthieu Boileau:

- Manager of the "GDR calcul",
- Co-Manager of the network "metier calcul",
- Member of the "Commission de la Recherche du Conseil Académique de l'Université de Strasbourg"

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence: E. Franck, "Informatics S6", 35h, L3, Strasbourg University, France.

Master: Y. Privat, "Optimal control", 64h, M2, Strasbourg University, France.

Master: Y. Privat, "Optimization", 64h, M1, Strasbourg University, France.
 Licence: Y. Privat, "Nonlinear Optimization", 52h, L3, Strasbourg University, France.
 Agrégation: Y. Privat, "Text study", 30h, Strasbourg University, France
 Licence: C. Courtès, "Scientific computing", 37h, L3, Strasbourg University, France.
 Licence: C. Courtès, "Numerical analysis", 34h, L3, Strasbourg University, France.
 Licence: C. Courtès, "Numerical analysis", 18h, L2, Strasbourg University, France.
 Licence: C. Courtès, "Multiple variables function", 10h, L2, Strasbourg University, France.
 Licence: L. Navoret, "Nonlinear Optimization", 18h, L3, Strasbourg University, France.
 Licence: L. Navoret, "Statistics for biologists", 21.5h, L2, Strasbourg University, France.
 Master: L. Navoret, "Scientific computing", 35h, M1, Strasbourg University, France.
 Master: L. Navoret, "Numerical methods for PDEs", 30h, M1, Strasbourg University, France.
 Master: L. Navoret, "Optimization", 12h, M1, Strasbourg University, France.
 Master (physics): L. Navoret, "Numerical resolution techniques for engineering", 22h, M1, Strasbourg University, France.
 Master (Agrégation): L. Navoret, "Scientific computing", 50h, M2, Strasbourg University, France.
 Master (cell physics): L. Navoret, "Basics in mathematics", 24h, M2, Strasbourg University, France.
 Licence, P. Helluy, "Numerical analysis", 17h, L3, Strasbourg University, France.
 Master, P. Helluy, "Scientific computing", 20h, Préparation agrégation, Strasbourg University, France.
 Master, P. Helluy, "Scientific computing", 28h, M1, Strasbourg University, France.
 Master, P. Helluy, "Hyperbolic systems", 35h, M2, Strasbourg University, France.
 Licence, M. Boileau, "informatic", 10h, L3, Strasbourg university, France.
 Master, M. Boileau, "data sciences", 20h, M2, Strasbourg University, France.
 Master, M. Boileau, "Parallel computing", 20h, M1, Strasbourg University, France.
 Master, M. Boileau, "Python for science", 36h, Strasbourg University, France.
 Other, M. Boileau, "Basic for python", 14h, Urfist (Unité Régionale de Formation à l'Information Scientifique et Technique), France.

10.2.2. Supervision

PhD in progress: G. Mestdagh, "Suivi de tumeur en temps réel par des méthodes d'optimisation", Strasbourg university. Beginning: September 2019. Y. Privat, S. Cotin.
 PhD in progress: J. B. Arnau, "Stratégie de contrôle d'une population de moustiques pour la lutte contre les arbovirus". Beginning: September 2019. Y. Privat, Luis Almeida.
 PhD in progress: A. Courtais, "Contrôle optimal de contacteurs à lit fixe par fabrication additive". Beginning: September 2017. Y. Privat, F. Lesage and A. Latifi.
 PhD in progress: Idriss Mazari, "Répartition des ressources dans un enclos optimisant la survie des populations". Beginning: September 2017. Y. Privat, G. Nadin.
 PhD in progress: Alexandre Delyon, "Étude de la géométrie des œufs de certains branchiopodes". Beginning: September 2016. Y. Privat, A. Henrot.
 PhD in progress: Mustafa Gaja, "Compatible Finite Elements for Wave and Fluid Models: Application to Plasma Physics". Beginning: October 2015. E. Franck, E. Sonnendrücker (main supervisor).
 PhD in progress: Pierre Gerhard, "Numerical methods for kinetic models. Application to building acoustic". Beginning: October 2015. P. Helluy (main supervisor), L. Navoret.

PhD in progress: Romane Helie, "Relaxation methods for kinetic models in plasma physics". Beginning: October 2019. P. Helluy (main supervisor), L. Navoret, E. Franck.

PhD in progress: Marie Houillon: "Modeling of thin wires in electromagnetic software", Advisors: Philippe Helluy and Laurent Navoret, from October 2017, Labex Irmia support.

PhD in progress: Lucie Quibel (CIFRE support): in collaboration with EDF Chatou, from October 2017, Advisor: Philippe Helluy.

PhD: Maxime Schmitt: "Optimization of scientific software with arbitrary mesh refinement", Defense: September 2019, Advisors: Philippe Helluy and Cédric Bastoul (CAMUS team). Labex Irmia support.

10.2.3. Juries

Y. Privat was member of jury of the PhD committee of F. Feppon, Ecole Polytechnique.

Y. Privat was member of jury of the PhD committee of A. Rebei. Paris Sciences et Lettres university.

Y. Privat was reviewer of jury of the PhD committee of N. Lebbe. Grenoble university.

P. Helluy was reviewer of jury of the PhD committee of S. Fornet. Toulouse, ISAE.

P. Helluy was reviewer of jury of the PhD committee of M. Kadiri. Normandie university.

P. Helluy was member of jury of the PhD committee of S. Bulteau. Nantes university.

P. Helluy was member of jury of the PhD committee of P. A. Giorgi. Aix-Marseille university.

10.3. Popularization

L. Navoret were allowed to participate in the "fete de la science"

BIOCORE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. General Chair, Scientific Chair

O. Bernard was the Co-Chair of the Dycops-CAB conference (CAB 2019 Florianópolis, Brazil, 23rd-26th April).

O. Bernard was the head of the academic scientific committee for the AlgaeEurope conference (Paris, France, 3rd-5th December).

10.1.1.2. Special sessions

M. Chaves together with Laetitia Giraldi (from team McTao, Inria) organized an invited session at the Conf. Decision and Control (Nice, France).

J.-L. Gouzé organized an invited session about control and biology at the FGS Conference (Nice, France).

10.1.1.3. Member of the Organizing Committees

O. Bernard was in the organizing committee of the workshop "Growing microalgae for aquaculture in a Nordic climate : opportunities and challenges" (Trondheim, Norway, 28th-29th May).

10.1.2. Scientific Events: Selection

10.1.2.1. Member of the Conference Program Committees

O. Bernard is in the technical committee of the Computer Applied to Biotechnology (CAB) conferences, of the conference Foundations of Systems Biology in Engineering (FOSBE) and of the Algae Europe conference.

O. Bernard is area chair (Biosystems and Bioprocesses) for the IFAC World Conference (Berlin, Germany, 12nd-17th July).

M. Chaves was on the PC of the following conferences: JOBIM (Nantes, France), FOSBE (Valencia, Spain), and CSBio (Nice, France).

J.-L. Gouzé is a member of the program committee for the International Conference on Positive Systems, and CSBio (Nice, France).

10.1.2.2. Reviewer

All BIOCORE members have been reviewers for the major 2019 conferences in our field: CDC, ECC, IFAC Congress, FOSBE,...

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

M. Chaves is an Associated Editor of SIAM Journal on Applied Dynamical Systems (SIADS), since January 2015.

S. Touzeau is an Academic Editor of PLOS ONE since August 2018.

10.1.3.2. Reviewer - Reviewing Activities

All BIOCORE members have been reviewers for the major journals in our field: Automatica, IEEE Transactions on Automatic Control, Journal of Mathematical Biology, Mathematical Biosciences, Algal Research, New Phytologist,...

10.1.4. Invited Talks

O. Bernard was invited to give a conference on microalgae at Ecole Centrale de Paris (“Biotechnological challenge”) “Use of microorganisms for biofuel production” (January, 16th, 2018).

O. Bernard was invited to give a conference at the workshop MADEV19, (“Mathématiques Appliquées à des questions de DEVELOPPEMENT”) (Dakar, November, 25th-27th).

O. Bernard was invited at the workshop “Control engineering concepts in systems- and synthetic biology” (Stavanger, Norway 20th-21st May).

P. Bernhard gave invited presentations at the “Rencontre interdisciplinaire: Théorie des jeux: concept mathématique et applications en économie”, University of Nice (November 2019).

M. Chaves gave a seminar on dynamics and feedback architectures in gene-metabolic pathways at the center for Modeling, Simulation and Interactions (MSI), Université Côte d’Azur (June 2019).

M. Chaves was invited to give a presentation at the Minisymposium on Modeling signal transduction/gene regulatory networks organized by T. Gedeon at the 9th International Congress on Industrial and Applied Mathematics (Valencia, Spain, July 2019).

M. Chaves was invited to give a presentation at the Symposium on Modeling approaches for cancer therapy, at Université de Lille (PHLAM) (September 2019).

Jean-Luc Gouzé was invited to give presentations at Autrans (IBIS seminar), Ifremer Nantes, Inria Paris (Kaist seminar with South-Korea).

S. Touzeau was invited to present works of the EPITAG associate team at the AgriNumA’2019 Symposium on “Digital agriculture in Africa”, Dakar, Senegal (April 30th, 2019) [43].

10.1.5. Scientific Expertise

O. Bernard is a member of the scientific committee of the companies Inalve and BioEnTech.

M. Chaves was a member of the Selection Committee for a Maitre de Conference position at the Univ. Rennes.

J.-L. Gouzé was in several evaluation committees or juries: FWO, NWO, FNRS...

10.1.6. Research Administration

O. Bernard represents Inria at the ANCRE (Alliance Nationale de Coordination de la Recherche pour l’Energie).

O. Bernard is a member of the ADT (Technological Development Actions) commission at Inria.

M. Chaves is a member of the COST-GTRI (working group on International Relations at Inria’s council for scientific and technological orientation). The group is charged with evaluating Inria’s Associated Teams.

M. Chaves and W. Djema are members of the CLDD of Inria Sophia Antipolis (local committee for sustainable development).

M. Chaves is a member of the Education Board of the Master “Quantitative and Computational Sciences for Biomedical data”, Université Côte d’Azur.

J.-L. Gouzé is in the Inria committee supervising the doctoral theses, and a member of the scientific committee of Labex SIGNALIFE of the University of Nice-Sophia-Antipolis, and of COREBIO PACA. He is in the scientific committee of Académie 4 of UCA-Jedi. He is a member of the board of the SFBT (French Speaking Society for Theoretical Biology).

F. Grogard is a member of the NICE committee, which allocates post-doctoral grants and fundings for visiting scientists at Inria Sophia Antipolis.

Since 2015, F. Grogard is a member of the MBIA CSS (Specialised Scientific Commission), in charge of the research scientists evaluation at INRA. He is a member of the steering committee of Academy 3, Space, Environment, Risk & Resilience of UCA-JEDI. He is co-responsible of the development of the MSc Risk of UCA-JEDI.

L. Mailleret is the head of the M2P2 team (Models and Methods for Plant Protection) of ISA. He's in the Unit and scientific council of Institut Sophia Agrobiotech.

S. Touzeau is a member of the steering committee of the INRA metaprogramme on "Plant Health", a follow-up of the SMaCH metaprogramme (since 2016).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence: F. Grogard (45.5h ETD) and L. Mailleret (26h ETD), "Equations différentielles ordinaires et systèmes dynamiques", L3, 1st year Engineering in Modeling and Applied Mathematics, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

Master: O. Bernard (4.5h ETD), "Bioenergy from microalgae", M2, Master International Energy Management : alternatives pour l'énergie du futur, Ecole Nationale Supérieure des Mines de Paris, France.

Master: O. Bernard (18h ETD), "Modeling biotechnological processes", M2, Ecole CentraleSupélec, Saclay, France.

Master: O. Bernard (18h ETD), "Automatic Control applied to biotechnological processes", M2, Ecole CentraleSupélec, Saclay, France.

Master : J.-L. Gouzé (18h ETD), M. Chaves (12h ETD), "Modeling biological networks by ordinary differential equations", M1, 2nd year Engineering in Génie biologique, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

Master: F. Grogard (21h ETD) and L. Mailleret (21h ETD), "Bio-Mathématiques", M1, 2nd year Engineering in Modeling and Applied Mathematics, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

Master: F. Grogard (45h ETD), "Elements of mathematical modelling", M1, MSc in Environmental Hazards and Risks Management, Université Côte d'Azur, France.

Master: S. Touzeau (27h ETD), "Analyse de données", M1, 2nd year Engineering in Génie biologique, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

10.2.2. Supervision

PhD: M. Haond. "Impact de la capacité de charge de l'environnement sur les dynamiques d'expansions de métapopulations. Théories et applications à un système expérimental hôte-parasitoïde", 2015-2019, Université Côte d'Azur. Supervisors: E. Vercken (UMR ISA), L. Mailleret and L. Roques (UR BioSP). Defended on 03/26/2019.

PhD: C. Martinez von Dossow. "Modélisation, analyse et contrôle de la croissance microalgale en cultures à haute densité", 13 May 2019, Sorbonne Université. Supervisors: O. Bernard, F. Mairet and A. Sciandra.

PhD: L. Gomes Pereira "Modeling cell response heterogeneity to pro-apoptotic ligands", 26 November 2019, Univ. Côte d'Azur. Supervisors: M. Chaves and J. Roux (IRCAN, Nice).

