Activity Report 2018

Section Dissemination

<p align="center">**ANTIQUE Project-Team**</p>

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. General Chair, Scientific Chair

- Jérôme Feret is a guest member of the Steering Committee of the Conference on Computational Methods in Systems Biology (CMSB).
- Jérôme Feret is a member of the Steering Committee of the Workshop on Static Analysis and Systems Biology (SASB).
- Xavier Rival organized the 60th meeting of the IFIP Working Group 2.4 held in Dijon, in July 2018.
- Xavier Rival is a member of the Steering Committee of the Static Analysis Symposium (SAS).
- Xavier Rival is a member of the Steering Committee of the Workshop on Tools for Automatic Program Analysis (TAPAS).

8.1.2. Scientific Events Selection

8.1.2.1. Chair of Conference Program Committees

- Xavier Rival served as Chair of the Artifact Evaluation Committee of SAS 2018 (Static Analysis Symposium).

8.1.2.2. Member of the Conference Program Committees

- Jérôme Feret served as a Member of the Program Committee of LICS 2018 (Logic in Computer Science).
- Jérôme Feret served as a Member of the Program Committee of VEMDP 2018 (Verification of Engineered Molecular Devices and Programs).
- Jérôme Feret served as a Member of the Program Committee of SASB 2018 (Static Analysis and Systems Biology Workshop).
- Jérôme Feret served as a Member of the Program Committee of SAS 2018 (Static Analysis Symposium).
- Jérôme Feret served as a Member of the Program Committee of CMSB 2018 (Computational Methods in Systems Biology).
- Jérôme Feret served as a Member of the Program Committee of VMCAI 2019 (Verification, Model Checking, and Abstract Interpretation)
- Jérôme Feret is serving as a Member of the Program Committee of CIBCB 2019 (Computational Intelligence in Bioinformatics and Computational Biology).
- érôme Feret is serving as a Member of the Program Committee of HSB 2019 (Hybrid Systems and Biology).
- Jérôme Feret is serving as a Member of the Program Committee of CMSB 2019 (Computational Methods in Systems Biology).
- Xavier Rival served as a Member of the Program Committee of SAS 2018 (Static Analysis Symposium).
- Xavier Rival served as a Member of the Program Committee of Web Design, Analysis, Programming and Implementation of the WWW'18 Conference.

- Xavier Rival served as a Member of the Extended Review Committee of PLDI 2018 (Programming Languages Design and Implementation).
- Xavier Rival served as a Member of the Program Committee of APLAS 2018 (Asian Programming Languages And Systems Symposium).
- Xavier Rival is serving as a Member of the Committee of POPL 2020 (Principles of Programming Languages).
- Cezara Drăgoi served as a member of the Program Committee of Computer Aided Verification CAV'18.
- Cezara Drăgoi served as a member of the Program Committee of VMCAI 2019 (Verification, Model Checking, and Abstract Interpretation).
- Cezara Drăgoi served as a member of the Program Committee of NETYS 2018.

8.1.2.3. Reviewer

- Jérôme Feret served as Reviewer for ARSBM 2018 (Automated Reasoning for Systems Biology and Medicine).

8.1.3. Journal

8.1.3.1. Member of the Editorial Boards

- Jérôme Feret serves as a Member of the Editorial Board of the Frontiers in Genetics journal and the Open Journal of Modeling and Simulation.
- Jérôme Feret serves as co-Editor of an Issue of the Theoretical Computer Science journal, that is composed of papers from SASB 2016, and is expected to appear in 2019.
- Jérôme Feret serves as co-Editor of an Issue of the IEEE/ACM Transactions on Computational Biology and Bioinformatics, that is composed of papers from CMSB 2017, and is expected to appear in 2019.
- Xavier Rival serves as Editor of an Issue of the Formal Methods in System Design Journal, that is composed of a selection of papers from SAS 2016, and appeared in 2018.

8.1.3.2. Reviewer - Reviewing Activities

- Jérôme Feret served as a Reviewer for NACO (Natural Computing).
- Jérôme Feret served as a Reviewer for ACS Synthetic Biology.
- Jérôme Feret served as a Reviewer for TCS (Theoretical Computer Sciences).
- Jérôme Feret served as a Reviewer for TCBB (IEEE/ACM Transactions on Computational Biology and Bioinformatics).
- Jérôme Feret served as a Reviewer for IEEE Transactions on Reliability.
- Xavier Rival served as a Reviewer for ACM TOPLAS (Transactions On Programming Languages and Systems).
- Xavier Rival served as a Reviewer for ACM TOPS (Transactions On Privacy and Security).

8.1.4. Invited Talks

- Cezara Drăgoi was invited to give a talk at the workshop on Verification of Distributed Systems, Essaouira, Morocco, 2018.
- Cezara Drăgoi was invited to give a talk at the Dagstuhl workshop no 18211 on Formal Methods and Fault-Tolerant Distributed Computing: Forging an Alliance.

8.1.5. Leadership within the Scientific Community

Xavier Rival is a member of the IFIP Working Group 2.4 on Software implementation technology.

8.1.6. Scientific Expertise

- Cezara Drăgoi has participated to the recruitment committee for an assistant professor in the Department of Computer Science of École normale supérieure 2018.

- Jérôme Feret served as a external Reviewer for research program PRIM 2017 (funded by MIUR, the Italian Ministry for Education, University and Research).

- Jérôme Feret has participated to the recruitment committee for an assistant professor in Paris-Diderot University 2018.

- Xavier Rival chaired the Hiring Committee for an Assistant Professor position (Tenure track position, Gaspard Monge Chair) at École Polytechnique in 2018.

8.1.7. Research Administration

- Jérôme Feret and Xavier Rival are members of the Laboratory Council of DIENS.

- Jérôme Feret is member of PhD Review Committee (CSD) of Inria Paris.

- Jérôme Feret is deputy head of study of the Department of Computer Science of École normale supérieure.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence:

- Marc Chevalier, Mathematics, 40h, L1, FDV Bachelor program (Frontiers in Life Sciences (FdV)), Université Paris-Descartes, France.

- Jérôme Feret and Xavier Rival (lectures), and Marc Chevalier (tutorials), "Semantics and Application to Verification", 36h, L3, at École Normale Supérieure, France.

- Xavier Rival, "Introduction to Static Analysis", 8h, L3, at École des Mines de Paris, France.

- Xavier Rival, "Programmation Avancée", 18h, L3, at École Polytechnique, France.

Master:

- Xavier Rival, "Introduction to Static Analysis", 24h, Internet of Things Master (retraining curriculum, EXED), France.

- Xavier Rival, "Protocol Safety and Verification", 12h, M2, Advanced Communication Networks Master, France.

- Cezara Drăgoi, Jérôme Feret, Antoine Miné, and Xavier Rival, "Abstract Interpretation: application to verification and static analysis", 72h, M2. Parisian Master of Research in Computer Science (MPRI), France.

- Vincent Danos and Jérôme Feret (with Jean Krivine), Computational Biology, 28h, M1. Interdisciplinary Approaches to Life Science (AIV), Master Program, Université Paris-Descartes, France.

Doctorat:

- Jérôme Feret, "Intrinsic Coarse-Graining of Models of Signalling pathways", 1h30, aDVANCES IN SYSTEMS AND SYNTHETIC BIOLOGY Modelling Complex Biological Systems in the Context of Genomics Thematic Research School, March 2018, Évry, France.

8.2.2. Supervision

- PhD in progress: Marc Chevalier, Static analysis of Security Properties in Critical Embedded Software. started in 2017 and supervised by Jérôme Feret

- PhD in progress: Hugo Illous, Relational Shape Abstraction Based on Separation Logic, started in 2015 and supervised by Xavier Rival and Matthieu Lemerre (CEA)
- PhD in progress: Olivier Nicole, Verification of micro-kernels, started in 2018 and supervised by Xavier Rival and Matthieu Lemerre (CEA)
- PhD defended: Huisong Li, Disjunctive Shape Abstraction for Shared Data-Structures, started in 2014 and supervised by Xavier Rival
- PhD defended: Jiangchao Liu, Static Analysis for Numeric and Structural Properties of Array Contents, started in 2014 and supervised by Xavier Rival

8.2.3. Juries

- Xavier Rival served as a Reviewer in the Jury of the PhD of Ahmad Salim Al-Sibahi (Defense planned for the 11th of January, 2018).

8.3. Popularization

8.3.1. Internal or external Inria responsibilities

- Xavier Rival is member of the "Bureau du comité des projets" since October 2018.
- Xavier Rival is Chair of the Hiring Committee for Inria researchers at the center of Paris (CRCN) for 2019.

<p style="text-align:center; color:red;">**AOSTE2 Team**</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

Liliana Cucu-Grosjen is member of the steering committees of the following conferences and workshops: RTSS, RTAS, RTNS, WMC, RTSOPS.

Rob Davis is member of the steering committees of the following conferences and workshops: RTSS, RTAS, RTNS, WMC, RTSOPS.

10.1.2. Scientific Events Selection

10.1.2.1. Chair of Conference Program Committees

Liliana Cucu-Grosjean has served as PC co-chair for the 14th edition of WFCS 2018 in Imperia, Italy.

Adriana Gogonel has served as PC co-chair for the 12th Junior Researcher Workshop on Real-Time Computing (JWRTC) edition of in Poitiers, France.

10.1.2.2. Member of the Conference Program Committees

Liliana Cucu: RTAS, RTNS, WFCS.

Robert Davis: RTSS, RTAS, RTNS.

Adriana Gogonel: ACM RACS, WMC, JWRTC.

Dumitru Potop Butucaru: ACSD, EMSOFT.

Yves Sorel: DASIP.

10.1.2.3. Reviewer

All members of the team are regularly serving as reviewers for the main scientific events of our domain: RTSS, RTAS, RTCSA, RTNS, DATE, ETFA, EMSOFT, DASIP, etc.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

Liliana Cucu-Grosjean has served as guest editor for the Journal of Real-Time Systems

10.1.3.2. Reviewer - Reviewing Activities

All members of the team are regularly serving as reviewers for the main journals of our domain: Information Processing Letter, Journal of Heuristics, Journal of Real-Time Systems, Journal of Systems Architecture, Journal of Signal Processing Systems, Leibniz Transactions on Embedded Systems, IEEE Transactions on Industrial Informatics, IEEE Transactions on Computers, Theoretical Computer Science.

10.1.4. Scientific Expertise

Yves Sorel: Steering Committee of System Design and Development Tools Group of Systematic Paris-Region Cluster.

Yves Sorel: Steering Committee of Technologies and Tools Program of SystemX Institute for Technological Research (IRT).

10.1.5. Research Administration

Liliana Cucu-Grosjean is member of Inria Evaluation Commission, co-chair of Inria Committee on gender equality and equal oportunities, and member of the CLHCST.

Dumitru Potop Butucaru is member of mobility grant commission for postdocs and invited professors.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master: Slim Ben Amor, Machine learning (practice sessions), 20H, M1, ESIEE Engineering School, Noisy-Le-Grand, France.

Master: Liliana Cucu, Distributed Databases and Statistics in Computer Science, 64h, U. Dunarea de Jos, Romania (Invited Professor).

Master: Liliana Cucu-Grosjean, Graph Theory, 32H, M1, ESIEE Engineering School, Cergy Pontoise, France.