PhD in progress: I. Tankam Chedjou. "Modeling, analysis and control of plantain plant-parasitic nematodes", University of Yaoundé I, Cameroon, since December 2015. Supervisors: J.-J. Tewa (Univ. Yaoundé I), F. Grogard, L. Mailleret, S. Touzeau.

PhD in progress: L. Chambon. "Control of models of genetic regulatory networks", since October 2016, Université Côte d'Azur. Supervisor J.-L. Gouzé.

PhD in progress: S. Nilusmas. "Gestion durable des nématodes à galles en cultures maraîchères : modélisation et optimisation du déploiement des résistances et des pratiques agronomiques", Université Côte d'Azur, since December 2016. Supervisors: S. Touzeau, C. Caporalino (ISA), V. Calcagno (ISA) and L. Mailleret.

PhD in progress: Y. Fotso Fotso. “Modeling, analysis and control of coffee berry borers”, University of Dschang, Cameroon, since January 2017. Supervisors: B. Tsanou (Univ. Dschang), S. Bowong (Univ. Douala), F. Grogard, S. Touzeau.

PhD in progress: M. Gachelin. “Selection pressure to improve lipid productivity of microalgae”, since March 2017, UPMC. Supervisors: O. Bernard and A. Sciandra.

PhD in progress: E. Firippi. “Mathematical analysis, control design and coupling for models of biological oscillators”, since October 2017, Univ. Côte d’Azur. Supervisors: M. Chaves.

PhD in progress: A. Yabo. “Control and optimal control of bacterial growth”, since October 2018, Université Côte d’Azur. Supervisors J.-L. Gouzé and J.-B. Caillaud (team McTao).

PhD in progress: A. Dos Reis de Souza. “Estimation and Control Methods for Microbial Communities”, since October 2018, Université de Lille. Supervisors: J.-L. Gouzé and D. Efimov (team Valse, Inria Lille).

PhD in progress: B. Assis Pessi. “Modelling and Control of outdoor microalgal processes”, since November 2019, Université Côte d’Azur. Supervisors: O. Bernard and L. Giraldi (team McTao).

PhD in progress: C. Djuikem. “Modelling and control of perennial plant phytopathogens”, Université Côte d’Azur, since October 2019. Supervisors: F. Grogard, S. Touzeau, S. Bowong (Univ. Douala).

PhD in progress: M. Péré. “Modeling cancer drug response heterogeneity using experimental tumor single-cell dynamics and transcriptomics”, since October 2019, Univ. Côte d’Azur. Supervisors: M. Chaves and J. Roux (IRCAN, Nice).

10.2.3. Master thesis and internships

PFE: L. Guitou, EPU MAM, supervisors J.-L. Gouzé et V. Baldazzi.

M1: L. Guitou, EPU MAM, supervisors J.-L. Gouzé et V. Baldazzi.

M1: V. Tapissier, EPU MAM, supervisors J.-L. Gouzé et J. A. Sepulchre (UCA).

M2: L. Etienne. “Combinaison de microhabitats artificiels et de ressources alimentaires pour des acariens agents de lutte biologique”, Université de Montpellier & Montpellier SupAgro, supervisors: C. Bresch (ISA), L. van Oudenhove (ISA) and L. Mailleret.

M2: B. Louis. “Modélisation individu-centrée pour optimiser l’introduction de populations et Applications en biologie de la conservation et lutte biologique”. Université Côte d’Azur, supervisor: L. Mailleret.

M2: L. Plaza Alvarez, “Microalgae growth limited by light, nitrogen, and phosphorus”. Universidad Técnica Federico Santa María, Valparaiso. Supervisors: C. Martinez von Dossow and O. Bernard.

Other: O. Bernard supervised a project involving 4 students from CentraleSupélec (first year of engineering school), 4 months, to design a system for microalgae growing under biofilm forms.

10.2.4. Juries

O. Bernard was referee for the jury of the PhD thesis of Angela La, “Process development for symbiotic culture of *Saccharomyces cerevisiae* and *Chlorella vulgaris* for in situ CO₂ mitigation”. University Paris-Saclay (May, 22nd 2019).

M. Chaves was in the HDR jury of Eugenio Cinquemani as reviewer (November, Univ. Grenoble Alpes).

M. Chaves was in the PhD juries of: Mohamed Ladjimi (as reviewer; September, Univ. Lille), Hugues Mandon (as examiner; November, Univ. Paris-Saclay), Luis Pereira (as advisor; November, Univ. Côte d’Azur).

J.-L. Gouzé was reviewer of the PhD thesis of Fatima-Zahra Tani, November, University of Montpellier.

10.3. Popularization

10.3.1. Articles and contents

- A popularization article has been published in the book "Chimie verte et IAA - Vers une bioéconomie durable" [69].

10.3.2. Interventions

- O. Bernard gave two general public conferences on the topic "Will we drive cars powered by microalgae in 2030" (Saint Etienne de Tinée, 21st September and MAMAC, Nice, November, 13th).
- P. Bernhard did several interventions for a general audience in the Alpes-Maritimes (at Biot, Saint-Vallier and Sospel).
- L. Chambon participated in MASTIC activities in the school Emile Roux (5 June 2019).
- Several members of Biocore hosted schoolchildren to show them the team's research topics.

10.3.3. Internal action

- M. Chaves gave a presentation at the local PhD Seminars organized by the students, on modeling the interactions between mammalian cell cycle and circadian clock.

CARMEN Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Member of the Organizing Committees

Several members of the team were involved in the organization of the 10th international conference on Functional Imaging and Modeling of the Heart (FIMH), that was held at Bordeaux in July 2019.

M. Leguèbe co-organizes the seminar of team "Calcul Scientifique et Modélisation" (IMB, Université de Bordeaux).

Lisl Weynans co-organizes with Edward Vigmond (IHU Liryc) the bi-monthly journal club of the modelling group at Liryc, and organizes a monthly workgroup about applied numerical methods, within the Scientific Computing and Modelling team at IMB (Institut de Mathématique de Bordeaux)

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

Mostafa Bendahmane is member of the editorial board of the "Moroccan Journal of Pure and Applied Mathematics", Mark Potse is an associate editor for "Frontiers in Cardiac Electrophysiology" and an Associate editor for "Journal of Electrocardiology".

9.1.3. Invited Talks

- Lisl Weynans: Mini-symposium on "Numerical methods for interfacial dynamics", ICIAM 2019, Valence, Spain.
- Nejib Zemzemi: Maghrebien Meeting of Young Researchers in Pure and Applied Mathematics, MYRPAM. Hammamet, Tunisia 9-12 December, 2019.
- Mostafa Bendahmane: "Recent progress in inverse problems in electrocardiology", at CAMS, American university of Beirut, Libanon.
- Mark Potse: "Atrial fibrillation dynamics", invited talk at the 2019 International Congress on Electrocardiology, Belgrade, Serbia, 2019.
- Mark Potse: "ECG imaging without imaging", invited talk at the 2019 International Congress on Electrocardiology, Belgrade, Serbia, 2019.
- Lisl Weynans: invited talk on "Hywec 2 : The Hydrodynamics of Wave Energy Convertors", Talence, 2019.
- Lisl Weynans: invited talk at the Seminar of "Institut de Mathematiques de Toulouse", 2019.
- Lisl Weynans: invited talk at the Workshop of ANR RheoSUNN, Ecole Polytechnique, Palaiseau, March 2019.
- Yves Coudière: invited plenary talk at the "9e biennale des mathématiques appliquées et industrielles de la SMAI", Guidel, 2019.
- Nejib Zemzemi: invited talk on "Mathematical Modelling of the electrical activity of the heart from ion-channels to the body surface: Forward and Inverse problems", at Institut de recherche mathématique de Rennes, March 14, 2019.

9.1.4. Research Administration

Yves Coudière is a deputy director of Directeur IMB (Institut de Mathématiques de Bordeaux, UMR 5251 CNRS, Ub, Bdx-INP). Gathering around 160 permanent members, it organizes the research in mathematics and applications of mathematics in Bordeaux.

Michael Leguebe is the secretary of the CLHSCT (Comité Local Hygiène et Sécurité au travail) of the Inria BSO research center.

Lisl Weynans is a member of the "conseil UFR maths et interactions", a member of the "conseil scientifique IMB" and a member of the "BCP" of the Inria BSO research center.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

The 2 assistant professors and 1 professor of the team teach at several levels of the Bordeaux University programs in Mathematics and Neurosciences (respectively, 192, 192 and 96 h/year on average). The researchers also have a regular teaching activity, contributing to several courses in the Applied Mathematics at the Bachelor and Master levels (usually between 16 and 32 h/year).

The PhD student are used to teach between 32 and 64 h/year, usually courses of general mathematics in L1 or mathematics for biologists in L1 or L2.

Teaching responsibilities at the University of Bordeaux:

- Yves Coudière: Master MAS (Mathématiques Appliquées, Statistiques), parcours MNCHP (Modélisation Numérique Calcul Haute Performance),
- Yves Coudière: Licence Mathématique parcours ingénierie mathématique,
- Lisl Weynans: Mineure Mathématiques du parcours International de la Licence
- Mostafa Bendahmane: Responsable de la mobilité internationale des étudiants de Licence MIASHS.

Courses (L for Bachelor level, M for Master level):

- Numerical analysis (L2)
- Programming for scientific computing with C++ (L3)
- Programming projects with Python (M1)
- Numerical approximation of PDEs: Finite Differences, Finite Elements, Finite Volumes (M1, M2)
- Supervision of programming projects (L3, M1)
- Mathematical modelling in L2 parcours medicine and physics
- Linear Algebra, Optimization under constraints (L2 and Essca school)
- Analysis, L2
- Computational Neurosciences, M2
- Neuropsychology and Psychophysiology, L3
- Graduate program EUR Digital Public Health, Bordeaux University, March 2019. Philosophy of science and the role of numerical models: introductory course in the module Modeling in life science

Courses at doctoral level:

- Liryc summer school, July 2019: Computer modeling of cardiac electrophysiology, 3 hours
- Course of mathematics for medicine students: March 2019, course organized by the Ecole Doctorales EDMI and SVS of Bordeaux University Introductory course of mathematical modelling and parameter estimation techniques in complex models (4h30)

9.2.2. Supervision

PhD : Antoine Gérard, Modèles numériques personnalisés de la fibrillation auriculaire , Univ. Bordeaux, July 12th 2019, encadrant: Yves Coudière

PhD in progress : Andony Arrieula, Oct. 2018, encadrant: Mark Potse

PhD in progress: Oumayma Bouhamama, Oct. 2018 , encadrante: Lisl Weynans

PhD in progress : Syed Hassaan Ahmed Bukhari, Oct. 2018, encadrant: Mark Potse

PhD in progress : Amel Karoui, Oct 2017, encadrants: Mostafa Bendahmane and Nejib Zemzemi

PhD in progress : Bachar Tarraf, Oct. 2018, encadrant: Yves Coudière and Michael Leguebe

9.2.3. Juries

- Lisl Weynans: member of the Jury for the recruitment of CR Inria, BSO research center.
- Lisl Weynans : member of the jury for the PhD of Umberto Bosi in applied mathematics (Univ. Bordeaux)
- Yves Coudière: chairman of the jury for the PhD of J. Engelhardt in neurology (Univ. Bordeaux)
- Yves Coudière: member of the jury for the PhD of A. Gérard in applied mathematics (Univ. Bordeaux)
- Nejib Zemzemi : member of the jury for the PhD of Rabeb Chamekh in applied mathematics
- Mostafa Bendahmane: member of the jury for the PhD of Mohamed Zagour in applied mathematics.

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Coordination of a workgroup entitled "CultureMATH Bordeaux", working on writing dissemination articles for the website <https://culturemath.ens.fr>.

9.3.2. Education

Organization of "Moi informaticienne, moi mathématicienne (MIMM)": one week internship at the University for young girls (15-16 year old) interested in maths and informatics.

9.3.3. Interventions

- National events: Fête de la Science, Semaine des maths,
- In educational institutions: several talks in high-schools about scientific computing and applied mathematics
- Presentation stand for "Simric" at the 10 years anniversary of the Inria Bordeaux Sud-Ouest centre.
- Modeling stand at the "Journée portes ouvertes de Liryç", 2019.
- Reception of 5 high-school pupils (élèves de 3e, 15 years old).