Master: Adriana Gogonel, Machine learning, 32H, M1, ESIEE Engineering School, Noisy le Grand, France.

Master: Dumitru Potop Butucaru, A synchronous approach to the design of embedded real-time systems, 30h, M1, EPITA Engineering School, Paris France.

Master: Cristian Maxim, Graph Theory, 12H, M1, ESIEE Engineering School, Cergy Pontoise, France.

Master: Yves Sorel, Optimization of distributed real-time embedded systems, 38H, M2, University of Paris Sud, France.

Master: Yves Sorel, Safe design of reactive systems, 18H, M2, ESIEE Engineering School, Noisy-Le-Grand, France.

10.2.2. Supervision

PhD: Salah-Edinne Saidi, Distributed real-time scheduling for the co-simulation of multiple control models, UPMC, defended April 2018, co-supervised by Nicolas Pernet (IFPEN) and Yves Sorel.

PhD in progress: Slim Ben Amor, Schedulability analysis of probabilistic real-time tasks under end to end constraints, UPMC, started on September 2016, supervised by Liliana Cucu.

PhD in progress: Keryan Didier, Formal certification of real-time implementations, UPMC, started November 2015, supervised by Dumitru Potop Butucaru.

PhD in progress: Evariste Ntaryamira, Analysis of embedded systems with time and security constraints, UPMC, started on January 2017, supervised by Liliana Cucu and Rachel Akimana.

PhD in progress: Walid Talaboulma, Probabilistic timing analysis in presence of dependences, UPMC, started November 2015, co-supervised by Liliana Cucu and Adriana Gogonel.

PhD in progress: Salah-Edinne Saidi, Distributed real-time scheduling for the co-simulation of multiple control models, UMPC, started December 2014, co-supervised by Nicolas Pernet (IFPEN) and Yves Sorel.

10.2.3. Juries

Liliana Cucu-Grosjean is PhD examiner for the thesis of Anh Toan Bui Long, University of Poitiers/ENSMA, defended on December 2018.

Dumitru Potop Butucaru is PhD examiner for the thesis of Jad Khatib, Université Pierre et Marie Curie/EDITE, defended September 2018. École doctorale EDITE.

Yves Sorel is Phd examiner for the thesis of Florian Greff, University of Lorraine, defended May 2018.

<p style="text-align:center">**CASCADE Project-Team**</p>

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. Events and Activities

- punctual seminars are organized: https://crypto.di.ens.fr/web2py/index/seminars
- quarterly Paris Crypto Days (https://pariscryptoday.github.io) supported by CryptoCloud and aS-CEND
- BibTeX database of papers related to Cryptography, open and widely used by the community (https://cryptobib.di.ens.fr)
- LATCA Bertinoro workshop (http://crypto-events.di.ens.fr/LATCA/)

8.1.1.2. Steering Committees of International Conferences

- steering committee of CANS: David Pointcheval
- steering committee of PKC: David Pointcheval
- steering committee of LATINCRYPT: Michel Abdalla (chair)
- steering committee of PAIRING: Michel Abdalla

8.1.1.3. Board of International Organisations

- Board of the *International Association for Cryptologic Research* (IACR): Michel Abdalla (2013 – 2018)

8.1.2. Scientific Events Selection

8.1.2.1. Program Committee Member

- CT-RSA '18 – 16-20 April (San Francisco, California, USA): David Pointcheval
- Eurocrypt '18 – 29 April-3 May (Tel Aviv, Israel): Georg Fuchsbauer and David Pointcheval
- Crypto '18 – 19-23 August (Santa Barbara, USA): Georg Fuchsbauer and Hoeteck Wee
- SCN '18 – 5-7 September (Amalfi, Italy): Georg Fuchsbauer and Romain Gay
- TCC '18 – 11-14 November (Goa, India): Hoeteck Wee

8.1.3. Editorial Boards of Journals

Editor-in-Chief

- of the *International Journal of Applied Cryptography (IJACT)* – Inderscience Publishers: David Pointcheval

Associate Editor

- of *IET Information Security*: Michel Abdalla
- of *ETRI Journal*: Michel Abdalla
- of *Applicable Algebra in Engineering, Communication and Computing*: David Pointcheval

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

- Master: Michel Abdalla, David Pointcheval, Cryptography, M2, MPRI

- Master: David Pointcheval, Cryptography, M2, ESIEA
- Bachelor: Georg Fuchsbauer, David Pointcheval, Jacques Stern, Hoeteck Wee, Introduction to Cryptology, L3/M1, ENS
- Bachelor: Georg Fuchsbauer, Cryptology, 3rd year, ESGI

8.2.2. *Defenses*

- PhD: Raphaël Bost, Algorithmes de recherche sur bases de données chiffrées, Univ. Rennes I, January 8th, 2018 (Supervisors: Pierre-Alain Fouque & David Pointcheval)
- PhD: Rafael Del Pino, Efficient Lattice-Based ZeroKnowledge Proofs And Applications, ENS, June 1st, 2018 (Supervisors: Vadim Lyubashevsky & David Pointcheval)
- PhD: Pierre-Alain Dupont, Advanced password-authenticated key exchanges, ENS, August 29th, 2018 (Supervisor: David Pointcheval)
- PhD: Dahmun Goudarzi, Implémentations Sécurisées de Chiffrement par Bloc contre les Attaques Physiques, ENS, September 21st, 2018 (Supervisor: Damien Vergnaud)
- PhD: Michele Minelli, Fully Homomorphic Encryption for Machine Learning, ENS, October 26th, 2018 (Supervisors: Michel Abdalla & Hoeteck Wee)
- PhD: Quentin Santos, Cryptography for Pragmatic Distributed Trust and the Role of Blockchain, ENS, December 20th, 2018 (Supervisor: David Pointcheval)

8.2.3. *Supervision*

- PhD in progress: Aurélien Dupin, Multi-Party Computations, from 2015, David Pointcheval (with Christophe Bidan, at Rennes)
- PhD in progress: Romain Gay, Functional Encryption, from 2015, Michel Abdalla & Hoeteck Wee
- PhD in progress: Louiza Khati, Disk Encryption Modes, from 2015, Damien Vergnaud
- PhD in progress: Anca Nitulescu, Verifiable Outsourced Computations, from 2015, Michel Abdalla & David Pointcheval
- PhD in progress: Razvan Rosie, Practical Functional Encryption Schemes For the Cloud, from 2015, Michel Abdalla & Hoeteck Wee
- PhD in progress: Jérémy Chotard, Attribute-Based Encryption, from 2016, David Pointcheval (with Duong Hieu Phan, at Limoges)
- PhD in progress: Michele Orrù, Functional Encryption, from 2016, Hoeteck Wee & Georg Fuchsbauer
- PhD in progress: Balthazar Bauer, Transferable e-Cash, from 2017, Georg Fuchsbauer
- PhD in progress: Chloé Hébant, Big Data and Privacy, from 2017, David Pointcheval (with Duong Hieu Phan, at Limoges)
- PhD in progress: Mélissa Rossi, Post-Quantum Cryptography, from 2017, Michel Abdalla (with Henri Gilbert at ANSSI and Thomas Prest at Thales)
- PhD in progress: Antoine Plouviez, Privacy and Decentralization, from 2018, Georg Fuchsbauer
- PhD in progress: Quoc Huy Vu, Quantum Cryptography, from 2018, Céline Chevalier

8.2.4. *Committees*

- PhD Raphaël Bost. *Algorithmes de recherche sur bases de données chiffrées* – Université Rennes I – France – January 8th, 2018: David Pointcheval (Co-supervisor)
- PhD Xavier Bultel. *Mécanismes de délégation pour les primitives de cryptographie à clé publique* – Université Clermont Auvergne – France – May 17th, 2018: David Pointcheval (President)
- PhD Luca Nizzardo. *Cryptographic Techniques for the Security of Cloud and Blockchain Systems* – IMDEA / UPM – Spain – May 24th, 2018: Georg Fuchsbauer (Reviewer)

- PhD Rafael Del Pino. *La cryptographie à base de réseaux* – Ecole Normale Supérieure – France – June 1st, 2018: David Pointcheval (Co-supervisor)

- PhD Pierre-Alain Dupont. *Advanced password-authenticated key exchanges* – Ecole Normale Supérieure – France – August 29th, 2018: David Pointcheval (Supervisor)

- PhD Dahmun Goudarzi. *Implémentations Sécurisées de Chiffrement par Bloc contre les Attaques Physiques* – Ecole Normale Supérieure – France – September 21st, 2018: David Pointcheval (President)

- PhD Cédric Van Rompay. *Protocoles Multi-Utilisateurs de Recherche sur Bases de Données Chiffrées* – Eurecom, Sophia Antipolis, Télécom ParisTech – France – October 4th, 2018: David Pointcheval (President)

- PhD Damien Ligier. *Functional encryption applied to privacy-preserving classification: practical use, performances and security* – CEA, Saclay, IMT Atlantique – France – October 15th, 2018: David Pointcheval (President)

- PhD Fabrice Mouhartem. *Cryptographie protégeant la vie privée à base de couplages et de réseaux* – ENS Lyon – France – October 18th, 2018: David Pointcheval (Reviewer)

- PhD Michele Minelli. *Fully Homomorphic Encryption for Machine Learning* – Ecole Normale Supérieure – France – October 26th, 2018: Michel Abdalla and Hoeteck Wee (Co-supervisors)

- PhD Nadim Kobeissi. *Formal Verification for Real-World Cryptographic Protocols and Implementations* – Inria Paris – France – December 10th, 2018: David Pointcheval (President)

- PhD Quentin Santos. *Cryptography for Pragmatic Distributed Trust and the Role of Blockchain* – Ecole Normale Supérieure – France – December 20th, 2018: David Pointcheval (Supervisor)

<p style="text-align:center">**GALLIUM Project-Team**</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Selection

10.1.1.1. Member of the Conference Program Committees

Xavier Leroy was on the program committee of CADO 2018, the special session on Compiler, Architecture, Design and Optimization of the 16th International Conference on High Performance Computing and Simulation.

Michel Mauny has been a member of the program committee of the International Symposium on Image, Video and Communications (ISIVC 2018).

François Pottier was a member of the program committee of ICFP 2018, the ACM International Conference on Functional Programming.

Didier Rémy was a member of the program committee of FLOPS 2018, the 14th International Symposium on Functional and Logic Programming.

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

Xavier Leroy is area editor (programming languages) for Journal of the ACM. He is a member of the editorial board of Journal of Automated Reasoning.

Until September 2018, Michel Mauny has been a member of the steering committee of the OCaml workshop.

François Pottier is a member of the ICFP steering committee and a member of the editorial boards of the Journal of Functional Programming and the Proceedings of the ACM on Programming Languages.

Didier Rémy is a member of the steering committee of the ML Family workshop.

10.1.3. Research Administration

In 2018, Michel Mauny was chairman of the Scientific Committee of the Caml Consortium. He organized its annual meeting in December 2018.

Since May 2018, Michel Mauny has been Chief Executive Officer of the Inria Foundation.

François Pottier is a member of Inria Paris' *Commission de Développement Technologique* and the president of Inria Paris' *Comité de Suivi Doctoral*.