COMMEDIA Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

- Céline Grandmont
 - Co-organizer of Inria-LJLL meeting in scientific computing
- Damiano Lombardi
 - Co-organisation (with Sanjay Pant, Swansea University) of two mini-symposia: Machine learning methods in biomedical engineering and Uncertainty Quantification and Bayesian inference in biomedical applications at CMBE 2019, June 2019, Sendai, Japan
 - Co-organizer of Inria-LJLL meeting in scientific computing
- Olga Mula
 - Co-organizer of Summer School on Sparsity for Physics, Signals and Learning, at Inria Paris, June 2019
 - Co-organiser of the GdT Stat-Num at Paris Dauphine

10.1.1.1. Member of the Organizing Committees

- Céline Grandmont
 - Member of the local organizing committee of WCCM 2020

10.1.2. Scientific Events: Selection

- Muriel Boulakia
 - Member of the scientific committee of LIA COPDESC and Lions-Magenes Days, LJLL, November 2019, Paris
- Miguel Ángel Fernández Varela
 - Member of the scientific committee of XDMS 2019, July 2019, Lugano

10.1.2.1. Member of the Editorial Boards

- Céline Grandmont
 - Member of the editorial board of Mathematical Modelling of Natural Phenomena
 - Member of the editorial board of Journal of Mathematical Fluid Mechanics (since November 2019)
- Olga Mula
 - Member of the editorial board of Calcolo (since October 2019)

10.1.2.2. Reviewer - Reviewing Activities

- Muriel Boulakia
 - Expert for « Appel à projets générique », ANR 2019

10.1.3. Research Administration

- Miguel Ángel Fernández Varela
 - Head of Science, Inria Paris (from September 2019)
 - Deputy Head of Science, Inria Paris (until August 2019)
 - Member of the Inria Evaluation Committee

- Céline Grandmont
 - Member of the Inria Evaluation Committee
 - Member of the Inria Parity Committee
 - Member of the scientific board of the EDMH, Paris Saclay

10.1.4. Conferences

- Muriel Boulakia
 - Seminar, Modeling and scientific computation, November 2019, LAGA, Univ. Paris 13
 - Invited speaker, Control and stabilization issues for PDE, September 2019, Toulouse
 - Contributed talk in minisymposium, Applied Inverse Problems Conference, July 2019, Grenoble
 - Seminar, Numerical Analysis and PDE, Université Lille, March 2019, Lille
 - Invited speaker, Workshop on fluid-structure interaction, March 2019, Politecnico di Milano, Italy
- Miguel Ángel Fernández Varela
 - Seminar, Laboratoire Mathématiques Jean Leray, Univ Nantes, Nantes
 - Contributed talk in minisymposium, ICIAM, July 2019, Valencia, Spain
 - Invited speaker, iHEART conference on Modelling the Cardiac Function, July 2019, Varese, Italy
- Felipe Galarce Marin
 - Seminar at Inria Chile, July 2019, Santiago, Chile
 - Semina at Universidad Técnica Federico Santa Maria, July 2019, Valparaiso, Chile
 - Seminar at Pontificia Universidad Católica de Valparaíso, July 2019, Valparaíso, Chile
 - Contributed talk in minisymposium, CSMA, May 2019, Giens
 - Contributed talk in minisymposium, Enumath, September/October 2019, Egmond aan Zee, The Netherlands
- Fannie Gerosa
 - Contributed talk in minisymposium, 9th biennial congress of SMAI, May 2019, Guidel Plages, France
 - Contributed talk in minisymposium, 15th US National Congress on Computational Mechanics, July/August 2019, Austin, Texas
- Céline Grandmont
 - Plenary speaker, International Meeting on Applied Mathematics & Evolution, La Rochelle, April 2019
 - Keynote speaker, PDE 2019: Partial Differential Equations in Fluids and Solids, Berlin, Sep. 2019
 - Invited Speaker, International Conference “Multiscale Modeling in Fluid Mechanics and Fluid-Structure Interaction” , Oct. 2019, Vilnius
 - Seminar, ULB, Bruxelles, Nov. 2019
 - Seminar, CMAP, Ecole Polytechnique, Dec. 2019
- Damiano Lombardi
 - Contributed talk in minisymposium, ICIAM, July 2019, Valencia, Spain
 - Contributed talk at the Lions-Magenes days, November 2019, Paris.
 - Contributed talk at Mortech, November 2019, Paris.

- Olga Mula
 - Contributed talk at Enumath, September/October 2019, Egmond aan Zee, The Netherlands
 - Contributed talk at INdAM workshop on kinetic equations, November 2019, Rome, Italy
 - Contributed talk at Mortech, November 2019, Paris.
- Fabien Raphel
 - Contributed poster at The Safety Pharmacology Society (SPS) annual meeting, September 2019, Barcelona, Spain
 - Contributed talk at The Safety Pharmacology Society (SPS) webinar, November 2019, Paris
 - Invited talk at Math jobs forum University of Nantes, January 2019, Nantes

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence:

- Muriel Boulakia
 - Projects on differential equations, 34h, L3, Polytech Sorbonne, Sorbonne Université
 - Nonlinear systems and optimization, 35h, L3, Polytech Sorbonne, Sorbonne Université
 - Numerical approximation of functions, 36h, L3, Sorbonne Université
- Fannie Gerosa
 - Function series, integrals and application to differential equation, 38h, L3, Sorbonne Université
- Damiano Lombardi
 - Cours/TD analysis and scientific computing, 32 h, ENPC, L3.
 - Model reduction in large dimensions, 9h, ENPC, L3.
 - TD, Function approximation, Sorbonne University , 18h, L3

Master:

- Muriel Boulakia
 - Preparatory course for teaching admission examination “Agrégation”, 40h, M2, Sorbonne Université
- Miguel Ángel Fernández Varela
 - Modeling and numerical methods for hemodynamics, 30h, M2, Sorbonne Université
- Damiano Lombardi
 - Mini-cours Modeling of cardiac electrophysiology, 3h, M2, Ecole des Mines Paristech

Others:

- Céline Grandmont
 - Invited Lecturer, Hausdorff School on “Modeling and Analysis of Evolutionary Problems in Materials Science” , 6h, Bonn, Sept. 2019

- Invited Lecturer, Institut d'Etudes Scientifiques de Cargèse, Summer school : *Why modelling the pulmonary ventilation? Music, exercise and medicine*, 1h30, November 2019

10.2.2. Supervision

PhD: Ludovic Boilevin-Kayl, Modeling of cardiac implantable devices, Sorbonne Université, defended on July 10, 2019. Supervisors: J.-F. Gerbeau & M.A. Fernández Varela

PhD: Alexandre This, Fusion data/simulation for the assessment of mitral regurgitation, Sorbonne Université, defended on May 28, 2019. Supervisors: O. Bonnefous, M.A. Fernández Varela, J.-F. Gerbeau & H. Morales

PhD in progress: Mocia Agbalessi, Modeling and patient specific fluid-structure interaction simulations of aortic pathological configurations. Since April, 2019, Supervisors: M.A. Fernández Varela & D. Lombardi

PhD in progress: Felipe Galarce, Enhancing hemodynamics measurements with mathematical modeling, since December 2017. Supervisors: J.-F. Gerbeau, D. Lombardi & O. Mula

PhD in progress: Fannie Gerosa, Immersed boundary methods for fluid-structure interaction with topological changes, since January 2018. Supervisor: M.A. Fernández Varela

PhD in progress: Fabien Raphel, Mathematical modeling and learning of biomedical signals for safety pharmacology. Since April 2019. Supervisors: J.-F. Gerbeau & D. Lombardi

10.2.3. Juries

- Miguel Ángel Fernández Varela
 - Hiring committees: Inria Paris (CRCN, Vice-président), Université de Franche-Comté (MdC)
 - PHD committee: P. Quemar, Université Paris-Nord (reviewer), D. Nolte, Groningen University, The Netherlands (reviewer), R.J. Rebolledo Cormack, Universidad de Concepción, Chile (reviewer)
- Céline Grandmont
 - Member of the “agrégation” jury in mathematics
 - Hiring committees: Inria CRCN, Inria DR2
 - PHD committee: N. Lauzeral, Ecole centrale de Nantes (reviewer), F. Vergnet, Paris Sud Univ (member), A. Dekkers, Centrale Supélec (reviewer)
 - HDR committee: A. Decoene, Paris-Sud Univ (reviewer)

10.3. Popularization

10.3.1. Interventions

- Céline Grandmont
 - Meeting with junior high school students, Collège Iqbal Masih, Saint-Denis. Interview: <https://www.youtube.com/watch?v=eJVvVB7z8tU&t=12s>

DRACULA Project-Team

7. Dissemination

7.1. Promoting Scientific Activities

7.1.1. Scientific Events: Organisation

7.1.1.1. General Chair, Scientific Chair

- Olivier Gandrillon, International Conference of Systems Biology 2019, Lyon, <http://www.ens-lyon.fr/evenement/recherche/icsb-2018-19th-international-conference-systems-biology>

7.1.1.2. Member of the organizing Committees

- Laurent Pujo-Menjouet, The Society for Mathematical Biology, Annual Meeting and Conference, Montreal, Canada, mini-symposium co-organizer, 21-26 July 2019

7.1.2. Journal

7.1.2.1. Member of the Editorial Boards

- Mostafa Adimy, Journal of Nonlinear Systems and Applications
- Olivier Gandrillon, Associate editor for BMC research notes
- Vincent Calvez, Journal of Mathematical Biology; SIAM Journal of Mathematical Analysis
- Laurent Pujo-Menjouet, Associate editor of PLOS ONE; Journal of Theoretical Biology; Mathematical modelling of natural phenomena

7.1.2.2. Reviewer - Reviewing Activities

- Mostafa Adimy, Canadian Journal of Mathematics; PLOS Neglected Tropical Diseases; Journal of Mathematical Modeling of Natural Phenomena
- Olivier Gandrillon, Plos Computational Biology; Progress in Biophysics and Molecular Biology; Journal of the Royal Society Interface; Journal of theoretical biology; Systems Biology and Applications; Genes
- Vincent Calvez, Inventiones Mathematicae; Duke Math Journal; Journal of the EMS; Nature Physics; Ecology Letters
- Laurent Pujo-Menjouet, Journal of Theoretical Biology; Plos One, Plos Computational Biology; Journal of Mathematical Modeling of Natural Phenomena; Journal of Mathematical Biology; Bulletin of Mathematical Biology; Computational and applied mathematics; Mathematical Biosciences and Engineering

7.1.3. Invited Talks

- Mostafa Adimy, International Conference on Mathematical Modelling in Biomedicine, Moscow - Russia, 30 Septembre - 04 Octobre, 2019, <http://eng.rudn.ru/science/conferences/9370>
- Mostafa Adimy, 9ème colloque, Tendances dans les Applications Mathématiques (TAMTAM), Tlemcen - Algeria, 24 - 27 February 2019, <https://tamtam2019-univ-tlemcen.weebly.com/accueil.html>
- Vincent Calvez, BIOMAT Granada, Patterns in Life and Social Sciences, Granada - Spain, June 17-19, <http://www.ugr.es/~kinetic/biomat/>
- Vincent Calvez, Colloque d'ouverture 50 ans du Laboratoire J.L. Lions, Roscoff - France, 4-8 mars 2019 <https://ljl-roscoff.sciencesconf.org>
- Vincent Calvez, Journées Aussois Chaire MMB, Aussois - France, 19 - 23 May <http://www.cmap.polytechnique.fr/chaire-mmb/Aussois2019.html>

- Vincent Calvez, LMS Research School, PDEs in Mathematical Biology: Modelling and Analysis, ICMS, Edinburgh - UK, 29 April – 3 May 2019, https://www.icms.org.uk/LMS_PDEsmathbio.php
- Laurent Pujo-Menjouet, Mathématiques étonnantes, SMF conference, Lyon, 9 December, <https://smf.emath.fr/conference-coeur>

7.1.4. Leadership within the Scientific Community

- Olivier Gandrillon, Director of BioSyL, the Federative Research Structure for Systems Biology attached to University of Lyon, <http://www.biosyl.org>
- Thomas Lepoutre, Head of the Groupe de Recherches CNRS MAMOVI on applied mathematical modelling in Life Sciences

7.1.5. Research Administration

- Léon Tine, Membre conseil du département de Mathématiques, UCBL 1
- Léon Tine, Co-responsable de l'enseignement TMB (Techniques Mathématiques de Base) du portail PCSI, UCBL 1
- Mostafa Adimy, Comité scientifique (COS) du centre Inria Rhône-Alpes
- Mostafa Adimy, Comité scientifique (CS) de l'Institut Camille Jordan, UCBL 1
- Mostafa Adimy, Comité des thèses de l'Institut Camille Jordan, UCBL 1
- Laurent Pujo-Menjouet, Responsable de la filière mathématiques pour la biologie et la médecine pour le master M2 Maths en Actions à l'UCBL 1
- Laurent Pujo-Menjouet, Correspondant mobilité internationale pour le département de mathématiques à l'UCBL 1
- Laurent Pujo-Menjouet, Directeur du portail mathématiques et informatique à l'UCBL 1
- Thomas Lepoutre member of the CORDI-S commission of Inria.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

- Licence: Laurent Pujo-Menjouet, Fondamentaux des mathématiques, 138h EQTD, L1, UCBL 1
- Licence: Laurent Pujo-Menjouet, 3ème année biosciences BIM, Systèmes Dynamiques et EDP, 45h EQTD, INSA Lyon
- Licence : Léon Tine, Techniques mathématiques de base, 53h (EqTD), niveau L0, UCBL 1
- Licence : Léon Tine, Techniques mathématiques de base, 62h (EqTD), niveau L1, UCBL 1
- Licence : Léon Tine, Initiation LaTeX+ stage, 12h (EqTD), niveau L3, UCBL 1
- Licence : Vincent Calvez, Cours de math pour étudiants médecins, cursus Médecine-Sciences (2e année fac de médecine), 40h, Lyon Est/Sud
- Master : Samuel Bernard, Population Dynamics, 36h ETD, M2, UCBL 1
- Master : Mostafa Adimy, Population Dynamics, 9h ETD, M2, UCBL, UCBL 1
- Master : Mostafa Adimy, Epidemiology, 21h ETD, M2, UCBL, UCBL 1
- Master: Thomas Lepoutre, préparation à l'option pour l'agrégation, 45 h eq TD, M2 UCBL 1
- Master: Laurent Pujo-Menjouet, Systèmes Dynamiques, 72 h EQTD, M1, UCBL 1
- Master: Laurent Pujo-Menjouet, Systèmes complexes: modelling biology and medicine, M2, 9h EQTD, ENS-Lyon
- Master: Laurent Pujo-Menjouet, 4ème année biosciences BIM: ED-EDP, 24h EQTD, INSA Lyon
- Master: Léon Tine, Maths en action, Remise à niveau analyse, 12h (EqTD), niveau M2, UCBL 1
- Master: Léon Tine, Maths en action, épidémiologie, 18h (EqTD), niveau M2, UCBL 1