Didier Rémy is *Deputy Scientific Director* (ADS) in charge of *Algorithmics, Programming, Software and Architecture*.

Didier Rémy is Inria's delegate in the pedagogical board of the *Master Parisien de Recherche en Informatique* (MPRI).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master (M2): "Proofs of Programs", Jean-Marie Madiot, 18 HETD, Université Paris Diderot, France.

Master (M2): "Semantics, languages and algorithms for multi-core programming", Luc Maranget, 18 HETD, Université Paris Diderot, France.

Master (M2): "Functional programming and type systems", François Pottier, 18 HETD, Université Paris Diderot, France.

Master (M2): "Functional programming and type systems", Didier Rémy, 18 HETD, Université Paris Diderot, France.

Licence (L3): Jean-Marie Madiot, "Les principes des langages de programmation", 40 HETD, École Polytechnique, France.

Master (M1): Michel Mauny, "Principles of Programming Languages", 32 HETD, ENSTA-ParisTech, France.

Open lectures: Xavier Leroy, *Programmer = démontrer? La correspondance de Curry-Howard aujourd'hui*, 16 HETD, Collège de France, France.

10.2.2. Supervision

PhD: Vitaly Aksenov, "Synchronization Costs in Parallel Programs and Concurrent Data Structures", ITMO University of Saint Petersburg (Russia) and Université Paris Diderot, September 26, 2018, advised by Petr Kuznetsov and Anatoly Shalyto [11].

PhD: Pierrick Couderc, "Vérification des résultats de l'inférence du compilateur OCaml", Université Paris-Saclay, October 23, 2018, advised by Michel Mauny et Fabrice Le Fessant [34].

PhD in progress: Albin Coquereau, "Amélioration de performances pour le solveur SMT Alt-Ergo: conception d'outils d'analyse, optimisations et structures de données efficaces pour OCaml," Université Paris-Saclay, since October 2015, advised by Michel Mauny, Sylvain Conchon (LRI, Université Paris-Sud) and Fabrice Le Fessant.

PhD in progress: Armaël Guéneau, "Towards Machine-Checked Time Complexity Analyses", Université Paris Diderot, since September 2016, advised by Arthur Charguéraud and François Pottier.

PhD in progress: Glen Mével, "Towards a system for proving the correctness of concurrent Multicore OCaml programs", Université Paris Diderot, since November 2018, advised by Jacques-Henri Jourdan and François Pottier.

PhD in progress: Naomi Testard, "Reasoning about Effect Handlers and Cooperative Concurrency", Université Paris Diderot, since January 2017, advised by François Pottier.

PhD in progress: Thomas Williams, "Putting Ornaments into practice", Université Paris Diderot, since September 2014, advised by Didier Rémy.

10.2.3. Juries

Xavier Leroy was a member of the jury for the Habilitation defense of Julien Signoles (Université Paris Sud, July 2018).

Xavier Leroy chaired the jury for the Ph.D. defense of Mario Pereira (Université Paris Sud, December 2018).

François Pottier was a reviewer for Steven Keuchel's PhD thesis (Ghent University), defended on June 5, 2018.

François Pottier was a reviewer for Martin Clochard's PhD thesis (Université Paris-Saclay), defended on March 30, 2018.

10.3. Popularization

10.3.1. Articles and contents

- For online publications (Interstices*, Images des Maths, Binaire, Wikipedia), and more widely blog articles

  Xavier Leroy wrote a short introduction to software sciences in general and to his lectures at Collège de France. This text was published by the "Binaire" blog of *Le Monde* [30].

10.3.2. Interventions

Gergö Barany gave a talk titled "Finding Missed Optimizations in LLVM (and other compilers)" at the 2018 European LLVM Developers Meeting, explaining his research on testing the quality of compiler optimizations to practitioners in compiler development.

OURAGAN Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. Member of the Organizing Committees

- Antonin Guilloux is a Co-organizer of the International conference Dynamics of Groups Actions (Cetraro, may 2019) [0]
- Antoine Joux co-organized the Sprint Summer School *Post-Scryptum*[0]
- Antoine-Joux co-organized *Crypto in the quantum age (STIAS)*[0]

10.1.2. Scientific Events Selection

10.1.2.1. Chair of Conference Program Committees

- Antoine Joux was Program Chair of Africacrypt [0]

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Elisha Falbel is a member of the editorial board of *São Paulo Journal of Mathematical Sciences - Springer*
- Antoine Joux is a member of the editorial board of *Designs, Codes and Cryptography*
- Fabrice Rouillier is a member of the editorial board of *Journal of Symbolic Computation*

10.1.3.2. Reviewer - Reviewing Activities

- Antonin Guilloux is reviewer in several journals, including Duke Math Journal.
- Razvan Barbulescu is reviewer for several cryptology conferences including Eurocrypt and WAIFI.

10.1.4. Invited Talks

- Razvan Barbulescu, Cryptography and algorithmic number theory, june 2018, Caen
- Elisha Falbel, Colloquium Heidelberg, June 2018 -Heidelberg -Alemagne
- Elisha Falbel, Representation varieties and geometric structures in low dimensions , July 2018 - Warwick-UK
- Elisha Falbel, Modern Trends in Differential Geometry, July 2018, Sao Paulo- Brazil
- Antonin Guilloux, Computation in Geometric Topology, December 2017 - Warwick - UK.
- Antonin Guilloux, Mahler Measure and values of L-functions, August 2018 - Copenhagen - Denmark.
- Antoine Joux, JFLI (UMI CNRS) / Tokyo university, May 2018, Tokyo https://jfliwp.prod.lamp.cnrs.fr/2018/04/13/jfli-seminar-on-the-mersenne-cryptosystem/
- Antoine Joux, Invited Lecture at the conference *Lattice crypto and algorithms*, May 2018, Bertinoro, Italy
- Antoine Joux, The Mersenne Cryptosystem, Nanyang University, June 2018, Singapore

---

[0]http://dynamicsgroupactions.imj-prg.fr/fr/68-2/
[0]https://postscryptum.lip6.fr
[0]http://stias.ac.za/events/workshop-on-cryptography-in-the-quantum-age
[0]http://africacrypt2018.aui.ma/commitees.php

10.1.5. Research Administration

- Fabrice Rouillier is a member of the scientific commitee of the Indo French Centre for Applied Mathematics

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Elisha Falbel : courses in Algebra and Analysis, L1 , Sorbonne Université.

Elisha Falbel : Course in Probabiltés, L3, Polytech

Elisha Falbel : Introduction aux surfaces de Riemann, M1, Sorbonne Université.

Antonin Guilloux: Courses in General Mathematics, L1, Sorbonne Université.

Antonin Guilloux: Chair of the Mathematics in L1 at Sorbonne Université; Lead of the renewing of the mathematical courses in L1 at Sorbonne Université for 2019.

Antonin Guilloux: Course in Hyperbolic geometry and character varieties, M2, Sorbonne Université.

Antoine Joux : Course on Techniques in Cryptography and Cryptanalysis, M2, Parisian Master of Research in Computer Science.

Pierre-Vincent Koseleff : Course on Applied Algebra, L3 for undergraduate students (6th semester), Sorbonne Université.

Pierre-Vincent Koseleff : Préparation à l'agrégation de Mathématiques, M2. General Chair and teacher. Sorbonne Université.

Fabrice Rouillier : Course in Algebraic Computations, M1, 24h, Sorbonne Université.

Fabrice Rouillier : Course in "Agrégation Option - C", M2, 31 heures,Sorbonne Université.

Razvan Barbulescu : part of the Course at MPRI Arithmetic algorithms for cryptology 6h

Razvan Barbulescu : 3 projects of cryptology in Python

Razvan Barbulescu : exercice sessions for Algorithmic and complexity 30h

10.2.2. Supervision

PhD in progress : Thomas Espitau, 09/2016, directed by Antoine Joux

PhD in progress : Natalia Kharchenko, 09/2016, directed by Antoine Joux

PhD in progress : Mahya Mehrabdollahei, 09/2018, directed by Antonin Guilloux and Fabrice Rouillier

PhD in progress : Sudarshan Shinde, 09/2016, directed by Razvan Barbulescu and Pierre-Vincent Koseleff

PhD in progress : Robin Timsit, 09/2015, directed by Elisha Falbel

10.2.3. Juries

- Fabrice Rouillier was reviewer of the PhD of Ruben Becker (Universität des Saarlandes)
- Antonin Guilloux, jury of the PhD thesis of Alexandre Bellis - Etude Topologique du Flot Horocyclique Le cas des surfaces Géométriquement Infnies - Supervisor: Françoise Dal'Bo.

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Razvan Barbulescu is *chargé médiation* at IMJ-PRG
- Razvan Barbulescu is a member of the steering commitee of the association *Animath*[0]
- Fabrice Rouillier is *chargé de mission médiation* at Inria Paris
- Fabrice Rouillier is a member of the editorial board of *Interstices*
- Fabrice Rouillier is the president of the association *Animath*

10.3.2. Interventions

- Razvan Barbulescu co-organizes the *Alkindi*[0] competition on crytography (50000 participants)

---

[0]http://www.animath.fr

[0]http://concours-alkindi.fr/

<p style="text-align:center;color:red;">PARKAS Project-Team</p>

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Selection

9.1.1.1. Member of the Conference Program Committees

- T. Bourke served on the PC of the International Conference on Embedded Software (EMSOFT 2018).
- T. Bourke served on the PC for the Journées Francophones des Langages Applicatifs (JFLA 2018).
- T. Bourke served on the PC of the American Modelica Conference 2018.
- T. Bourke served on the PC of the Japanese Modelica Conference 2018.
- T. Bourke served on the PC of the International Workshop on Software and Compilers for Embedded Systems (SCOPES 2018).
- F. Zappa Nardelli will serve on the PC of OOPSLA 2019 (International Conference on Object-Oriented Programming, Systems, Languages & Applications).
- M. Pouzet served on the PC of the International Workshop on Software and Compilers for Embedded Systems (SCOPES 2018).
- M. Pouzet served on the PC of the International Conference on Embedded Software (EMSOFT 2018).
- M. Pouzet served on the PC of the International Conference on Principles and Practice of Declarative Programming (PPDP 2018).
- M. Pouzet served on the PC of the International Forum on specification & Design Languages (FDL 2018).

9.1.1.2. Reviewer

- T. Bourke reviewed for the International Joint Conference on Automated Reasoning (IJCAR 2018)
- T. Bourke reviewed for the International Conference on Interactive Theorem Proving (ITP 2018)
- T. Bourke reviewed for the International Symposium on Principles and Practice of Declarative Programming (PPDP 2018)

9.1.2. Journal

9.1.2.1. Reviewer - Reviewing Activities

- T. Bourke was a reviewer for Science of Computer Programming.

9.1.3. Invited Talks

- T. Bourke was invited to present a seminar at the Collège de France in January 2018: *La vérification formelle d'un compilateur Lustre*.
- T. Bourke was invited to present an LSV Seminar (Laboratoire Spécification et Vérification) at the ENS Cachan in January 2018: *Compiling a Synchronous Language with Timers for Simulation*
- T. Bourke was invited to present to the Société Informatique de France doctoral seminar at the École normale supérieure in June 2018: *10 lignes de logique pour 1 ligne de code (correct)*
- F. Zappa Nardelli was invited to present to the DeepSpec Workshop in July 2018 on *Debugging Debug Information*.

- T. Bourke and M. Pouzet participated by invitation in the Shonan Meeting 136 on *Functional Stream Libraries and Fusion: What's next?*, in Japan in October 2018.
- M. Pouzet was invited to give a lecture at the International summer school at Marktoberdorf, in July 2018.

9.1.4. Research Administration

- F. Zappa Nardelli will chair the part-time assistant professor recruitment committee at École Polytechinque.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: F. Zappa Nardelli: "A Programmer's introduction to Computer Architectures and Operating Systems" (M1), 45h, École Polytechnique, France

Master: A. Cohen & F. Zappa Nardelli, "Semantics, languages and algorithms for multicore programming", Lecture, 12h+9h, M2, MPRI: Ecole normale supeérieure and Université Paris Diderot, France

Master : M. Pouzet & T. Bourke: "Synchronous Systems" (M2), Lectures and TDs, MPRI, France

Master: T. Bourke participated in reviewing the L3 and M1 internships of students at the ENS, France.

Licence : M. Pouzet & T. Bourke: "Operating Systems" (L3), Lectures and TDs, ENS, France.

Licence : T. Bourke, "Digital Systems" (L3), Lectures and TDs, ENS, France

Marc Pouzet is Director of Studies for the CS department, at ENS.

9.2.2. Supervision

PhD in progress : Lélio Brun, 3rd year, supervised by T. Bourke and M. Pouzet.

PhD in progress : Chandan Reddy, 3rd year, supervised by A. Cohen.

PhD : Jie Zhao, 3rd year, supervised by A. Cohen, defended in December 2018.

PhD in progress : Basile Clément, 1st year, supervised by F. Zappa Nardelli and A. Cohen.

9.2.3. Juries

- Francesco Zappa Nardelli was jury member of the PhD thesis of Francois Ginraud, Grenoble, Jan 2018.
- T. Bourke was an examiner for the thesis of Jiangchao LIU at the École normale supérieure in February 2018.
- T. Bourke was an examiner for the thesis of Hai NGUYEN VAN at the Université Paris-Sud in September 2018.
- T. Bourke was an examiner for the thesis of Narjes JOMAA at the Université de Lille in December 2018.
- F. Zappa Nardelli was an examiner for the thesis of Jie Zhao at the École normale supérieure in December 2018.

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- F. Zappa Nardelli is member of the CES of Inria.

<p style="text-align:center">**PI.R2 Project-Team**</p>

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. General Chair, Scientific Chair

Pierre-Louis Curien organised a Day of Hommage to the memory of Maurice Nivat on February 6, 2018, at University Paris 7.

Alexis Saurin organised and co-chaired with David Baelde the Paris workshop in Oxford, UK, July 7-8th 2018, collocated with FLoC 2018.

Matthieu Sozeau co-organised and co-chaired with Nicolas Tabareau the Coq Workshop 2018 in Oxford, UK, July 8th 2018, collocated with FLoC 2018.

8.1.1.2. Member of the Organising Committees

Yves Guiraud organised with Philippe Malbos (Univ. Lyon 1) and Samuel Mimram (École Polytechnique) the fourth edition of the workshop HDRA (Higher-Dimensional Rewriting and Algebra) in July 2018 in Oxford.

8.1.2. Scientific Events Selection

8.1.2.1. Member of the Conference Program Committees

Hugo Herbelin was a member of the program committee of the conference POPL 2019.

Yann Régis-Gianas was a member of the program committee of the conference PPDP 2018.

Yann Régis-Gianas was a member of the program committee of the conference JFLA 2019.

Matthieu Sozeau was member of the program committee of the conference Interactive Theorem Proving 2018 which took place in Oxford during FLoC 2018 and the 13th Workshop on Logical and Semantic Frameworks with Applications, which took place in Fortaleza, Brazil, September 26-28, 2018.

8.1.2.2. Member of the Conference Steering Committees

Pierre-Louis Curien is member of the steering committee of the international workshop Games for Logic and Programming Languages (GaLop).

Hugo Herbelin is a member of the steering committee of the conference TYPES.

Matthieu Sozeau is member of the steering committee of the Dependently Typed Programming international workshop (DTP).

8.1.3. Journal

8.1.3.1. Member of the Editorial Boards

Pierre-Louis Curien is editor in chief of the Cambridge University Press journal Mathematical Structures in Computer Science (since January 2016).

Alexis Saurin is editing a special issue of MSCS dedicated to contributions in honour of Dale Miller for his 60th birthday.

8.1.3.2. Reviewer - Reviewing Activities

The members of the team reviewed papers for numerous journals and international conferences.

8.1.4. Invited Talks

Pierre-Louis Curien gave talks on the legacy of Maurice Nivat at two special events organised to honour his memory: special sessions in the Journées du GDR IM (Ecole Polytechnique, May 2018), and at ICALP 2018 (Prague, July 2018).

Eric Finster gave an invited talk at the annual meeting of the GDR Topologie in Montpellier in October entitled "The Cotopological Tower".

Hugo Herbelin gave an invited talk on computing with Gôdel's completeness theorem using side effects at the workshop Proof, Computation and Complexity in Bonn, July 2018.

Yann Régis-Gianas gave an invited talk about copatterns in OCaml at the "Logique, Types et Preuves" workshop of the GDR GPL.

Matthieu Sozeau gave an invited talk on "The Predicative, Polymorphic, Cumulative Calculus of Inductive Constructions" at the TYPES 2018 International Conference on Types for Proofs and Programs in Braga, Portugal, 18-21 June 2018.

Matthieu Sozeau gave an invited seminar entitled "Programmer en Coq" at the Collège de France, on December 12th 2018, part of Xavier Leroy's lectures on the Curry-Howard Isomorphism.

Théo Zimmermann was invited to give a talk in the First international workshop on Empirical Answers to Questions of Software Engineering to present his work on the impact of switching bug trackers [60].

8.1.5. Scientific Expertise

Pierre-Louis Curien has been an expert for a hiring committee for an assistant professor position in Logic, Computation and Programming at Stockholm University (June 2018).

Hugo Herbelin has been a reviewer for FWF (Austrian research funding agency) and NKFI (Hungarian research funding agency).

8.1.6. Research Administration

Pierre-Louis Curien is a member of the Scientific Council of the CIRM (Centre International de Rencontres Mathématiques).

Pierre-Louis Curien and Yves Guiraud are members of the scientific council of the Computer Science department of University Paris 7.

Yves Guiraud is the head of the "Preuves, Programmes et Systèmes" (PPS) pole of the IRIF laboratory (since April 2016), and a member of the IRIF direction council (since September 2017).

Yann Régis-Gianas is a member of the Executive Comitee of the OCaml Foundation, acting as a representative of the teaching community.

In collaboration with Emmanuel Chailloux (UPMC), Yann Régis-Gianas is organising the next four years of IRILL, an initiative about innovation in free software.

8.1.7. Presentation of papers

Pierre-Louis Curien gave a talk at the Conference "Topology in Australia and South Korea 2018", Pohang (https://cgp.ibs.re.kr/conferences/Topology_in_Australia_and_South_Korea) in April 2018 ('A syntactic approach to opetopes').

Yann Régis-Gianas gave talks to present "Morbig", a static parser for POSIX Shellat at FOSDEM 2018 in Brussels, at MiniDebConf 2018 and at SLE 2018 in Boston.

Yann Régis-Gianas gave a talk at OCaml 2018 in St Louis to present Learn-OCaml, a project to support the teaching of OCaml worldwide.

Yann Régis-Gianas gave a talk at JFLA 2018 to present his work about extending OCaml with Copatterns.

Exequiel Rivas gave a talk on relating interfaces for computational effects at the Seventh Workshop on Mathematically Structured Functional Programming (MSFP 2018) in July 2018.

Exequiel Rivas gave a talk on relating interfaces for computational effects at the First Symposium on Compositional Structures (SYCO I) in September 2018.

Matthieu Sozeau gave a talk and presented a poster at PEPM 2018 on Equations, gave a talk on Typed Template Coq at CoqPL 2018, along with the traditional Coq developer session. These events were co-located with POPL 2018 in Los Angeles, CA in January 2018.

8.1.8. *Talks in seminars*

Eric Finster gave a talk about the implementation of Catt, a proof assistant for Maltsinotis-style higher categories at the Journées pi.r2 (Fontainebleau, june 2018).

Eric Finster gave a talk on "Towards Higher Universal Algebra in Dependent Type Theory" in the working group on Higher Categories, Polygraphs and Homotopy, during the Journées PPS (November 2018).

Eric Finster gave a talk during the HoTTest Electronic Seminar on "Towards Higher Universal Algebra in Type Theory".

Eric Finster gave a talk entitled "Left Exact Modalities in Type Theory" at the Cambridge Logic and Semantics Seminar (March 2018).

Hugo Herbelin gave a talk on computing with Gödel's completeness theorem at the seminar of the Logic team of the IMJ-PRG Paris 6 - Paris 7 lab.

Pierre Letouzey gave two talks on "Un problème d'Hofstadter pour ses lecteurs curieux" during the Journées pi.r2 (Fontainebleau, june 2018) and the Journées PPS (November 2018).

Jean-Jacques Lévy gave a talk at the IRIF Verification seminar (January 8) entitled "Proofs of graph algorithms with automation and their readability".

Jean-Jacques Lévy gave a talk at the VIP ISCAS-Inria workshop (Irif, November 19-22) entitled "Comparing a Formal Proof in Why3, Coq and Isabelle".

Yann Régis-Gianas gave a talk at Gallium seminar to present "Morbig", a static parser for POSIX Shell.

Exequiel Rivas gave a talk on "Arrows: from programming to semantics" at the Laboratoire d'Informatique de Paris Nord (LIPN), September 2018.

Exequiel Rivas gave a talk on "Interaction from monadic interfaces" during the Journées PPS, November 2018.

Exequiel Rivas gave a talk on "Interaction from monadic interfaces" at the Prosecco seminar, December 2018.

Alexis Saurin gave a talk at I2M seminar in the "logique de la programmation" group entitled "logical-by-need".

Alexis Saurin gave a talk at the VIP ISCAS-Inria workshop (Irif, November 19-22) entitled "On non-wellfounded proofs and cuts in linear logic with fixed points."

Matthieu Sozeau gave a talk on the MetaCoq Project at the VALS seminar, LRI, October 2018.

Matthieu Sozeau gave a talk on "A universe of strict propositions" during the Journées PPS, November 2018.

8.1.9. *Attendance to conferences, workshops, schools,...*

Hugo Herbelin attended TYPES 2018 in Porto (June), the Coq Implementors Workskop in Nice (May 2018), FLoC in Oxford (July 2018), the GPL working group in Marseille (October 2018), the Scalp working group in Saclay (November 2018).

Hugo Herbelin gave a talk on cubical type theory at the workshop Types, Homotopy Type theory and Verification (June 2018), on computing with Markov's principle at the workshop Proof and Computation (July 2018), on a constructive proof of the axiom of dependent choice compatible with classical logic at the workshop Constructive Mathematics (August 2018), all workshops of the special trimester on types, sets and constructions in Bonn. He gave a talk on the reverse mathematics of Gödel's completeness theorem and on the computational contents of Henkin's proof at the seminar of the trimester.