- Master: Vincent Calvez, Modèles mathématiques et analyse pour Ecologie et Evolution, 24h, niveau M2 avancé, ENS-Lyon
- Master: Olivier Gandrillon, Systems Biology, 8h, niveau M2 Génopopath, UCBL 1

7.2.2. Supervision

- PhD in progress: Aurélien Canet, “Contribution à l’étude de la quantification de la réponse d’une tumeur solide après un traitement par radiothérapie”, Université Lyon, since January 2016, supervisors: Larry Bodgi, Nicolas Foray and Laurent Pujo-Menjouet
- PhD in progress: Kyriaki Dariva, “Modélisation mathématique des interactions avec le système immunitaire en leucémie myéloïde chronique”. Université Lyon 1, since September 2018, supervisor: Thomas Lepoutre
- PhD in progress: Ronan Duchesne, “Vers un modèle multi-échelle de la différenciation cellulaire : Application à la différenciation érythrocytaire”, École normale supérieure de Lyon and Université Lyon 1, Décembre 2019, supervisors: Olivier Gandrillon and Fabien Crauste
- PhD in progress: Alexey Koshkin, “Inferring gene regulatory networks from single cell data”, ENS de Lyon, since September 2018, supervisors: Olivier Gandrillon and Fabien Crauste
- PhD in progress: Paul Lemarre, “Modélisation des souches de prions”. Université Lyon 1, since May 2017, supervisors: Laurent Pujo-Menjouet et Suzanne Sindi (University of California, Merced)
- PhD in progress: Léonard Dekens, “Adaptation d’une population avec une reproduction sexuée à un environnement hétérogène : modélisation mathématique et analyse asymptotique dans un régime de petite variance”, Université Lyon 1, since September 2019, supervisor: Vincent Calvez.
- PhD in progress: Mete Demircigil, “Etude du mouvement collectif chez Dictyostelium Discoideum et autres espèces. Modélisation, Analyse et Simulation”, ENS-Lyon, since September 2019, supervisor: Vincent Calvez.
- PhD in progress: Ghada Abi Younes, “Modélisation mathématique des maladies inflammatoires”, Université Lyon, since November 2019, supervisor: Vitaly Volpert.
- PhD in progress: Elias Ventre, “Paysage et trajectoire - des réseaux de régulation génique aux trajectoires cellulaires”, ENS - Lyon, since October 2019, supervisors: Olivier Gandrillons and Thibault Espinasse.
- PhD in progress: Cheikh Gueye, “Problèmes inverses pour l’estimation de paramètre de modèles mathématiques”, Université Lyon, since October 2019, supervisors: Laurent Pujo-Menjouet and Léon Tine.

7.2.3. Juries

- Laurent Pujo-Menjoue: PhD of Hugo Martin, Étude de données et analyse de modèles intégrés-différentiels en biologie cellulaire, Laboratoire Jacques-Louis Lions - Sorbonne Université, examiner.
- Vincent Calvez: PhD of Pierre Roux, Équations aux dérivées partielles de type Keller-Segel en dynamique des populations et de type Fokker-Planck en neurosciences, Laboratoire de mathématiques d’Orsay - Université Paris-Sud, reviewer
- Vincent Calvez: PhD of Xiaoming Fu, Reaction-diffusion Equations with Nonlinear and Nonlocal Advection Applied to Cell Co-culture, Institut de Mathématiques de Bordeaux, Université de Bordeaux, examiner
- Olivier Gandrillon: PhD of Ronan Duchesne, Erythroid differentiation in vitro under the lens of mathematical modelling, ENS-Lyon, examiner.

7.3. Popularization

7.3.1. Articles and contents

- Laurent Pujo-Menjouet : Radio (France Inter), la tête au carré, <https://www.franceinter.fr/emissions/la-tete-au-carre/la-tete-au-carre-10-mai-2019>
- Laurent Pujo-Menjouet : Radio (Europe 1), Wendy Bouchard, <https://www.europe1.fr/emissions/on-fait-le-tour-de-la-question-avec-wendy-bouchard/wendy-bouchard-aujourd'hui-alchimie-equation-formule-magique-lamour-est-il-le-fruit-du-hasard-3905606>
- Laurent Pujo-Menjouet : Radio (Québec), <https://www.qub.radio/balado?id=6bb8beb9-9bb3-493f-abe3-aa7100f60a73&episode=3f6e7a5c-b11a-45ff-aa28-aa96015f517b&fbclid=IwAR2DUNgo-QvKh3z9oGeslTJOnCa3f5GzTYWIIGrYSe5hrm7ydSgc1gW6Z5g>
- Laurent Pujo-Menjouet : Radio Canada, <https://ici.radio-canada.ca/premiere/emissions/region-zero-8/episodes/439145/audio-fil-du-vendredi-26-juillet-2019/10>
- Laurent Pujo-Menjouet : Presse écrite (L'Express), https://www.lexpress.fr/actualite/sciences/le-livre-qui-veut-modeliser-l-amour-par-les-mathematiques_2075520.html
- Laurent Pujo-Menjouet : Presse écrite (Le Figaro), <http://www.lefigaro.fr/sciences/le-bonheur-conjugal-c-est-simple-comme-une-equation-differentielle-20190506>
- Laurent Pujo-Menjouet : Presse écrite (Slate), <http://www.slate.fr/story/178140/maths-livre-jeu-amour-hasard-laurent-pujo-menjouet>
- Laurent Pujo-Menjouet : Presse écrite (Le Parisien), <http://www.leparisien.fr/societe/et-si-l-amour-n-etait-pas-le-fruit-du-hasard-10-06-2019-8090055.php>
- Laurent Pujo-Menjouet : Presse écrite (Montreal Gazette), <https://montrealgazette.com/news/local-news/equations-can-predict-the-success-of-relationships-mathematician-says>
- Laurent Pujo-Menjouet : Presse écrite (Society), <http://math.univ-lyon1.fr/~pujo/Society.pdf>
- Laurent Pujo-Menjouet : Presse écrite (Le matin dimanche, Suisse), <https://twitter.com/lpmenjouet/status/1130474006312890373/photo/1>
- Laurent Pujo-Menjouet : Presse écrite (Le journal de Montréal), <https://www.journaldemontreal.com/2019/07/30/et-si-lamour-se-maintenait-avec-des-equations-mathematiques>

7.3.2. Interventions

- Thomas Lepoutre: Visite de l'inria pour les stagiaires de 3e de l'ICJ (plusieurs fois dans l'année, une matinée en général).
- Thomas Lepoutre participation to MathaLyon intervention
- Laurent Pujo-Menjouet participation to “Math en Jeans”, Collège-Lycée Lacassagne, Lyon and Collège Gratte-Ciel, Villeurbanne
- Laurent Pujo-Menjouet participation to “Mathématiques étonnantes, SMF conférence”, Lyon
- Laurent Pujo-Menjouet participation to TEDx, Montrouge https://www.youtube.com/watch?v=xJ8wE_wmtUY

M3DISIM Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific events organisation

9.1.1.1. General chair, scientific chair

F. Clément, Session *Biomathématiques, Bioinformatique et Biophysique pour la reproduction*, ReproSciences 2019 Toulouse (France), April 24-26

D. Chapelle, M. Genet: Session co-chairs at the 6th International Conference on Computational and Mathematical Biomedical Engineering (CMBE2019), Sendai City (Japan), June 10-12

9.1.1.2. Member of organizing committees

J.M. Allain, Member of the workshop Biomechanics from cells to tissues organising committee

D. Chapelle, Chair of the organizing committee of the VPH2020 conference (Paris, August 2020)

F. Clément, ReproSciences 2019, Toulouse (France), April 24-26

M. Genet, D. Chapelle, Co-organizers of the Paris-Saclay University Biomechanics Seminar Series (Until June 2019)

P. Moireau, Member of the organizing committee of the VPH2020 conference (Paris, August 2020)

9.1.2. Scientific events selection

9.1.2.1. Reviewer

J.M. Allain, Member of the European Society of Biomechanics conference scientific committee

R. Chabiniok, reviewer for FIMH2019

M. Genet, reviewer for the 10th international conference on Functional Imaging and Modeling of the Heart (FIMH, June 6-8, 2019, Bordeaux)

9.1.3. Journal

9.1.3.1. Member of editorial boards

D. Chapelle, Member of the editorial board of journal *Computers & Structures*

D. Chapelle, Member of the editorial board of journal *ESAIM: M2AN*

F. Clément *Frontiers*, review editor (Systems Endocrinology)

P. Le Tallec, Member of the editorial board of journal *Computer Methods in Applied Mechanics and Engineering*

P. Le Tallec, Member of the editorial board of journal *Computer and Structures*

9.1.3.2. Reviewer - Reviewing activities

J.M. Allain, reviewer for “Acta Biomaterialia”, “Journal of Anatomy”, “Journal of Biomechanics” and “Journal of the Mechanical Behavior of Biomedical Materials”

R. Chabiniok, reviewer for “Philosophical Transactions of the Royal Society A”

F. Clément, reviewer for “Endocrinology”, “PloS Comp. Biol.”, “Appl. Math. Mod.”

M. Genet, reviewer for “Acta Biomaterialia” and “Inverse Problems in Science & Engineering”

D. Chapelle, reviewer for “Biomechanics and Modeling in Mechanobiology”, “Computers & Structures”, “International Journal for Numerical Methods in Biomedical Engineering”

S. Imperiale, reviewer for “Numerische Mathematik” and “Proceeding of the royal society A”

P. Moireau, reviewer for “Journal of Computational Physics”, “Biomechanics and Modeling in Mechanobiology”

9.1.4. Invited talks

F. Clément. Invited seminar at MaiAGE (France), invited mini-symposium talk to Equadiff, Leiden, The Netherlands

M. Genet, invited keynote at the 90th Annual Meeting of the International Association of Applied Mathematics and Mechanics (GAMM, February 18-22), Vienna, Austria

M. Genet, invited keynote at the francilian mechanics meeting (RFM, Mai 27-28), Fontainebleau

M. Genet, invited keynote at the “Biomechanics from cell to tissue” workshop (November 8), Gif-sur-Yvette

P. Le Tallec, invited speaker at at the 13th International Conference on Advanced Computational Engineering and Experimenting (ACEX, July 1-5), Athens, Greece

D. Chapelle, invited lecturer at iHeart workshop (22-24 July), Varese, Italy

P. Moireau, invited lecture at the GDR MAMOMI 2019 days, Tours, France

P. Moireau, invited lecture at BME symposium 2019, Ecole Polytechnique, France

P. Moireau, invited seminars at LMA Marseille France and CMAP Polytechnique, France

9.1.5. Leadership within the scientific community

D. Chapelle, Member of the board of directors of the VPH Institute

D. Chapelle, Member of the steering committee of the BioMedical Engineering (BME) Institute coordinated by Ecole Polytechnique

F. Clément, member of the direction and scientific board of **GdR REPRO** (Integrative and translational approaches of human and animal reproduction)

F. Clément, expert of the **BCDE** (Cell Biology, Development and Evolution) ITMO (Multi Organization Thematic Institute) of the French National Alliance for Life and Health Sciences **Aviesan**.