Hugo Herbelin gave a talk on cubical type theory at the TYPES conference (June 2018).

Hugo Herbelin gave a talk on the cubical type structure of cubical type theory at the HoTT-UF workshop in Oxford, July 2018.

Jean-Jacques Lévy attended the Coq Winter School 2018-2019 (SSReflect & MathComp) at Inria Sophia-Antipolis (November 2018).

Yann Régis-Gianas attended JFLA 2018, OCaml 2018, SPLASH 2018, FOSDEM 2018 and MiniDebConf 2018.

Exequiel Rivas attended to MSFP 2018 and SYCO I.

Alexis Saurin attended FLoC 2018 in Oxford.

Matthieu Sozeau attended POPL in Los Angeles, CA (January 2018), the Coq Implementors Workshop in Nice (May 2018), the TYPES Conference in Braga, Portugal (June 2018), FLoC in Oxford (July 2018) and ICFP in St Louis, MI (September 2018).

Théo Zimmermann attented FOSDEM in Brussels (February 2018), the Coq Implementors Workskop in Nice (May 2018), FLoC in Oxford (July 2018), OpenSym in Paris (August 2018) and the EAQSE workshop in Villebrumier (November 2018).

8.1.10. *Groupe de travail Théorie des types et réalisabilité*

This is one of the working groups of PPS, jointly organised by Hugo Herbelin and Matthieu Sozeau. The speakers in 2018 were Rodolphe Lepigre (Practical Curry-Style using Choice Operators, Local Subtyping and Circular proofs), Armaël Guéneau (A Fistful of Dollars: Formalising Asymptotic Complexity Claims via Deductive Program Verification), Jérôme Siméon (Specifying and compiling domain specific languages using Coq: Three case studies), Laura Fontanella 'Axiom of choice in classical realisabiity), Adrien Guatto (A Generalised Modality for Recursion), Hadrien Batmalle (Preservation of properties of the original model in classical realisability), Raphaël Cauderlier (Tactics and certificates in Meta Dedukti).

8.1.11. *Groupe de travail Catégories supérieures, polygraphes et homotopie*

Several members of the team participate actively in this weekly working group of PPS, organised by François Métayer (Univ. Nanterre) since 2009.

8.2. Teaching - Supervision - Juries

8.2.1. *Teaching*

Master: Pierre-Louis Curien teaches in the course Models of programming languages: domains, categories, games of the MPRI (together with Thomas Ehrhard and Paul-André Melliès). Pierre-Louis Curien taught a course on the Foundations of Programming Languages at East China Normal University (12 hours, November 2018).

Master: Hugo Herbelin teaches with Nicolas Tabareau the course on Homotopy Type Theory at the LMFI.

Master: Pierre Letouzey teaches two short courses to the LMFI Master 2 students : "Programming in Coq" and "Introduction to computed-aided formal proofs". These two courses come in addition to Pierre Letouzey's regular duty as teacher in the Computer Science department of Paris 7 (including a course on Compilation to M2-Pro students and a course on computed-aided formal proofs to M1 students).

Master: Yann Régis-Gianas took part in the MPRI course entitled "Type systems": he gave a 12-hour course about generalised algebraic data types, higher-order Hoare logic and dependently typed programming.

Master: Alexis Saurin taught the proof theory and lambda-calculus part of the cours fondamental de logique in M2 "Logique Mathématique et Fondements de l'Informatique", Université Paris 7.

Alexis Saurin chairs LMFI M2 since September 2013.

Master: Matthieu Sozeau taught the MPRI course on Advanced uses of proof assistants (12 hours + a project), together with Bruno Barras (Inria Deducteam).

Matthieu Sozeau gave a guest lecture on dependent pattern-matching and Equations at the University of Saarland in April 2018.

Matthieu Sozeau gave an introductory lecture on Dependent Type Theory at the EUTYPES summer school in Ohrid, Macedonia, in August 2018.

8.2.2. *Supervision*

Guillaume Claret defended his PhD on "Programmation avec effets en Coq" on 18 September 2018 (supervised by Hugo Herbelin and Yann Régis-Gianas). Note that the dissertation was completed in 2015 but Guillaume Claret moved in the meantime to a private company and the defense has been delayed.

PhD (completed): Thibaut Girka defended his PhD on "Differential Program Semantics" on the 3rd of July 2018, supervised by Roberto Di Cosmo and Yann Régis-Gianas.

PhD (abandoned): Cyprien Mangin, Dependent Pattern-Matching, induction-induction and higher inductive types (started in September 2015), supervised by Matthieu Sozeau and Bruno Barras. Cyprien Mangin left for industry.

PhD in progress: Théo Zimmermann (started in September 2016), supervised by Hugo Herbelin.

PhD in progress: Cédric Ho Thanh (started in September 2017), on Opetopes for higher-dimensional rewriting and koszulity, supervised by Pierre-Louis Curien and Samuel Mimram.

PhD in progress: Antoine Allioux (started in February 2018), on the formalisation of algebraic structures in type theory, supervised by Yves Guiraud and Matthieu Sozeau.

PhD in progress: Abhishek De (started in october 2018), on fixed point logics, structures for infinite proofs and their finite representations, supervised by Alexis Saurin.

The following are cosupervisions of PhD students who are not formally part of the team:

PhD in progress: Rémi Nollet, Functional reactive programming and temporal logics: their syntax and semantics - from discrete to continuous time (started in September 2016), supervised by Alexis Saurin and Christine Tasson.

PhD in progress: Gaëtan Gilbert (at Inria Nantes), Definitional proof-irrelevance in the Calculus of Inductive Constructions (started in September 2016), supervised by Nicolas Tabareau and Matthieu Sozeau.

PhD in progress: Simon Forest (at École Polytechnique), Rewriting in semistrict higher categories (started in September 2017), supervised by Yves Guiraud and Samuel Mimram.

PhD in progress: Théo Winterhalter (at Inria Nantes), Extensional to Intensional type theory and meta-theory of proof-irrelevance (started in September 2017), supervised by Nicolas Tabareau and Matthieu Sozeau.

8.2.3. *Juries*

Pierre-Louis Curien was member of the jury of the PhD thesis of Clovis Eberhard (Université Savoie Mont Blanc), defended in June 2018.

Hugo Herbelin was a member of the jury of the PhD thesis of Andrea Vezzosi (University of Göteborg, Sweden), defended in September 2018.

Hugo Herbelin was a member of the jury of the PhD thesis of Guillaume Claret (University of Paris-Diderot), defended in September 2018.

Hugo Herbelin was referee for the PhD thesis of Simon Boulier (University of Nantes), defended in November 2018.

Hugo Herbelin was president of the jury of the PhD thesis of Pierre Cagne (University of Paris Diderot), defended in December 2018.

Yann Régis-Gianas is a member of the jury of the competitive examination for the entrance to the Ecoles Normales Supérieures and the Ecole Polytechnique.

Matthieu Sozeau was member of the jury of the PhD thesis of Amin Timany (KU Leuven, Belgium), defended in April 2018.

8.3. Popularisation

Pierre-Louis Curien gave a talk in the Lycée Georges Dumézil (Vernon, Eure, May 2018) on computer bugs and their prevention, on the occasion of the 50th anniversary of this high school.

Jean-Jacques Lévy is member of the Inria-Alumni's executive committee (4 meetings in 2018) and organised the session about the Transparency of Algorithms (November 12).

Jean-Jacques Lévy was invited by the French Academy of Sciences to participate to the 2018 Hangzhou International Human Resources Exchanges and Cooperation Conference (Hangzhou, November 9-12).

Yann Régis-Gianas co-organised the "Journée Francilienne de Programmation", a programming contest between undergraduate students of three universities of Paris (UPD, UPMC, UPS).

8.3.1. Education

Yann Régis-Gianas is the project leader of the "Learn-OCaml" project whose purpose is to support teaching the OCaml programming language worldwide.

8.3.2. Internal action

- Science outreach towards services (DPEI, STIP...)

    Jean-Jacques Lévy talked about "L'informatique en 4 temps" at the Alumni-UniThé seminar at Inria Bordeaux (October 10).

POLSYS Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

Dongming Wang was the General Chair of International Conference on Automated Deduction in Geometry (ADG 2018) (Nanning, China, September 11-14, 2018).

Dongming Wang was the General co-Chair of the 44th International Symposium on Symbolic and Algebraic Computation (ISSAC 2019) , Beijing, China, July 15-18, 2019), and the 13th International Conference on Artificial Intelligence and Symbolic Computation (AISC 2018) (Suzhou, China, September 16-19, 2018).

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

Elias Tsigaridas was a member of the program committees of the 20th International Workshop on Computer Algebra in Scientific Computing (CASC) 2018.

Mohab Safey El Din was member of the program committee of the 43rd International Symposium on Symbolic and Algebraic Computation (ISSAC) 2018.

Emmanuel Prouff was a member of the programm committee of the Conference on Cryptographic Hardware and Embedded Systems 2018 (CHES), Smart Card Research and Advanced Application Conference (CARDIS) 2018, and Constructive Side-Channel Analysis and Secure Design (COSADE) 2018.

Dongming Wang was a member of the program committee of 13th International Conference on Artificial Intelligence and Symbolic Computation (AISC 2018) (Suzhou, China, September 16-19, 2018) and the 4th International Conference on Numerical and Symbolic Computation (SYMCOMP 2019) (Porto, Portugal, April 11-12, 2019).

9.1.2.2. Reviewer

Mohab Safey El Din was reviewer of the M. Skomra's Phd (CMAP, École polytechnique).

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

Mohab Safey El Din is member of the editorial board of the Journal of Symbolic Computation.

Mohab Safey El Din (with Chee Yap, Courant Inst. NYU) is guest editor of the Journal of Symbolic Computation Special Issue on the 2017 International Symposium on Symbolic and Algebraic Computation.

Dongming Wang is a member of the editorial board of

- Journal of Symbolic Computation (published by Academic Press/Elsevier, London),
- Frontiers of Computer Science (published by Higher Education Press, Beijing and Springer, Berlin),
- Texts and Monographs in Symbolic Computation (published by Springer, Wien New York).

Dongming Wang is a member of the Advisory Board for the journal SCIENCE CHINA Information Sciences (published by Science China Press, Beijing and Springer, Berlin).

Dongming Wang is the Editor-in-Chief for the journal Mathematics in Computer Science (published by Birkhäuser/Springer, Basel).

9.1.4. Invited Talks

Elias Tsigaridas was invited speaker at

- IBM T.J. Watson Research Center, (*Invited talk*) 28 Nov 2018.
- *Applied Algebra Day*. MIT, 17 Nov 2018.
- ICERM, University of Brown, *Main seminar*, Nov, 2018.

Mohab Safey El Din was invited speaker at

- Key Lab on Math. Mechanization, Chinese Academy of Sciences, *Invited talk*.
- Dep. of Math. of Univ. of Tromso, *Invited talk*.
- ICERM, Semester Prog. on Non-linear Algebra, Workshop on Real algebraic geometry and optimization, *Plenary talk*.