P. Moireau, Member of the steering committee of Department of Mathematics of Université Paris Saclay and Jacques Hadamard Foundation

9.1.6. Scientific expertise

J.M. Allain, Reviewer for the NSERC (Canadian ANR)

R. Chabiniok, Reviewer for Swiss National Science Foundation

F. Clément, member of the INRA DR2 admissibility and admission juries “Agronomie, biologie et amélioration des plantes, sciences du numérique, sciences économiques et sociales”

M. Genet, Reviewer for the Swedish Foundation for Strategic Research

S. Imperiale, Consultant for CEA

P. Moireau, Reviewer for **ISCD** (Data science Institute, Paris Sorbonne Université)

P. Moireau, Reviewer for ANR and Member of the evaluation committee 46 "Numerical models, simulations, applications"

P. Moireau, member of the MAP5 Paris Descartes, MCF (assistant professor) admission jury

9.1.7. Research administration

J.M. Allain, Scientific Advisory Board, chair BioMecAM

R. Chabiniok, in charge of the objectives of Inria Associate team ToFMODE (with UT Southwestern Medical center Dallas, USA)

D. Chapelle, Head of Science of Inria Saclay-Ile-de-France, and member of the Inria Evaluation Committee

P. Moireau, Member of the LMS board of direction

P. Le Tallec, Director of the Laboratory of Solid Mechanics at Ecole Polytechnique

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Bachelor: J.-M. Allain, Supervision of the introductory projects in physics, 15h, B1, Ecole Polytechnique, France

Bachelor: J.-M. Allain, “Classical mechanics”, 24h, B2, Ecole Polytechnique, France

Bachelor: J.-M. Allain, “Advanced labwork”, 12h, B3, Ecole Polytechnique, France

Bachelor: M. Genet, “Continuum Mechanics I”, B3, 40h, École Polytechnique, France

Bachelor: M. Genet, “Continuum Mechanics II”, B3, 40h, École Polytechnique, France

Bachelor: S. Imperiale, “MA102 – Analyse pour les EDP”, 24h, B3, ENSTA ParisTech, France

Bachelor: P. Le Tallec, “Mécanique des Milieux Continus 2. ”, 24h, L3, École Polytechnique, France

Bachelor: P. Le Tallec, “Mechanics of Continuous Media and Structure. ”, 24h, Y4, Shanghai Jiao Tong Elite Institute of Technology, China

Master: J.-M. Allain, “Statistical mechanics: application to cell motility”, 20h, M2, Ecole Polytechnique, France

Master: D. Chapelle, “Biomechanical Modeling of Active Tissues”, 33h, M2, Université Paris-Saclay, France

Master: M. Genet, “Plasticity and Fracture”, 18h, M1, Ecole Polytechnique, France

Master: P. Le Tallec, “Solid and Continuum Mechanics”, 12h, M1, Master of Nuclear Energy, Université Paris-Saclay, France

Master: P. Moireau, “Biomechanical Modeling of Active Tissues”, 8h, M2, Université Paris-Saclay, France

Master: P. Moireau, “Méthodes et problèmes inverses en dynamique des populations”, 16h, M2, UPMC, France

Master: P. Moireau, “AMS305 – Complétion de données et identification dans les problèmes gouvernés par des équations aux dérivées partielles”, 16h, M2, Université Paris-Saclay, France

9.2.2. Supervision

PhD: F. Caforio, “Modélisation mathématique et numérique de la propagation d’ondes élastique dans le coeur”, supervisors: D. Chapelle and S. Imperiale, defended in January

PhD: F. Kimmig, “Multi-scale modeling of muscle contraction – From stochastic dynamics of molecular motors to continuum mechanics, in interaction with experimental assays”, supervisors: M. Caruel and D. Chapelle, defended in December

PhD: F. Robin “Multiscale modeling of the morphodynamics in ovarian follicles”, supervisors: F. Clément & Romain Yvinec [INRA], defended in September

PhD: F. Wijanto, “Multiscale Mechanics of soft tissues”, supervisors: J.-M. Allain and M. Caruel, defended in December

PhD in progress: G. Ballif “Stochastic multiscale modeling in developmental and reproductive biology”, started October 2019, supervisors: F. Clément & R. Yvinec [INRA]

PhD in progress: J. Manganotti, “Energy preserving cardiac circulation models”, started october 2019, supervisors: S. Imperiale and P. Moireau,

PhD in progress: N. Tueni, “Multiscale properties of the passive cardiac muscle”, started 01/2018, supervisors: J.M. Allain and M. Genet

PhD in progress: C. Giraudet, “Cornea biomechanics”, started 10/2018; supervisors: J.M. Allain and P. Le Tallec

PhD in progress: E. Berberoglu (ETHZ, Switzerland), “Image Guided Computational Cardiac Mechanics”, started February 2017, supervisors: M. Genet and S. Kozerke (ETHZ, Switzerland)

PhD in progress: C. Della Valle, “Modélisation et estimation des dynamiques d’assemblage de protéines”, supervisors: M. Doumic and P. Moireau

PhD in progress: M. Gusseva, “Cardiac Biomechanical Modeling for Chronic Ventricular Loading”, supervisors: R. Chabiniok, D. Chapelle, T. Hussain, started in December 2017

PhD in progress: A. Le Gall, “Cardiac modelling for monitoring purposes during general anaesthesia and at Intensive Care Unit”, supervisors: R. Chabiniok, D. Chapelle, E. Gayat, started in November 2016

PhD in progress: C. Patte, “Lung multiscale poromechanical modeling: from breathing to pulmonary fibrosis-induced chronic remodeling”, supervisors: M. Genet and D. Chapelle, started November 2017

PhD in progress: J. Joachim “Développement d’une nouvelle méthode d’administration automatisée des médicaments utilisés chez les patients sous anesthésie générale basée sur un monitoring totalement non-invasif”, supervisor: E. Gayat, started September 2018

9.2.3. *Juries*

J.M. Allain, PhD Jury of T. Cochereau (referee), Grenoble University, PhD Advisor L. Bailly, March 18

J.M. Allain, PhD Jury of T. Rongsawat (referee), Montpellier University, PhD Advisor H. Sentenac, December 13

D. Chapelle, PhD Jury of M. Pfaller (referee), TUM, PhD Advisor W. Wall, April 26

D. Chapelle, PhD Jury of F. Vallée, PhD Advisor E. Gayat, Sorbonne Université, June 20

D. Chapelle, PhD Jury of T. Boucneau, PhD Advisor X. Maître, Université Paris-Saclay, July 3

F. Clément, PhD Jury of H. Martin, Sorbonne Université, July 15

F. Clément, PhD Jury of A. Perrillat-Mercerot, Université de Poitiers, October 22

P. Moireau, PhD Jury of Lorenzo Sala, PhD Advisor C. Prud’homme, Université de Strasbourg, September 27

P. Moireau, PhD Jury of Sebastian Reyes Riffo, PhD Advisor J. Salomon, Université Paris Dauphine, November 29

P. Moireau, PhD Jury of François Kimmig, PhD Advisor D. Chapelle, Institut Polytechnique de Paris, December 6

9.3. Popularization

C. Patte, J. Diaz and J. Manganotti, leading of a scientific activity for the Fête des Sciences day organized by Inria. October 11

C. Patte, creation of a scientific activity for middle and high school students as part of a popularization doctoral mission

C. Patte, supervision of a research activity for the RJMI (Rendez-vous des Jeunes Mathématiciennes et Informatiennes) organized by Inria. October 21 & 22

MAMBA Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Organisation

9.1.1.1. General Chair, Scientific Chair

- J. Clairambault has organised with Stylianos Xanthopoulos (University of the Aegean), Nikolaos Sfakianakis (University of St. Andrews), Nikos Kavallaris (University of Chester) and Pierre-Alexandre Bliman the Summer school and workshop *MBMC-Samos 2019* “Mathematical Biology on the Mediterranean Conference”, Samos island, Greece, September 1-14, see <http://actuarweb.aegean.gr/mbmc2019>. This conference, envisioned to be the first of a series of such MBMCs, consisted of two twin events, the Summer school and the workshop (1st and 2nd week) that were funded by Inria DGDS and DPEI, together with EMS and ESMTB.
- Dirk Drasdo is member of the Program committee of the SBMC 2020 (Heidelberg, Germany), May, 25-27.
- L. Almeida, B. Perthame and D. Peurichard coordinate a math-bio work group every month at LJLL
- D. Peurichard and D. Drasdo coordinate the internal 'Open MAMBA seminar' - seminar for PhD and post-doctoral students of the MAMBA team
- Pierre-Alexandre Bliman, together with Christian Schaerer (Polytechnic School, Universidad Nacional de Asunción, Paraguay), organized the Workshop on Advanced Control Techniques for Mosquito-Borne Diseases 2019 (WTAEM 2019) 11–17 november 2019, <https://sites.google.com/view/wtaem/wtaem>
- Benoit Perthame organized a France-China summer school 1-5 july 2019 (partnership LIA-SFMA, Institute of Natural Science and Department of mathematics, Shanghai Jiao Tong University)

9.1.1.2. Member of the Organizing Committees

- On October 7th and 8th, Marie Doumic co-organized the symposium *Deciphering the functional mechanisms of biological macromolecules* with Raphaël Guérois (CEA) and Marc Baaden (IBPC).
- Marie Doumic was a member of the organisation committee for the 50th anniversary of J-L. Lions laboratory (November 27-29).
- Marie Doumic co-organised the Workshop "Mathematical Models in Cancer", August 1-2, Vienna, Austria.

9.1.2. Scientific Events: Selection

9.1.2.1. Member of the Conference Program Committees

- Pierre-Alexandre Bliman was in the Editorial Board of the conference “European Control Conference”, Naples (Italy), 25-28 June 2019.

9.1.2.2. Reviewer

- Pierre-Alexandre Bliman, reviewer for the conferences IEEE Conference on Decision Control, European Control Conference.
- Dirk Drasdo, CELLMECH 2019 (June 3-6, 2019): Quantitative single-cell-based modelling reveals predictable response of growing tumour spheroids on external mechanical stress, and how this informs liver regeneration

- Dirk Drasdo, 3rd Workshop on BioFabrication & Cancer, 24-25.09.2019: Quantitative single-cell-based modelling reveals predictable response of growing tumour spheroids on external mechanical stress, and how this informs liver regeneration

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- Dirk Drasdo is associate editorial member of J. Theor. Biol. Royal Society Open Science, and The Scientific World Journal.
- Marie Doumic is associate editor of Kinetic and Related Models and of the Journal of Mathematical Biology.
- Diane Peurichard and Nastassia Pouradier Duteil are guest editors of a special issue for the journal Mathematical Biosciences and Engineering, planned in september 2020.
- Benoit Perthame is associate editor of Bol. SeMA, Milan Journal of Mathematics, M3AS, Mathematical Medicine and Biology (IMA journal), Comm. in PDE,

9.1.3.2. Reviewer - Reviewing Activities

We reviewed for:

BBA Reviews Cancer, Mathematical Modelling of Natural Phenomena, Mathematical Biosciences, Mathematical Biosciences and Engineering, Bioinformatics, BBA Molecular Cell Research, Computers in Biology and Medicine, Biosystems, J Math Biol, Cancer Research, Bull Math Biol, J Theor Biol, Science Advances ; Symmetry, Mathematical Biosciences and Engineering ;

IEEE Transactions on Automatic Control, Mathematical Biosciences;

Transactions of the London Mathematical Society, Journal of Mathematical Biology;

Annales de l'Institut Henri Lebesgue, SIAM Applied Math, J. Math. Biol, Asymptotic Analysis.

9.1.4. Invited Talks

- P.-A. Bliman's presentations at seminars and workshops:
 - Laboratoire Analyse, Géométrie et Applications UMR 7539, Université Paris 13, February 2019;
 - Institut de Mathématiques de Bordeaux UMR 5251, March 2019;
 - Universidad Nacional de Asunción, Asunción, Paraguay, March 2019 Université de Guyane, Cayenne, April 2019;
 - Universidade Federal de Amapá, Macapá, Brazil, April 2019;
 - Laboratoire Jacques-Louis Lions, Sorbonne Université, Paris, June 2019;
 - COPPE, Universidade Federal de Rio do Janeiro, Brazil, July 2019;
 - Fifth International Conference on Computational and Mathematical Population Dynamics, Fort Lauderdale (FL), USA May 2019;
 - Mathematical Biology on the Mediterranean Conference, Samos, September 2019;
 - Workshop on Advanced Control Techniques for Mosquito-Borne Diseases 2019, Asunción, Paraguay, November 2019.
- J. Clairambault's presentations at seminars and workshops:
 - Maths club Paris VII, January 2019;
 - LJLL 50-year anniversary, Roscoff March 2019;
 - Seminar Math-Bio, LAGA, Université Paris XIII, Villetaneuse, April 2019;
 - Mathematical Methods and Models in Biosciences Conference, IMPAN, Bedlewo, Poland, June 2019;

- Mathematical Biology on the Mediterranean Conference, Samos, Greece, September 2019;
- Symposium on Modelling approaches for cancer therapy, Cité scientifique, Lille, September 2019;
- Q-Bio symposium Pasteur Institute, December 2019.
- D. Peurichard's presentations at seminars and workshops:
 - Colloque d'ouverture 50 ans du LJLL, Roscoff, March 2019;
 - ICIAM 9th International Congress on Industrial and Applied Mathematics, Valencia, July 15th-19th;
 - Math and cancer workshop in Vienna, 1-3th August, 2019;
 - MAMOVI days (MATHématiques de la MODélisation du VIVant), Tours, 4th-6th Sep, 2019;
 - Mathematical Biology on the Mediterranean Conference, Samos, Greece, September 2019;
 - PDE-biology workshop, Orsay, 25-26 Nov 2019;
 - Math-bio seminar, Bordeaux, December, 2019.
- N. Pouradier Duteil's presentations at seminars and workshops:
 - Colloque d'ouverture 50 ans du LJLL, Roscoff, March 2019;
 - Journées Picard, Roscoff, March 2019;
 - Séminaire du laboratoire Jacques-Louis Lions, Paris, March 2019;
 - Workshop "PDEs and Applications in Life Sciences", Penn State, USA, October 2019;
 - INdAM workshop "Recent advances in kinetic equations and applications", Rome, Italy, November 2019.
- M. Doumic's presentations at seminars, workshops and conferences:
 - Inria-KAIST (Korean Advanced Institute of Science and Technology) meeting, Paris, March 28th.
 - Amiens PDE seminar, May 27th.
 - PDE Day, June 7th, Le Havre.
 - Four-hour course at the 2019 Summer School on Mathematical Biology, July 1-4, Shanghai.
 - Plenary talk at the AIP 2019 Conference (Applied Inverse Problems), July 7-11, Grenoble.
 - First meeting of MeDyNa GDR, October 7-10, Sainte Montaine.
 - DEA conference in Krakow, September 18-20.
 - CENTURI Conference in Marseille, November 18th, with W-F. Xue.

9.1.5. Leadership within the Scientific Community

Dirk Drasdo is member of the scientific leadership board of the German flagship project LiSyM (Liver Systems Medicine) financed by BMBF (Germany).

Marie Doumic is a member of the board of the GDR Medyna (self-assembly of peptides and proteins).

9.1.6. Scientific Expertise

M. Doumic is a member of ITMO BMSV (interdisciplinary institute for structural and biomolecular basis of living matter) experts' committee, representing Inria.