Emmanuel Prouff was an invited speaker at

- PANDA 2018 Conference (China) and talked on "Deep Learning for Embedded Security Evaluation".
- COSADE 2018 Conference (Singapur) and talked on "Deep Learning for Embedded Security Evaluation".

9.1.5. Scientific Expertise

Mohab Safey El Din is Chargé de Mission for Computer Science at Sorbonne Univ. (Faculté des Sciences et Ingéniérie).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Jérémy Berthomieu had the following teaching activities:

Master : Computation Modeling, 38 hours, M1, Sorbonne Université, France.

Master : In charge of Basics of Algebraic Algorithms, 74 hours, M1, Sorbonne Université & Polytech' UPMC, France.

Master : Projects supervision, 6 hours, M1, Sorbonne Université, France.

Licence : Introduction to Algorithmics, 33 hours, L2, Sorbonne Université , France.

Licence : Projects supervision, 10 hours, L2, Sorbonne Université, France.

Licence : In charge of Basics of Programmation 2, 50 hours, L1, Sorbonne Université, France.

Mohab Safey El Din has the following teaching activities:

Master : Computation Modeling, 33 hours, M1, Sorbonne Université, France.

Master : Polynomial System Solving, 40 hours, M1, Sorbonne Université, France.

Master : In charge of the curriculum on Security, Reliability of Performance in Computing, 30 hours, M1, Sorbonne Université , France.

Master : Projects management, 20 hours, M1, Sorbonne Université, France.

Licence : Projects supervision, 10 hours, L2, Sorbonne Université, France.

9.2.2. Supervision

PhD in progress : Matías Bender, Algorithms for Sparse Gröbner basis and applications, started in Dec. 2015, Jean-Charles Faugère and Elias Tsigaridas.

PhD in progress : Thi Xuan Vu, Faster algorithms for structured polynomial systems, started in Oct. 2017, Jean-Charles Faugère and Mohab Safey El Din.

PhD in progress : Phuoc Le, Real root classification and polar varieties, started in Oct. 2018, Jean-Charles Faugère and Mohab Safey El Din.

PhD in progress : Simon Landry, Threshold Implementations Against Side Channel Analysis, Emmanuel Prouff.
CIFRE/Contract with ST Micro electronics.

9.2.3. Juries

Mohab Safey El Din was member of the PhD committees of M. Skomra (CMAP, École polytechnique) and T. Weisser (LAAS, CNRS).

<p style="text-align:center">**PROSECCO Project-Team**</p>

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- Catalin Hritcu and Amal Ahmed co-organized a Dagstuhl Seminar on Secure Compilation (18201)
- Harry Halpin and Bart Preneel co-organized the ECRYPT-CSA workshop on Crypto Policies (22-23 January 2018) in Brussels, Belgium.

9.1.1.2. Member of the Organizing Committees

- Catalin Hritcu and Amal Ahmed were organizers for PriSC 2018 and the upcoming PriSC 2019

9.1.2. Scientific Events Selection

9.1.2.1. Chair of Conference Program Committees

- Catalin Hritcu was the PC chair for the 2nd Workshop on Principles of Secure Compilation (PriSC) at POPL 2018
- Harry Halpin was General Chair of the 1st Workshop on the Decentralization of Governance at INSCI 2018

9.1.2.2. Member of the Conference Program Committees

- Bruno Blanchet was PC member of RESSI 2018 (*Rendez-vous de la Recherche et de l'Enseignement de la Sécurité des Systèmes d'Information*).
- Catalin Hritcu was PC member of EuroS&P 2018, ESOP 2018, and CCS 2018
- Karthikeyan Bhargavan was PC member of IEEE S&P 2018, ACM CCS 2018, and POST 2018
- Harry Halpin was PC Member of SSR 2018, ACM WWW 2018, and ISWC 2018.

9.1.2.3. Reviewer

- Catalin Hritcu served as a reviewer for the Journal of Automated Reasoning (JAR)

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

Associate Editor

– of the *International Journal of Applied Cryptography (IJACT)* – Inderscience Publishers: Bruno Blanchet

9.1.4. Invited Talks

- Catalin Hritcu gave an Invited Keynote talk at the Working Formal Methods Symposium (FROM) in June 2018
- Catalin Hritcu gave invited talks at Nomadic Labs (Tezos), IRIF Verification Seminar (Paris 7), and SoSySec seminar (IRISA Rennes)
- Karthikeyan Bhargavan gave invited talks at Security Standardization Research (SSR 2018), Formal Methods and Tools for Security (FMATS 2018), Crypto Welcomes TLS 1.3 (CWTLS), and the annual GDR Securité meeting.
- Harry Halpin gave invited talks at the EPFL Summer Research Institute in July 2018, the Web 3.0 Summit in October 2018, and Binance Labs in December 2018.

9.1.5. Leadership within the Scientific Community

- Catalin Hritcu served as the Artifact Evaluation Co-Chair for POPL 2018 and POPL 2019

9.1.6. Scientific Expertise

- Bruno Blanchet is a member of the specialized temporary scientific committee of ANSM (*Agence nationale de sécurité du médicament et des produits de santé*), on the cybersecurity of software medical devices.

- Bruno Blanchet participated to a review of the code of the Tezos blockchain by the Inria Foundation (March–May 2018).

- Harry Halpin participated as a member of the advisory board to the PANORAMIX EC H2020 project (2018).

9.1.7. Research Administration

- Bruno Blanchet was co-president of the Inria hiring committee for PhD, post-docs, and *délégations* (*Commision des Emplois Scientifiques*, CES).

- Bruno Blanchet was representative of Inria Paris at the DIM RFSI (*Domaine d'Intérêt Majeur, Réseau Francilien en Sciences Informatiques*).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Master: Bruno Blanchet, Cryptographic protocols: formal and computational proofs, 18h equivalent TD, master M2 MPRI, université Paris VII, France

- Master: Karthikeyan Bhargavan, Cryptographic protocols: formal and computational proofs, 18h equivalent TD, master M2 MPRI, université Paris VII, France

- Master: Karthikeyan Bhargavan, Network Protocol Safety and Security, 18h equivalent TD, ACN master, Telecom ParisTech

- PhD: Formally Secure Compartmentalizing Compilation course at International School on Foundations of Security Analysis and Design (FOSAD), 27-28 August, 2018, Bertinoro, Italy

- PhD: Program Verification with F* course at EPIT 2018 Software Verification Spring School, 7-11 May, 2018, Aussois, France

- PhD: Attacks and Automated Tools, BIU winter school on cryptography, 11-15 February, 2018, Tel Aviv, Israel

- PhD: Crypto standards for the Internet and Web. ECRYPT-CSA School on Societal Aspects of Cryptology and on Business and Innovation in Crypto. 7-9 January. Zurich, Switzerland.

- PhD: Mix networking, ECRYPT Summer School, ECRYPT-NET School on Integrating Advanced Cryptography with Applications, 16-21 September 2018, Kos, Greece.

9.2.2. Supervision

- PhD: Jean Karim Zinzindohoue, Secure, Fast and Verified Cryptographic Applications: A Scalable Approach [13], ENS Paris, defended on July 3, 2018, supervised by Karthikeyan Bhargavan.

- PhD: Nadim Kobeissi, Formal Verification for Real-World Cryptographic Protocols and Implementations [12], ENS Paris, defended on December 10, 2018, supervised by Karthikeyan Bhargavan and Bruno Blanchet.

- PhD in progress: Benjamin Beurdouche, on verified cryptographic protocol implementations, ENS Paris, since October 2016, supervised by Karthikeyan Bhargavan.

- PhD in progress: Marina Polubelova, on verified post-quantum cryptography, PSL Paris, since October 2017, supervised by Karthikeyan Bhargavan.

- PhD in progress: Natalia Kulatova, on verified secure hardware APIs, PSL Paris, since October 2017, supervised by Karthikeyan Bhargavan.
- PhD in progress: Denis Merigoux, on verified RUST applications, PSL Paris, since November 2017, supervised by Karthikeyan Bhargavan.
- PhD in progress: Benjamin Lipp, On Mechanised Cryptographic Proofs of Protocols and their Link with Verified Implementations, ENS Paris, since October 2018, supervised by Bruno Blanchet and Karthikeyan Bhargavan.
- PhD in progress: Kenji Maillard, on Semantic Foundations for F*, started January 2017, supervised by Catalin Hritcu and Karthikeyan Bhargavan
- PhD in progress: Carmine Abate, The Formal Foundations of Secure Compilation, since June 2018, advised by Catalin Hritcu and Bruno Blanchet
- PhD in progress: Jérémy Thibault, Secure Compartmentalizing Compilation to a Tagged Architecture, from August 2018, advised by Catalin Hritcu and Bruno Blanchet
- PhD in progress: Guido Martínez (CIFASIS-CONICET Rosario), Metatheory for Semi-Automatic Verification of Effectful Programs, from April 2017, advised by Mauro Jaskelioff (CIFASIS-CONICET Rosario) and Catalin Hritcu

9.2.3. Juries

- Karthikeyan Bhargavan participated in the PhD jury of Daniel Fett at University of Stuttgart.
- Harry Halpin participated in the PhD jury of Joseph Raad at University Paris-Saclay.

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- Bruno Blanchet was co-president of the Inria hiring committee for PhD, post-docs, and *délégations* (*Commision des Emplois Scientifiques*, CES).
- Bruno Blanchet was representative of Inria Paris at the DIM RFSI (*Domaine d'Intérêt Majeur, Réseau Francilien en Sciences Informatiques*).

9.3.2. Interventions

- Karthikeyan Bhargavan was a panelist at the Cloudflare Internet Summit in London, June 14, 2018.
- Harry Halpin was a panelist at the World Digital Asset Summit in San Fransisco, USA, December 10, 2018.

<p style="text-align:center;color:red;font-weight:bold;">SECRET Project-Team</p>

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- WCC 2019, March 31 - April 5, 2019, St Jacut-de-la-Mer, France: A. Canteaut, program co-chair
- Eurocrypt 2020, Zagreb, Croatia: A. Canteaut, program co-chair
- Workshop on quantum code design and architectures (kick-off meeting of the European project QCDA), November 5-6, 2018, Paris (France): A. Leverrier.

9.1.1.2. Member of the Organizing Committees

- Training School on Symmetric Cryptography and Blockchain: February 19-23, 2018, Torremolinos (Spain): A. Canteaut.

9.1.2. Scientific Events Selection

9.1.2.1. Chair of Conference Program Committees

As a co-editor-in-chief of the journal *IACR Transactions on Symmetric Cryptology*, María Naya-Plasencia served as a program chair of the conference *Fast Software Encryption (FSE)*, held in Bruges March 2018. Gaëtan Leurent will serve as a co-editor-in-chief of *IACR Transactions on Symmetric Cryptology* starting from 2019.