M. Doumic is a member of the scientific committee of the mathematical institute INSMI of CNRS, and a member of the interdisciplinary committee CID 51 of CNRS.

9.1.7. Research Administration

- Dirk Drasdo is associated with IfADo Leibniz-Institute. He directs a research group bi-localized at Inria de Paris and IfADo, Dortmund.
- Dirk Drasdo is member of the scientific leadership board of the German flagship project LiSyM (Liver Systems Medicine) financed by BMBF (Germany).
- D. Peurichard is a member of the CSD (Comité de Suivi Doctoral) at Inria
- P.-A. Bliman is the coordinator of the ECOS-Nord project C17M01 “News methods for control of dengue and arboviroses”, and international coordinator of the STIC AmSud project 20-STIC-05 “New Methods for Biological Control of the Arboviruses” epidemics”.
- M. Doumic is a member of the organisation committee for mentorship at Inria Paris.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Most non permanent researchers have teaching activities in Sorbonne Université. We detail below only some of the teaching activities of permanent researchers.

- N. Pouradier Duteil, “Travaux de Recherche Encadrés”, 10h, M1, Jussieu
- D. Drasdo, “Agent-based models of tissue organization”, Paris 24 h / yr, M2 course, UPMC, Paris, France
- D. Drasdo: "Integrated and spatial-temporal multiscale modeling of liver guide in vivo experiments in healthy & chronic disease states: a blue print for systems medicine?", M2 course, 1 h, Ecole Polytechnique, France
- D. Peurichard, TD M1 in Jussieu, "Fondements des méthodes numériques", 40h
- D. Peurichard, M1 TD in Jussieu, "Approximation des EDP", 24h
- D. Peurichard, M2 4 hours course in Strasbourg in the interdisciplinary program entitled 'Physique Cellulaire'
- B. Perthame, M2 course “Introduction to mathematical biology”
- M. Doumic, M2 Course "Inverse Problems in Population Dynamics"

(24 hours)

9.2.2. Supervision

PhD in progress:

- P.-A. Bliman is co-advisor of the PhD student Pastor E. Pére-Estigarribia (with Ch. Schaerer, at UNA, Paraguay);
- L. Almeida is Emma Leschiera’s co-supervisor (with Chloé Audebert, Sorbonne Université, and Tommaso Lorenzi, St Andrew’s university) and Jesus Bellver Arnau’s supervisor;
- M. Doumic is Mathieu Mezache’s co-supervisor (with H. Rezaei, Inra - defended in December 2019), Cécile della Valle’s co-supervisor (with Philippe Moireau, Inria Saclay), Julia Delacour’s co-supervisor (with Christian Schmeiser, Vienna), Hugo Martin’s co-supervisor (with Pierre Gabriel, Université de Versailles-St Quentin - defended in July 2019), Adrien Ellis’ co-supervisor (with Marc Hoffmann, Université Paris Dauphine - begun in October 2019) and Anaïs Rat co-supervisor (with Magali Tournus, Centrale Marseille - begun in October 2019);
- B. Perthame is Alexandre Poulain’s supervisor, Giorgia Ciavovella’s co-supervisor (with Roberto Natalini, Roma), Federica Bubba’s co-supervisor (with Pasquale Ciarletta, Politecnico di Milano) and Noemi David’s co-supervisor (with, University of Bologna);
- Diane Peurichard is Valeria Caliaro’s supervisor;

- Philippe Robert is Gaëtan Vignoud's advisor.

M2 internship: P.-A. Bliman was Mahamadou Sylla's advisor; M. Doumic was Adrien Ellis' advisor; D. Peurichard was Valeria Caliaro's advisor; Luis Almeida is Jesus Bellver Arnau's supervisor and Jorge Hernandez co-supervisor.

9.2.3. Committees

- J. Clairambault's international project evaluation activity in 2019: ICREA, EPSRC
- J. Clairambault's PhD defence committees: Ghassen Haddad (JC supervisor), Paris March 1st; Mohammed Ladjimi, Lille, September 25.
- J. Clairambault is member of the ANR evaluation panel "Mathematics and their interactions for biology and health"
- M. Doumic is a member of the interdisciplinary committee 51 of CNRS (CID51): selection committee for junior and senior research scientists of CNRS.
- M. Doumic was a member of the Inria Paris research center selection committee for junior scientists.
- M. Doumic's Ph.D defence committees: Hugo Martin (MD supervisor), July Paris, Frédérique Robin (MD chair), September 26, Paris; Emma Horton (MD reviewer), November 14th, Bath; Mathieu Mezache (MD supervisor), December 17th, Paris; Samuel Nordmann, October 11th, Paris.
- D. Peurichard is a member of the Inria "Comission des emplois scientifiques" for selecting PhD, delegation and post-doctoral candidates at Inria.
- D. Peurichard is a member of the ARP/SRP selection committee for Inria.

9.3. Popularization

Diane Peurichard presented a talk in the framework of the "Remise des prix des Olympiades de mathématiques de Paris" (prize for national mathematics competition for young french students), Wednesday 29th, June 2019.

Diane Peurichard presented her work at the Inria scientific days in Lyon from June 5th- 7th, 2019.

At the occasion of scientific seminaries, Pierre-Alexandre Bliman gave interviews to TV channels in Paraguay: Paraguai TV (March 28, 2019); and in Brazil: Globo Amapá (April 16, 2019), Balanço Geral AP (April 17th, 2019).

Marie Doumic gave a presentation of her research for middle-school pupils in internship (December 2019) and for highschool mathematics teachers (March 2019, in Lille), and did "speed-dating interviews" with high school students (February 12th, NGO "Sephora Berrebi").

Benoit Perthame gave public talks at Tamkang university (Taipei) and Nancy.

MONC Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events: Organisation

10.1.1.1. General Chair, Scientific Chair

- C. Poignard: Organization of the Core-to-Core meeting March 21st-22nd at Bordeaux. This is the annual meeting of the JSPS Consortium « Establishing networks in mathematical medicine », which gathers Osaka University (Suzuki's lab), Vanderbilt University (Quaranta's lab), St Andrews Univ. (Chaplain's lab), and Inria Bordeaux team MONC.

10.1.2. Scientific Events: Selection

10.1.2.1. Reviewer

S. Benzekry served as a reviewer for the IEEE Control Systems Society Conference and for the International Symposium on Mathematical and Computational Oncology (Lake Tahoe, NV, USA).

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- S. Benzekry is a member of the Editorial Board of "Mathematical Biosciences and Engineering"
- C. Poignard is a member of the editorial board of DCDS-S.

10.1.3.2. Reviewer - Reviewing Activities

- S. Benzekry served as a reviewer for Nature Communications, Cancer Research, Clinical Pharmacology and Therapeutics, Scientific Reports and ESAIM: Proc.
- A. Collin: Reviewer for Plos One.
- C. Etchegaray: ESAIM: Mathematical Modelling and Numerical Analysis, Royal Society Open Sciences.
- O. Saut: Mathematical Modelling of Natural Phenomena, PLOS One, Journal of Theoretical Biology, EBioMedicine, Nature Communications, Medical Image Analysis.

10.1.4. Invited Talks

- S. Benzekry: May 2019, RITS conference (Recherche en Imagerie et Technologies pour la Sante) of the French Society of Biomedical Engineering (SFGBM), Tours, France.
- S. Benzekry: May 2019, Seminaire phases I en oncologie, Marseille, France. Old concept, new name? l'intelligence artificielle en oncologie.
- S. Benzekry: May 2019, Masterclass Mathematiques appliquees CEPS Mathematiques Des Sciences du Vivant, CIRM, Marseille, France.
- S. Benzekry: May 2019, NCI Mathematical Oncology Meeting, Portland, USA.
- S. Benzekry: May 2019, Biomedicum Helsinki Seminar (Invitation by Sampsa Hautaniemi), Faculty of Medicine, Helsinki, Finland.
- S. Benzekry: June 2019, Seminar in the Novartis pharmacometrics department. Basel, Switzerland. Artificial intelligence and machine learning in oncology: myths and reality.
- S. Benzekry: July 2019, International Society of Pharmacometrics (ISoP) workshop. Paris, France.
- C. Etchegaray: Equadiff conference, Leiden.
- O. Saut: July 2019, Mathematical models in Biology and Medicine, Vienna, Austria.

10.1.5. Scientific Expertise

- S. Benzekry is expert within the scientific board of the national multi-thematic institute (ITMO) Cancer of the French alliance for health sciences (AVIESAN).
- A. Collin, Steering Committee Axe 5, Cancéropole Grand Sud Ouest
- C. Poignard: Member of the INCA committee on pediatric cancer data structuration
- C. Poignard: Member of the GAMNI prize committee.
- O. Saut: expert in the "Single Cell" call at ITMO Cancer / Plan Cancer.
- O. Saut: expert for the French Ministry of Research (for various programs including PHC and EGIDE programs).
- O. Saut: reviewer for SIRIC CURAMUS projects.

10.1.6. Research Administration

- S. Benzekry is a member of the local Inria commission of informatical tools users (CUMI)
- Annabelle Collin, member of "conseil de Laboratoire", Institut Mathématique de Bordeaux.
- Annabelle Collin, "chargée de mission parité", Institut Mathématique de Bordeaux.
- Annabelle Collin, member of "commission ADT", Inria Bordeaux Sud-Ouest.
- Annabelle Collin, "chargée de mission Développement Durable et Responsabilité Sociétale", ENSEIRB-MATMECA.
- Annabelle Collin, elected member of "comité de centre", Inria Bordeaux Sud-Ouest.
- C. Poignard is a member of the Inria Evaluation Committee
- Clair Poignard, member of "conseil scientifique", Institut Mathématique de Bordeaux.
- Olivier Saut: member of the steering committee of ITMO consortium HTE (on tumor heterogeneity) and coordinator of work package Model and Data.
- Olivier Saut: member of the steering committee of Labex TRAIL (Translational Imaging) <http://trail.labex.u-bordeaux.fr>.
- Olivier Saut: in charge of "Interdisciplinarité" at Institut de Mathématiques du CNRS <http://www.cnrs.fr/insmi>.
- Olivier Saut: member of the steering committee of the MITI at CNRS <http://www.cnrs.fr/mi>.
- Olivier Saut: member of the steering committee of the Oncosphere Project <https://siric-brio.com/oncosphere/>.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : S. Benzekry, Cours "Modélisation de la croissance tumorale", 3h, niveau M2, Université de Tours, France.

Master : S. Benzekry, Cours "Mathematical tools for pharmacometrics", 10h, niveau M2, Aix-Marseille Université, France.

Master : S. Benzekry, TP "Introduction to Monolix", 2 x 3h, EUR "Modeling Life Sciences" (Université de Bordeaux) and DESU "Pharmacokinetics modeling" (Aix-Marseille Université), France.

Master: A. Collin, Pratical C++ programming, 96h, niveau M1, INP Bordeaux, France.

Master: A. Collin, Mesh theory, 36h, niveau M2, INP Bordeaux, France.

Master: A. Collin, Machine Learning, niveau M2, INP Bordeaux, France.

PHD: A. Collin, Modeling Life Science Module, Digital Public Health, Graduate Program.

Licence : C. Poignard, Undergraduate teaching in Numerical and Applied Mathematics, 80h, L3-M1, INP Bordeaux, ENSAM, France.

Master: O. Saut, Mathematical modeling in Oncology, 2h, niveau M2, Univ. Bordeaux, France.

10.2.2. Supervision

PhD: C. Nicolò, *Mathematical modeling of systemic aspects of cancer and cancer therapy*, 2016 - 2019, supervision S. Benzekry and O. Saut. Defended October 14th, 2019.

PhD in progress: C. Vaghi, Improving intra-tumor drug distribution of anti-cancer nanoparticles by data-informed mathematical modeling, Nov 2017 - Nov 2020, supervision S. Benzekry and C. Poignard.

PhD in progress: Sergio Corridore, 2016-..., supervision A. Collin and C. Poignard

PhD in progress: Pedro Jaramillo-Aguayo, 2019-..., supervision A. Collin and C. Poignard

PhD: C. Perier, *Analyse quantitative des données de routine clinique pour le pronostic précoce en oncologie*, 2016-2019, supervision B. Denis de Senneville and O. Saut. Defended November 14th, 2019.

PhD in progress: A. Crombé, 2017-..., supervision O. Saut

10.2.3. Juries

- S. Benzekry: Reviewer of the PhD thesis of E. Kozłowska (University of Helsinki, Finland)
- S. Benzekry: Reviewer of the PhD thesis of A. Alvarez-Arenas Alcamí (Universidad de Castilla La Mancha, Ciudad Real, Spain)
- S. Benzekry: Reviewer of the PhD thesis of A-S Giaccobi (Université Picardie Jules Verne)
- S. Benzekry: Reviewer of the PhD thesis of J Goya-Outi (Paris Saclay University)
- A. Collin, Phd defense committee, Antoine Gérard, Inria Bordeaux Sud-Ouest, Modèles numériques personnalisés de la fibrillation auriculaire, 10 juillet 2019
- A. Collin, Phd defense committee, Thibaut Hirschler, INSA Lyon, IsoGeometric Modeling for the Optimal Design of Aerostructures, 13 nov. 2019
- A. Collin, Jury member, agrégation de Mathématiques
- O. Saut: Reviewer of the HdR thesis of A. Decoene, Univ. Paris Sud, France.
- O. Saut: Reviewer of the PhD thesis of A. Perrillat-Mercerot, Univ. Poitiers, France.
- O. Saut: PhD defense committee, A. Hocquelet, Univ. Bordeaux, France
- O. Saut: PhD defense committee, G. Birindelli, Univ. Bordeaux, France

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

10.3.2. Interventions

- A. Collin, intervention "midi-rencontre sur les femmes dans les sciences", association TousEn-Sciences
- A. Collin, intervention "place de la femme dans les métiers scientifiques", Robot makers' days
- C. Etchegaray: Fête de la science.
- O. Saut: Journée Scientifique Institut Bergonié.

10.3.3. Internal action

- O. Saut: Café des Sciences.

NUMED Project-Team

6. Dissemination

6.1. Promoting Scientific Activities

6.1.1. Scientific Events: Organisation

6.1.1.1. General Chair, Scientific Chair

- E. Grenier: member of the Scientific Board of the CLARA (Regional Cancer organization)
- H. Leman: Inria Bio (october 2019)
- H. Leman: "mating preferences" symposium in the international conference MMEE (june 2019)
- P. Vigneaux: Scientific co-head of the national CNRS research group GdR EGRIN (with Emmanuel Audusse).

6.2. Teaching - Supervision - Juries

6.2.1. Teaching

- E. Grenier: L3 (integration theory), M1 (PDEs) and "agregation" (modeling).
- Paul Vigneaux: "agregation" (modeling), "computational sciences, an introduction to modelling" (for L3 - M2 students from physics, computer science and biology)
- Paul Vigneaux: Member of the Board of MILYON, the Laboratory of Excellence (Labex) in Mathematics of Lyon (Since September 2011). This Labex aims at federating international research, higher education and society activities. In charge of evaluation and grant attribution for foreign students for M1, M2 and PhD in Lyon, since 2011.

6.3. Popularization

Emmanuel Grenier: "Mathematics and vaccines" (Université de Chambéry, for first year students).

6.3.1. Interventions

- H. Leman: Mentoring of two high school students
- D. Coulette: Scientific speed dating at "Musée des Confluences" (Lyon) for the "Fête de la Science" and 80th birthday of CNRS.

REO Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events: Organisation

9.1.1.1. General Chair, Scientific Chair

I. Vignon-Clementel: Co-chair of the international conference VPH2020

9.1.1.2. Member of the Organizing Committees

Irene Vignon-Clementel: session to foster collaboration between scientists and medical doctors at the Inria/CentraleSupélec/Ap-Hp meeting, March 28th, Palaiseau, France

9.1.2. Scientific Events: Selection

9.1.2.1. Member of the Conference Program Committees

- I. Vignon-Clementel
 - Programme committee member, Computational and Mathematical Biomedical Engineering Conference
 - Conference steering committee, International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

Irene Vignon-Clementel: Associate Editor of the International Journal for Numerical Methods in Biomedical Engineering

9.1.3.2. Reviewer - Reviewing Activities

Irene Vignon-Clementel for several journals such as Annals Biomed Eng, BMMB, Med. engineering & Physics.

9.1.4. Conferences and seminars

- Nicolas Golse
 - talk, 15th French congress of hepato-biliary surgery (ACHBT-SFCD), Hotel Newport Bay, Paris, 27-29 Novembre 2019
 - As part of his clinical research, N. Golse presented 7 conference talks and 5 posters
- Nour Bou Saleh
 - poster: 15th French congress of hepato-biliary surgery (ACHBT-SFCD), Hotel Newport Bay, Paris, 27-29 Novembre 2019
- Florian Joly (supported by Reo)
 - talk, ESB2019, European Society of Biomechanics Conference, July 7-10 2019, Vienna, Austria
 - talk, SB2019, Congress of the French society of biomechanics October 28-30 2019, Poitiers, France
- Irene Vignon-Clementel
 - Invited talk, Day on AI and health, School of medicine, U. Paris-Saclay, Nov 25th, Kremlin-Bicetre, France

- Invited talk, National conference of Biomechanics, Oct 28-30, Poitiers, France
- Round table on Healthcare 4.0, IMT, Oct 15th, St Etienne, France
- Seminar, U. of Tokyo, June 13th, Tokyo, Japan
- Keynote speaker, CMBE conference, June 10th-12th, Tohoku University, Sendai City, Japan
- Keynote speaker, FIMH, June 6-8th, Bordeaux, France
- Invited talk, International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease, May 9th-11th, Philadelphia, USA

9.1.5. Leadership within the Scientific Community

Irene Vignon-Clementel: VPHi board meeting, Oct 4th, Paris, France

9.1.6. Scientific Expertise

Irene Vignon-Clementel: Reviewer for several institutions: Helmholtz Institute (Germany), Israeli Science Foundation, Medical research council (UK), Heart research (UK)

9.1.7. Research Administration

- I. Vignon-Clementel
 - Working group to foster innovation for the Inserm strategic plan
 - Technology grant committee (Commission de développement technologique), Inria Paris center
 - Committee member for PhD students at Inria - Commission consultative des doctorants
 - Mediator between PhD students and their supervisors for Inria Paris

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence:

Irene Vignon-Clementel

- Numerical Methods for Ordinary Differential Equations, 24h ETD, L3, UPMC (2nd semester 2018-2019)
- Invited lecture as part of the undergraduate continuum mechanics class at AgroParisTech (engineering school), France

Master:

- Irene Vignon-Clementel
 - Fall school on Ventilation and Music, Cargèse, France (2h30 EDT)
 - MEC 550 - Biofluid Mechanics and Mass Transport, Ecole Polytechnique (engineering school), France (1h30 EDT)
 - Doctoral school cours Innovations thérapeutiques: du fondamental à l'appliqué, bioengineering module at ENS Cachan, France (1h30 EDT)
 - Master 2 Sciences Chirurgicales de l'Université Paris Sud, France (1h30 EDT)
- Nicolas Golse
 - Master 1 Sciences, Techniques et Santé, Faculté Médecine Kremlin Bicêtre (4.5h EDT)

University diploma (DU)

Nicolas Golse:

- DU of hepatobiliary and pancreatic surgery, 6 sessions (9h EDT)

9.2.2. Supervision

PhD in progress : Nicolas Golse, Apports de la modélisation anatomique et hémodynamique du foie dans l'anticipation, la réalisation et l'enseignement de la chirurgie hépatique, since 10/2016, co-directed by Eric Vibert, Irene Vignon-Clementel, Stephane Cotin

Defended PhD: Chen-Yu Chiang, Transport in biological systems. Monolithic method for fluid-structure interaction, Sorbonne U., 11 January 2019, co-directed by Marc Thiriet, Olivier Pironneau and Toni Sheu (National Taiwan U)

9.2.3. Juries

Irene Vignon-Clementel

- Referee for the PhD defense of Miguel Veira, KCL, London, UK, June 18th
- Jury for research projects (undergraduates), CentraleSupélec, June 4th & Nov 4th & 6th
- Hiring committee for engineer position, U. of Bordeaux, France, May 5th
- Jury member (invited), PhD defense of F. Joly, CHUM, Canada, April 15th
- Referee for the PhD defense of Mathias Braun, U. of Bordeaux, France, April 4th
- President of the jury for the HDR of Paul VanLiedekerke, Sorbonne U., France, March 26th

9.3. Popularization

9.3.1. Interventions

- N Golse (MD)
 - conference at Ecole des Mines, 14th October 2019, "Healthcare simulation"
- Irene Vignon-Clementel
 - High school forum on scientific career, 7th December, Lycee Corneille, La Celle St Cloud
 - Junior high school intervention 'women in engineering', 22nd February, Ville d'Avray
 - High school forum on scientific career, 19th January, Lycee Corneille, La Celle St Cloud
 - High school intervention, 15th January, Blanche de Castille, Le Chesnay

9.3.2. Internal action

Interviews of Irene Vignon-Clementel by journalist for Inria, 13th March and 25th Nov (see Inria website articles)

SISTM Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Societies Involvement

- Boris Hejblum is a member of the chairing committee of the *Société Française de Biométrie*, the French Chapter of the International Biometric Society
- Boris Hejblum is a board member of the “MACHINE Learning et Intelligence Artificielle” (MALIA) group of *Société Française de Statistique* (SFdS)
- Mélanie Prague is a board member of the “Jeunes Statisticien.ne.s” group of SFdS
- Marta Avalos is a board member of the “Stat&Sport” group of SFdS

10.1.2. Scientific Events: Organisation

10.1.2.1. General Chair, Scientific Chair

Mélanie Prague co-organized with Jérémy Guedj from Inserm the 4th Workshop on Virus Dynamics <https://viraldynamics.sciencesconf.org>, 21-23 October in Paris, France.

10.1.3. Scientific Events: Selection

10.1.3.1. Chair of Conference Program Committees

- Robin Genuer Co-organizes a reading group called "Smiling in Bordeaux" (<http://www.math.u-bordeaux.fr/~mchave100p/smiling/>)
- Boris Hejblum organizes the Biostatistics Seminar Series at the Bordeaux Population Health Inserm Research Center
- Boris Hejblum co-organizes the Bordeaux Statistics Seminar Series (<https://indico.math.cnrs.fr/category/367/>)

10.1.3.2. Member of the Conference Program Committees

- Mélanie Prague was a member of the 51th Days of Statistics (JdS), the most important annual scientific event in the French-speaking statistical community, organized by the French Statistical Society (SFdS), June 2019, Nancy, France
- Rodolphe Thiébaud was a member of the scientific committee of the national conference on clinical research (EPICLIN)
- Rodolphe Thiébaud is a member of the scientific committee of the IWHOD International Workshop on HIV Observational Databases since 2013 (<http://iwhod.org/Committee>) and chair in 2020.

10.1.3.3. Reviewer

- NeurIPS (Robin Genuer)
- Workshop at NeurIPS 2019 "ML4H: Machine Learning for Health" (Marta Avalos)

10.1.4. Journal

10.1.4.1. Member of the Editorial Boards

Lifetime Data Analysis (Daniel Commenges)

Statistics Surveys (Daniel Commenges)

Associate editor of International journal of Biostatistics (Melanie Prague)

IMIA Yearb Med Inform (Rodolphe Thiébaud)

10.1.4.2. Reviewer - Reviewing Activities

- AIDS (Rodolphe Thiébaud)
- Am J Public Health (Mélanie Prague)
- Biometrics (Mélanie Prague, Boris Hejblum)
- Bioinformatics (Boris Hejblum)
- IMIA Yearb Med Inform (Marta Avalos)
- International Journal of Epidemiology (Daniel Commenges)
- Journal of Computation Statistics and Data Analysis (Boris Hejblum)
- Journal of the American Statistical Association (Robin Genuer)
- Journal of the Royal Statistical Society: Interaction (Mélanie Prague)
- JRSS-B (Mélanie Prague)
- Operations research (Robin Genuer)
- PLOS Computational Biology (Boris Hejblum)
- Society of clinical trial (Mélanie Prague)
- Statistical Methods in Medical Research (Mélanie Prague)
- Statistical science (Mélanie Prague)
- Trials (Laura Richert)

10.1.5. Invited Talks

- 3rd EcoSta Conference – 25-27th June 2019, Taichung, Taïwan. A variance component score test applied to RNA-Seq differential analysis. [B Hejblum]
- 12th International Conference of the ERCIM Working Group on Computational and Methodological Statistics – 14-16th December 2019, London, UK. Scaling up nonparametric Bayesian clustering with MCMC for big data applications. [B Hejblum]
- The 9th International Digital Public Health Conference – 20-23 November 2019, Marseille, The Challenges of Implementing Healthcare Technology and Innovation across Europe and Beyond [R Thiebaut]
- Conférence du centre de recherche du CHU de Sainte Justine – 17 October 2019, Montreal, Canada - *Science des données en épidémiologie clinique: exemples en vaccinologie*. [R Thiebaut]
- 4th Workshop on viral dynamics – 21-23rd October 2019, Paris - Modeling to optimize vaccine development against Ebola [R Thiebaut]
- INFECTION, IMMUNITY AND INFLAMMATION PROGRAMME Mini-symposium Mathematical Immunology in memoriam Robin Callard - 3rd October 2019, Institute of Child Health, London - Modelling in Immunology from 2007 to tomorrow, an overview of the work done with and inspired by Robin Callard [R Thiebaut]
- Workshop ITUN CESI, CHU Nantes, 3rd September. Understanding and predicting the effect exogenous IL-7 in HIV infected patients through mathematical modelling: toward personalised medicine. [R Thiebaut]
- 14th Colloquium of ADEA *La transformation du système de santé : l'hôpital de demain*, Cambo les Bains, September. L'intelligence artificielle [R Thiebaut]
- Robin's Callard symposium – Institute of Child Health, London – 4 October [R Thiebaut]

10.1.6. Oral contributions in conferences and colloquium

- Several members contributed to the 51th Days of Statistics (JdS), the most important annual scientific event in the French-speaking statistical community, organized by the French Statistical Society (SFdS), June 2019, Nancy, France [R Genuer, M Prague, M Avalos]