9.1.2.2. Member of the Conference Program Committees

- FSE 2018: March 5-7, 2018, Bruges, Belgium (C. Boura, A. Canteaut, G. Leurent, M. Naya-Plasencia, L. Perrin);
- CryptoAction Symposium 2018: April 4-5, Sutomore, Montenegro (A. Canteaut);
- PQCrypto 2018: April 9-11, 2018, Fort Lauderdale, USA, (M. Naya-Plasencia, N. Sendrier, J.P. Tillich);
- CT-RSA 2018: April 16-20, 2018, San Francisco, USA (M. Naya-Plasencia);
- Eurocrypt 2018: April 29- May 3, 2018, Tel Aviv, Israel (M. Naya-Plasencia);
- WAIFI 2018: June 14-16, 2018, Bergen, Norway, (L. Perrin)
- SAC 2018: August 13-14, 2018, Calgary, Canada, (G. Leurent);
- Crypto 2018: August 17-19, 2018, Santa Barbara, USA, (M. Naya-Plasencia);
- QCrypt 2018: August 27-31, 2018, Shanghai, China, (A. Leverrier);
- TQC 2018: July 16-18, 2018, Sydney, Australia, (A. Leverrier);
- QTech 2018: September 5-7, 2018, Paris, France, (A. Leverrier);
- SCN 2018: September 5-7, 2018, Amalfi, Italy, (G. Leurent);
- AQIS 2018: September 8-12, 2018, Nagoya, Japan, (A. Leverrier);
- SETA 2018: October 1-6, 2018, Hong-Kong, China, (P. Charpin);
- Asiacrypt 2018: December 02-06, 2018, Brisbane, Australia, (G. Leurent);
- CT-RSA 2019: March 4-8, 2019, San Francisco, USA, (L. Perrin)
- FSE 2019: March 25-28, 2019, Paris, France (C. Boura, A. Canteaut, G. Leurent, M. Naya-Plasencia)

- WCC 2019: March 31 - April 5, 2019, St Jacut-de-la-Mer, France, (A. Canteaut chair, P. Charpin, N. Sendrier, J.P. Tillich);
- PQCrypto 2019: May 8-10, 2019, Chongqing, China, (J.P. Tillich);
- CBC 2019: May 18-19, Darmstadt, Germany, (J.P. Tillich);
- Eurocrypt 2019: May 19-23, 2019, Darmstadt, Germany (C. Boura)
- ISIT 2019: July 7-12, 2019, Paris, France, (J.P. Tillich);
- CHES 2019: August 25-28, 2019, Atlanta, USA, (G. Leurent);
- Eurocrypt 2020: Zagreb, Croatia (A. Canteaut, PC co-chair).

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- *Designs, Codes and Cryptography*, associate editor: P. Charpin.
- *Finite Fields and Applications*, associate editor: A. Canteaut, P. Charpin.
- *Applicable Algebra in Engineering, Communication and Computing*, associate editor: A. Canteaut.
- *IACR Transactions on Symmetric Cryptology*, associate editors: C. Boura, A. Canteaut, G. Leurent, M. Naya-Plasencia.
- *IACR Transactions on Cryptographic Hardware and Embedded Systems*, associate editors: G. Leurent.
- *Advances in Mathematics of Communications*, associate editors: N. Sendrier and J.P. Tillich

9.1.3.2. Reviewer - Reviewing Activities

- Remote Referee - step 2- ERC-2018-CoG (A. Canteaut)
- Remote Referee - step 2- ERC-2018-STG (M. Naya-Plasencia)

9.1.4. Invited Talks

- A. Canteaut, *Desperately Seeking Sboxes*, Eurocrypt 2018, Tel Aviv, Israel, April 29 - May 3 2018.
- M. Naya-Plasencia, *New Results on Quantum Symmetric Cryptanalysis*, QUANTALGO Quantum Algorithms and Applications Workshop, 2018, Paris, France, September 25 - 28, 2018.
- M. Naya-Plasencia, *New Results on Quantum Symmetric Cryptanalysis*, CrossFYRE Workshop, 2018, Surrey, UK, September 13 - 14, 2018.
- M. Naya-Plasencia, *New Results on Quantum Symmetric Cryptanalysis*, Journées Nationales 2018 du GDR Informatique Mathématique, Apr 2018, Palaiseau, France
- J.P. Tillich *Schémas cryptographiques à clé publique à base de codes correcteurs proposés à la compétition du NIST*, Journées Nationales 2018 du Pré-GDR Sécurité Informatique, June 1, 2018.

The members of the project-team have also been invited to give talks to some workshops or international seminars, including:

- C. Boura, A. Canteaut, J. Jean and V. Suder, *On Sboxes sharing the same DDT*, Dagstuhl Seminar 18021 Symmetric Cryptography, Jan 2018, Dagstuhl, Germany
- A. Canteaut *L'insoutenable légèreté du chiffrement*, Journées Scientifiques Inria 2018, June 2018, Bordeaux, France
- A. Canteaut and L. Perrin *On CCZ-Equivalence, Extended-Affine Equivalence and Function Twisting*, BFA 2018 - 3rd International Workshop on Boolean Functions and their Applications, Jun 2018, Loen, Norway
- A. Chailloux, *Relativistic commitment and zero-knowledge proofs*, 17th Bellairs Crypto-Workshop 2018, Mar 2018, Holetown, Barbados.
- T. Fuhr, M. Naya-Plasencia and Y. Rotella, *New Results on Modified Versions of Ketje Jr*, Dagstuhl Seminar 18021 Symmetric Cryptography, Jan 2018, Dagstuhl, Germany

- G. Leurent, *MDS Matrices with Lightweight Circuits*, The Challenges of Lightweight Cryptanalysis, April 2018, Tel Aviv, Israel.
- G. Leurent, *Security Issues with Small Block Sizes*, Lightweight Crypto Day, April 2018, Tel Aviv, Israel.
- G. Leurent *The Missing Difference Problem*, Flexible Symmetric Cryptography, March 2018, Leiden, Netherlands.
- M. Naya-Plasencia, *Quantum Safe Symmetric Cryptography*, Flexible Symmetric Cryptography Lorentz Center Workshop, 2018, Leiden, Netherlands, March 19 - 23, 2018.
- M. Naya-Plasencia, *Symmetric lightweight primitives: (Design and) Cryptanalysis*, Lightweight Crypto Day, April 2018, Tel Aviv, Israel.
- L. Perrin, *Generalized Feistel Networks with Optimal Diffusion*, Dagstuhl Seminar 18021 Symmetric Cryptography, Jan 2018, Dagstuhl, Germany
- L. Perrin, *S-Box Reverse-Engineering: Boolean Functions, American/Russian Standards, and Butterflies*, CECC 2018 - Central European Conference on Cryptology, Jun 2018, Smolenice, Slovakia.

9.1.5. Leadership within the Scientific Community

- A. Canteaut serves as a chair of the steering committee of *Fast Software Encryption (FSE)*.
- A. Canteaut serves on the steering committee of the international competition CAESAR for authenticated encryption [0]
- N. Sendrier serves on the steering committee of *Post-quantum cryptography (PQCrypto)*.
- P. Charpin, N. Sendrier and JP Tillich serve on the steering committee of the WCC conference series.
- A. Leverrier serves on the steering committee of *DIM SIRTEQ* (réseau francilien pour les technologies quantiques).

9.1.6. Research Administration

- A. Canteaut serves as Head of Science of the Inria Paris research center since September 2017.
- A. Canteaut serves on the *Inria Evaluation Committee* since September 2017.
- M. Naya-Plasencia and G. Leurent are members of *Inria Paris CSD Committee* (Comité de suivi doctoral).
- M. Naya-Plasencia is a member of *Inria Paris Scientific Hiring Committee* (Assignement of PhD, post-doctoral and delegation Inria fundings).
- M. Naya-Plasencia serves as head of the jury for PhD scholarships from EDITE.
- M. Naya-Plasencia serves on the *Comité des usagers du projet "rue Barrault"*.

9.1.7. Committees for the selection of professors, assistant professors and researchers

- Inria Paris Chargés de recherche: A. Canteaut (vice-chair)
- Inria Chargés de recherche (national selection): A. Canteaut
- ISTIC, Rennes, maître de conférence: M. Naya-Plasencia

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: A. Canteaut, *Error-correcting codes and applications to cryptology*, 12 hours, M2, University Paris-Diderot (MPRI), France;

---

[0] https://competitions.cr.yp.to/caesar.html

Master: A. Chailloux, *Quantum Information*, 18 hours, M2, University Paris-Diderot (MPRI), France;

Master: A. Leverrier, *Quantum information and cryptography*, 18 hours, M2, University Paris-Diderot (MPRI), France;

Master: N. Sendrier, Information theory, 40 hours, M1, UVSQ, MINT, France;

Master: J.-P. Tillich, *Introduction to Information Theory*, 32 hours, M2, Ecole Polytechnique, France;

Corps des Mines: G. Leurent *Cryptographie symétrique*, 7 hours, Telecom ParisTech, France;

The members of the project-team were also invited to give courses at training schools for PhD students and young researchers:

- A. Canteaut, *Secure building-blocks against differential and linear attacks*, Training School on Symmetric Cryptography and Blockchain, Torremolinos, Spain, February 2018. 3 hours.
- A. Canteaut, *Exploiting algebraic properties of block ciphers*, Training School on Symmetric Cryptography and Blockchain, Torremolinos, Spain, February 2018. 1.5 hours.
- G. Leurent *How Not to Use a Blockcipher*, Training School on Symmetric Cryptography and Blockchain, Torremolinos, Spain, February 2018. 2.5 hours.
- A. Leverrier, *Security of continuous-variable quantum key distribution*, Secure Quantum Communications School, Baiona, Spain, May 2018.
- M. Naya-Plasencia, *Introduction to Symmetric Cryptography*, Summer School on real-world crypto and privacy, Sibenik, Croatia, June 2018.
- M. Naya-Plasencia, *Lightweight Cryptography*, Summer School on real-world crypto and privacy, Sibenik, Croatia, June 2018.

9.2.2. Supervision

PhD: Sébastien Duval, *Constructions for lightweight cryptography*, Sorbonne Université, October 3, 2018.

PhDs: Yann Rotella, *Finite fields and symmetric cryptography*, Sorbonne Université, September 19, 2018.

PhD in progress: Rodolfo Canto Torres, *Analysis of generic decoding algorithms for the Hamming metric and study of cryptosystems based on the rank metric*, since September 2015, supervisor: N. Sendrier

PhD in progress: Xavier Bonnetain, *Cryptanalysis of symmetric primitives in the post-quantum world*, since September 2016, supervisor: M. Naya Plasencia

PhD in progress: Thomas Debris, *Quantum algorithms for decoding linear codes*, since September 2016, supervisor: J.-P. Tillich

PhD in progress: Antoine Grospellier, *LDPC codes: constructions and decoding*, since October 2016, supervisor: J.-P. Tillich

PhD in progress: Vivien Londe, *Study of quantum LDPC codes*, since September 2016, supervisors: G. Zémor and A. Leverrier

PhD in progress: Kevin Carrier, *Reconstruction of error-correcting codes*, since October 2016, supervisor: N. Sendrier

PhD in progress: Matthieu Lequesne, *Attaques par canaux cachés sur les cryptosystèmes à base de codes MDPC quasi-cycliques*, since September 2017, supervisor: N. Sendrier

PhD in progress: Ferdinand Sibleyras, *Security of modes of operation*, since October 2017, supervisor: G. Leurent and A. Canteaut

PhD in progress: Valentin Vasseur, *Etude du décodage des codes QC-MDPC*, since October 2017, supervisor: N. Sendrier

PhD in progress: Rémi Bricout, *Etude de scénarios non-locaux quantiques à l'aide d'outils de la théorie de l'information quantique*, since September 2017, supervisor: A. Chailloux and A. Leverrier

PhD in progress: Shouvik Ghorai, *Beyond-QKD continuous-variable quantum cryptographic protocols*, since October 2017, supervisors: E. Diamanti (UPMC), A. Leverrier

PhD in progress: Andrea Olivo, *Partir de contraintes relativistes pour faire de la cryptographie quantique*, since November 2017, supervisors: A. Chailloux and F. Grosshans (laboratoire Aimé Cotton).