- UseR! 2019, Toulouse, France – July 2019. VICI: a Shiny app for accurate estimation of Vaccine Induced Cellular Immunogenicity with bivariate modeling. [B Hejblum]
- Joint Statistical Meeting 2019, Denver, USA – July 2019. Can you trust differential expression methods for RNA-seq data analysis ? [B Hejblum]
- 6th *Colloque francophone international sur l'enseignement de la statistique* 2019, Nancy, France–June 2019. *Enseigner la science des données en santé publique* [B Hejblum]
- Medinfo 2019, Lyon, 25-30 August 2019 [R Thiebaut]
- Several Talks at Virus Dynamics, October, Paris [R. Thiebaut, M. Alexandre, Q. Clairon].
- 32nd IEEE International Symposium on Computer-Based Medical Systems (CBMS) [H. Lorenzo].
- GDR Statistics and Health, Paris, France, October 2019 [L. Villain].
- StatOmique day - November 2019 [M. Gauthier]

10.1.7. Poster contributions in conferences and colloquium

- The French Health Data System applied to health research Meeting - June 2019, Rennes, France [M Avalos]
- PAGE June Stocholm [M. Prague, M. Alexandre]
- StatOmique day - Novembrer 2019, Paris [L. Villain]

10.1.8. Scientific Expertise

- Rodolphe Thiébaud is an expert for INCA (Institut National du Cancer) for the PHRC (Programme hospitalier de recherche Clinique en cancérologie) and for the PRME (Programme de recherche médico-économique en cancérologie).
- Rodolphe Thiébaud is a member of the CNU 46.04 (Biostatistiques, informatique médicale et technologies de communication).
- Rodolphe Thiébaud is a member of the Scientific Council of Inserm.
- Rodolphe Thiébaud is a member of the committee “Biologie des Systèmes et Cancer (Plan Cancer)”, a member of the Scientific Advisory Board of the “Institut Pierre Louis d’Epidémiologie et de Santé Publique” (UPMC, Dir : Dominique Costagliola), a member of the independent committee of international trials ODYSSEY and SMILE, a member of the scientific council of Muraz’s Center (Bobo-Dioulasso, Burkina Faso)
- Mélanie Prague is an expert for ANRS (France Recherche Nord&Sud Sida-HIV Hépatites) in the CCS13 (Recherches cliniques et physiopathologiques dans l’infection à VIH) and AC 47.
- Laura Richert is an expert for the PHRC (Programme hospitalier de recherche Clinique).
- Marta Avalos is an expert for the ANSM (Agence nationale de sécurité du médicament et des produits de santé)

10.1.9. Research Administration

Daniel Commenges is the director of the Biostat-Info axis in the Inserm BPH (Bordeaux Public Health) institute.

Rodolphe Thiébaud is the director of the department of Public Health in University of Bordeaux and a member of the Inserm Scientific Council

Laura Richert is coordinator of the Clinical epidemiology module of the Clinical Investigations Center (CIC1401 Bordeaux)

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

In class teaching

Master: Rodolphe Thiébaud is head of the Digital Public Health graduate program, University of Bordeaux.

Master : All the permanent members and several PhD students teach in the Master of Public Health (M1 Santé publique, M2 Biostatistique and/or M2 Epidemiology and/or M2 Public Health Data Science) and the Digital Public Health graduate program, University of Bordeaux.

Master : Marta Avalos, Robin Genuer, Louis Capitaine and Marine Gautier teach in the Master of Applied Mathematics and Statistics (1st and/or 2nd year), University of Bordeaux.

Master : Marta Avalos teaches in the 2nd year of the Master of "Management international : Développement pharmaceutique, Production et Qualité opérationnelle", University of Bordeaux.

Bachelor: Laura Richert and Edouard Lhomme teach in PACES and DFASM1-3 for Medical degree at Univ. Bordeaux

Master: Hadrien Lorenzo teach in the third year engineering school ENSAI, Rennes and in the "Ecole Santé Science" Program (dual degree in Health and Science), University of Bordeaux.

Master: Laura Richert teaches in the Master of Vaccinology from basic immunology to social sciences of health (University Paris-Est Créteil, UPEC)

Teaching unit coordination: Laura Richert, Rodolphe Thiébaud, Robin Genuer, Boris Hejblum and Marta Avalos coordinate several teaching units of Master in Public Health (Biostatistics, Epidemiology, Public Health), M2 Public Health Data Science. Laura Richert coordinates the teaching unit "Experimental Designs" (M2 Epidemiology) and teaching unit "Omics Data" (M2 Public Health Data Science), University of Bordeaux

International summer school: Laura Richert coordinates the summer school course "Big data in immunology" University of Bordeaux. All permanent team members teach in this course.

H Lorenzo participated to the University Course *Big data et statistique pour l'ingénieur (BDSI)*, Ecole Nationale Supérieure de Cognitique (ENSC), Bordeaux.

E-learning

Master: Marta Avalos is head of the first year of the e-learning program of the Master of Public Health, University of Bordeaux.

Master: Marta Avalos teaches in the e-learning program of the Master of Public Health (1st and 2nd year)

ODL University Course: Robin Genuer is head of the Diplôme universitaire "Méthodes statistiques en santé.

ODL University Course: Mélanie Prague teaches in the Diplôme universitaire "Méthodes statistiques de régression en épidémiologie".

ODL University Course: Laura Richert co-coordinates and teaches in the Diplôme universitaire "Recherche Clinique".

ODL University project: Robin Genuer participated to the IdEx Bordeaux University "Défi numérique" project "BeginR" (<http://beginr.u-bordeaux.fr>).

10.2.2. Supervision

HdR: Laura Richert, *Statistical approaches and methodological developments to optimize clinical vaccine research*, Université de Bordeaux, defence date 17th Dec 2019

PhD: Edouard Lhomme, *Analyse des déterminants de la réponse immunitaire post-vaccination dans des stratégies vaccinales expérimentales*, defence date 25th Nov, directed by Laura Richert

PhD: Hadrien Lorenzo, *Analyse supervisée multibloc en grande dimension*, defence date 27th Nov, co-directed by Rodolphe Thiébaud and Jérôme Saracco (CQFD team)

PhD: Perrine Soret, "Régression pénalisée de type Lasso pour l'analyse de données biologiques de grande dimension : application à la charge virale du VIH censurée par une limite de quantification et aux données compositionnelles du microbiote", Université de Bordeaux, defence date 28th Nov, supervisor: Marta Avalos

PhD: Soufiane Ajana "Comparison of linear and non-linear machine learning approaches to predict Age-related Macular Disease (AMD) risk in a survival framework", defense's date 4th Nov, co-supervised by Boris Hejblum and Hélène Jacquemin-Gadda (Inserm) and Cécile Delcourt (Inserm), from Sept 2016.

PhD in progress: Marie Alexandre "Mechanistic modeling and optimization of vaccine response in HIV and Ebola", co-directed by Mélanie Prague and Rodolphe Thiébaud, from Oct 2018.

PhD in progress: Marine Gauthier "Methods for bulk and single-cell RNA-seq data analysis in vaccine research", co-directed by Boris Hejblum and Rodolphe Thiébaud, from Sept 2018.

PhD in progress: Louis Capitaine, *Random forests for high-dimensional longitudinal data*, from Oct 2017, co-directed by Robin Genuer and Rodolphe Thiébaud.

PhD in progress: Madelyn Rojas *Self-management of injury risk and decision support systems based on predictive computer modelling. Development, implementation and evaluation in the MAVIE cohort study*, from Oct 2017, (Injury Epidemiology team, Inserm U1219, ED SP2) co-directed by Emmanuel Lagarde (Inserm) and Marta Avalos.

Several team's members supervised Master 2 (T. Alin, A. Devaux, G. Sotton, A. Herteau, T. Ferte) and Master 1 (V. Gasque, M.H. Ibrahim, C. Lemoigne, V. Kochegarov) internship students.

10.2.3. Juries

Boris Hejblum was involved in the PhD defence jury of Soufiane Ajana (university of Bordeaux).

Marta Avalos was involved in the PhD defence jury of Perrine Soret (University of Bordeaux).

Laura Richert was involved in the PhD defence jury of Edouard Lhomme (University of Bordeaux).

Robin Genuer was reviewer of the thesis of Antonio Sutera (University of Liège).

Rodolphe Thiébaud was involved in the PhD defence jury of Edouard Lhomme, Hadrien Lorenzo, Perrine Soret, Sophie Lefèvre-Arbogast, Corentin Segalas (University of Bordeaux), Simon Bussy, Hugo Arlegui, Jeanne Tamarelle (Paris), and Alban Caporossi (Lyon). He was also a reviewer of the HDR of Encarnita Mariotti-Ferrandiz (Sorbonne University, Paris) and took part in her defence jury.

Mélanie Prague was involved in the PhD defence jury of Chiara Nicolo (University of Bordeaux) and Steven Sanche (University of Montreal, CA)

Marta Avalos is a member of the follow-up dissertation committee of 2 PhD students: Alexandre Conanec (Statistics, IMB, ED MI) and Madelyn Rojas (Epidemiology, ED SP2).

Mélanie Prague is a member of the follow-up dissertation committee of 2 PhD students: Jonas Beal (Institut Curie) and Marie astrid Metten (University of Rennes).

Laura Richert, Rodolphe Thiébaud, Robin Genuer, Boris Hejblum, Edouard Lhomme and Marta Avalos participated to the juries of Master in Public Health (Biostatistics, Epidemiology, Public Health)

Robin Genuer and Marta Avalos participated to the juries of Master of Applied Mathematics and Statistics (2nd year), University of Bordeaux.

Edouard Lhomme participated to the juries of medical thesis defenses, Medical School of Bordeaux University

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Mélanie prague is part of two committees at Inria: "ADT - Aide au développement technologique" and "CER - Commission Emploi recherche".

10.3.2. Articles and contents

Mélanie Prague participated to the video reportage produced by the Inria's communication service

10.3.3. Interventions

Mélanie Prague participated at the "Fête de la Science" for high school students on October.

10.3.4. Internal action

R Thiébaud gave the talk "VIRUS EBOLA: Comment la modélisation permet d'aider au développement des vaccins ?" in November at "Unithé ou café", Inria BSO, Talence.

H Lorenzo presented a poster *Apprentissage supervisé pour données massives multi-blocs incomplètes* in the anual workshop (*JED*) of the Doctoral School of Societies, Politics and Public Health (ED SP2), University of Bordeaux.

XPOP Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Selection

10.1.1.1. Member of the Conference Program Committees

- ALT 2019
- CLAPEM 2019, Merida, Mexico
- useR!2019

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- Stochastic Processes and their Applications
- Journal of Statistical Planning and Inference
- Journal of Computational and Graphical Statistics

10.1.3. Invited Talks

- International Federation of Classification Societies, Thessaloniki, Greece, August 2019.
- useR!2019, Toulouse, France, July 2019.
- R in Official Statistics, Bucharest, Romania, May 2019.
- French Statistical Society, France, Nancy, June 2019.
- Statlearn 2019, Grenoble, France.
- The Big Sick Conference, Zermatt, Switzerland, February, 2019.
- REDIF 2019, La Habana, Cuba, October 2019.
- 4th Workshop on Virus Dynamics, Paris, October 2019.
- ModelBio 2019, Salamanca, Spain, November 2019.

10.1.4. Leadership within the Scientific Community

- Eric Moulines is in charge of the academic supervision of the **International Laboratory of Stochastic Algorithms and High-dimensional inference**, National Research University, Higher School of Economics, funded by the Russian Academic Excellence Project.
- Eric Moulines is associate researcher of the **Alan Turing Institute**
- Eric Moulines is elected member of the French Académie des Sciences.
- Julie Josse is visiting researcher at Google France

10.1.5. Scientific Expertise

- Marc Lavielle is member of the Scientific Committee of the High Council for Biotechnologies.
- Marc Lavielle is member of the evaluation committee of the **International Center for Mathematics (CIMAT)**, Guanajuato, Mexico.
- Eric Moulines is member of the award committee of foundation "Charles Defforey".

10.1.6. Research administration

- Marc Lavielle is member of the Scientific Programming Committee (CPS) of the Institute Henri Poincaré (IHP).

- Eric Moulines is a board member of the Institut de Convergence DataIA.
- Julie Josse is elected member of the R foundation.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : Julie Josse, Statistics with R, 48, M2, X-HEC

Master : Eric Moulines, Regression models, 36, M2, X-HEC

Engineering School : Eric Moulines, Statistics, 36, 2A, X

Engineering School : Eric Moulines, Markov Chains, 36, 3A, X

Engineering School : Erwan Le Pennec, Statistics, 36, 2A, X

Engineering School : Erwan Le Pennec, Statistical Learning, 36, 3A, X

Engineering School : Marc Lavielle, Statistics in Action, 48, 3A, X

10.2.2. Supervision

PhD defended : Nicolas Brosse, June 2019, Eric Moulines

PhD defended : Geneviève Robin, June 2019, Julie Josse and Eric Moulines

PhD defended : Belhal Karimi, September 2019, Marc Lavielle and Eric Moulines

PhD in progress : Marine Zulian, October 2016, Marc Lavielle

PhD in progress : Wei Jiang , October 2017, Julie Josse and Marc Lavielle

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Eric Moulines was member of the Evaluation Committee of Inria.

10.3.2. Creation of media or tools for science outreach

Marc Lavielle developed and maintains the learning platform [Statistics in Action](#). The purpose of this online learning platform is to show how statistics (and biostatistics) may be efficiently used in practice using R. It is specifically geared towards teaching statistical modelling concepts and applications for self-study. Indeed, most of the available teaching material tends to be quite "static" while statistical modelling is very much subject to "learning by doing".

Julie Josse (with Nicholas Tierney and Nathalie Vialaneix) developed and maintains the website [R-miss-tastic](#), A resource website on missing data.