PhD in progress: Daniel Coggia, *Cryptanalysis techniques for lightweight ciphers*, since September 2018, supervisors: A. Canteaut and C. Boura.

9.2.3. *Juries*

- Alex Bredariol Grilo, *Quantum proofs, the Local Hamiltonian problem and applications*; Université Sorbonne Paris Cité, Paris, April 27, 2018, committee: A. Leverrier.

- Vincent Zucca, *Towards efficient arithmetic for Ring-LWE based homomorphic encryption*, Sorbonne Université, June 25, 2018, committee: A. Canteaut (chair);

- Yann Rotella, *Mathématiques discrètes appliquées à la cryptographie symétrique*, Sorbonne Université, September 19, 2018, committee: A. Canteaut (supervisor), M. Naya-Plasencia

- Dahmun Goudarzi, *Secure implementation of block ciphers against physical attacks*, PSL, September 21, 2018, committee: A. Canteaut

- Sébastien Duval, *Constructions pour la cryptographie à bas coût*, Sorbonne Université, October 3, committee: C. Boura, A. Canteaut (supervisor), G. Leurent (supervisor)

- Benjamin Lac, *Cryptographie légère intrinsèquement résistante aux attaques physiques pour l'Internet des objets*, Ecole des Mines de St-Etienne, October 18, 2018, committee: A. Canteaut

- Michele Minelli, *Chiffrement Totalement Homomorphe pour l'Apprentissage Automatique*, Université Paris Sciences et Lettres, October 26, 2018, committee: M. Naya-Plasencia (chair)

- Claire Delaplace, *Algorithmes d'algèbre linéaire pour la cryptographie*, Université de Rennes, November 21, 2018, committee: M. Naya-Plasencia.

- David Gérault, *Security Analysis of Contactless Communication Protocols*, Université Clermont Auvergne, November 27, 2018, committee: M. Naya-Plasencia (reviewer).

- Colin Chaigneau, *Cryptanalyse des Algorithmes de Chiffrement Symétrique*, Université de Versailles, November 28, 2018, committee: M. Naya-Plasencia (reviewer).

- Victor Cauchois, *Couches de Diffusion Lineaires à Partir de Matrices MDS*, Université de Rennes, December 13, 2018, committee: M. Naya-Plasencia.

- Eloi de Chérisey, *Towards a better formalisation of the side-channel threat*, Telecom Paris, December 18, 2018, committee: A. Canteaut (chair).

9.3. Popularization

9.3.1. *Internal or external Inria responsibilities*

- **Association Animath**: M. Lequesne serves on the board of Animath.
- M. Lequesne is also member of the scientific committee of the French Tournament of Young Mathematicians: redaction of the problems for the competition, jury member (chair of a jury) ; member of the scientific committee of the International Tournament of Young Mathematicians: redaction of the problems for the competition, jury member (chair of a jury) ; Member of the scientific committee of the Correspondances des Jeunes Mathématicien.ne.s: redaction of the problems for the competition.

9.3.2. *Articles and contents*

- A.Chailloux, *L'algorithme de Shor*, Interstices, Inria, March 2018.
- G. Leurent and M. Naya-Plasencia, *La fragilité inattendue du chiffrement symétrique*, "La Recherche", November 2018.
- JP Tillich, *Les codes correcteurs*, "La Recherche", November 2018, p. 45-46.
- A. Canteaut, *La meilleure garantie de sécurité est l'épreuve du temps*, interview to the journal "La Recherche", November 2018.
- M. Naya-Plasencia, *Symmetric Cryptanalysis: The Foundation of Trust*, Lorentz Center Highlights, 2018, Leiden, Netherlands, Mars 20, 2018.

9.3.3. Education

- **Alkindi cipher challenge:** Several members of the project-team are involved in the cipher challenge for high-school students "concours Alkindi" http://www.concours-alkindi.fr/. Mathieu Lequesne serves as a co-organizer of the challenge, preparing the three rounds and the final. Together with C. Boura and A. Canteaut, he was also involved in the redaction of the exercises, and in videos for Inria channel on different aspects of cryptography and how to solve problems from the Alkindi challenge: https://www.youtube.com/watch?v=Y-VQBzwEaqQ&t=17s, https://www.youtube.com/watch?v=Mv415zfUFNs&t=3s and https://www.youtube.com/watch?v=8ohEeTPKBwA&t=21s. The best teams from Académie de Paris have been visiting the SECRET project-team in June 2018 https://www.youtube.com/watch?v=EVLHEOWAORc.
- Organization of the event "Rendez-vous des Jeunes Mathématiciennes et Informaticiennes" at Inria Paris (October 22-23) by M. Lequesne, a 2-days camp for 20 high-school girls interested in mathematics and computer science.
- Organization of the International Tournament of Young Mathematicians in Paris, a one-week competition (July 5-12) for 120 high-school students. M. Lequesne served as vice-president of the local organizing committee.

9.3.4. Interventions

- A. Canteaut gave a talk to high-school students at Palais de la Découverte, during the "Semaine des maths" (March 2018) [61];
- A. Canteaut gave the talk during the closing ceremony of "Olympiades nationales de mathématiques" (June 2018) [62];
- A. Canteaut gave a presentation on research in computer science to 10-year children in a school in Paris (Jan. 2018);
- M. Lequesne gave a presentation on code-based cryptography to high-school interns (stagiaires de 3e) (Dec. 2018).

<h1 style="color:red; text-align:center">CAGE Project-Team</h1>

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. Member of the Organizing Committees

Ugo Boscain and Mario Sigalotti were Members of the Organizing Committee of the Workshop "Sub-Riemannian Geometry and Topolò(gy)", Topolò/Topolove, Italy, June 2018

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

- Emmanuel Trélat was Member of the Program Committee of the 18th French-German-Italian Conference on Optimization (FGI'2018).
- Emmanuel Trélat was Member of the Scientific Committee of the 23rd International Symposium on Mathematical Programming (ISMP 2018).

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- Ugo Boscain is Associate editor of SIAM Journal of Control and Optimization
- Ugo Boscain is Managing editor of Journal of Dynamical and Control Systems
- Jean-Michel Coron is Editor-in-chief of Comptes Rendus Mathématique
- Jean-Michel Coron is Member of the editorial board of Journal of Evolution Equations
- Jean-Michel Coron is Member of the editorial board of Asymptotic Analysis
- Jean-Michel Coron is Member of the editorial board of ESAIM : Control, Optimisation and Calculus of Variations
- Jean-Michel Coron is Member of the editorial board of Applied Mathematics Research Express
- Jean-Michel Coron is Member of the editorial board of Advances in Differential Equations
- Jean-Michel Coron is Member of the editorial board of Math. Control Signals Systems
- Jean-Michel Coron is Member of the editorial board of Annales de l'IHP, Analyse non linéaire
- Mario Sigalotti is Associate editor of ESAIM : Control, Optimisation and Calculus of Variations
- Mario Sigalotti is Associate editor of Journal on Dynamical and Control Systems
- Emmanuel Trélat is Editor-in-chief of ESAIM : Control, Optimisation and Calculus of Variations
- Emmanuel Trélat is Associate editor of Syst. Cont. Letters
- Emmanuel Trélat is Associate editor of J. Dynam. Cont. Syst.
- Emmanuel Trélat is Associate editor of Bollettino dell'Unione Matematica Italiana
- Emmanuel Trélat is Associate editor of ESAIM Math. Modelling Num. Analysis
- Emmanuel Trélat is Editor of BCAM Springer Briefs
- Emmanuel Trélat is Associate editor of J. Optim. Theory Appl.
- Emmanuel Trélat is Associate editor of Math. Control Related fields

9.1.4. Invited Talks

- Ugo Boscain was invited speaker at the International Conference "Optimal Control and Differential Games", dedicated to the 110th anniversary of L.S. Pontryagin, Dec. 2018.
- Ugo Boscain was invited speaker at the conference "Dynamics, Control, and Geometry", Banach Center, Warsaw, Sept. 2018.
- Ugo Boscain was invited speaker at Linkopyng University, Department of Electrical Engineering, Nov. 2018.
- Ugo Boscain was invited speaker at the conference "Analysis, Control and Inverse Problems for PDEs", Napoli (Italy), Nov. 2018.
- Mario Sigalotti was invited speaker at the Workshop Quantum control and feedback: foundations and applications, Paris, Jun. 2018.
- Emmanuel Trélat was invited speaker at ICM 2018, Rio, section "Control Theory and Optimization", Aug. 2018.
- Emmanuel Trélat was invited speaker at Analysis, Control and Inverse Problems for PDEs, Naples, Nov. 2018.
- Emmanuel Trélat was invited speaker at Dynamics Control and Geometry, Varsovie, Sept. 2018.
- Emmanuel Trélat was invited speaker at 14th Viennese Conference on Optimal Control and Dynamic Games, Vienna, July 2018.
- Emmanuel Trélat was invited speaker at Portuguese Meeting on Optimal Control 2018, Coimbra (Portugal), June 2018.
- Emmanuel Trélat was invited speaker at International Symposium on Mathematical Control Theory, Shanghai, June 2018.
- Emmanuel Trélat was invited speaker at GAMM Munich, March 2018.

9.1.5. Leadership within the Scientific Community

Emmanuel Trélat is director of the Fondation Sciences Mathématiques de Paris (FSMP).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Ugo Boscain thought "Sub-elliptic diffusion" to PhD students at SISSA, Trieste Italy
- Ugo Boscain thought "Automatic Control" (with Mazyar Mirrahimi) at Ecole Polytechnique
- Ugo Boscain thought "MODAL of applied mathematics. Contrôle de modèles dynamiques" at Ecole Polytechnique
- Emmanuel Trélat thought "Control in finite and infinite dimension" at Master 2, Sorbonne Université

9.2.2. Supervision

PhD: Riccardo Bonalli, Optimal Control of Aerospace Systems with Control-State Constraints and Delays, Sorbonne Université, July 2018, supervised by Emmanuel Trélat.

PhD: Antoine Olivier, Optimal and robust attitude control of a launcher, Sorbonne Université, October 2018, supervised by Emmanuel Trélat and co-supervised by Thomas Haberkorn, Éric Bourgeois, David-Alexis Handschuh.

PhD: Ludovic Sacchelli, Singularities in sub-Riemannian geometry, Université Paris-Saclay, September 2018, supervised by Ugo Boscain and Mario Sigalotti.

PhD in progress: Nicolas Augier, "Contrôle adiabatique des systèmes quantiques", started in September 2016, supervisors: Ugo Boscain, Mario Sigalotti.

PhD in progress: Amaury Hayat, " Contrôle et stabilisation en mécanique des fluides", started in October 2016, supervisors: Jean-Michel Coron and Sébastien Boyaval

PhD in progress: Mathieu Kohli, "Volume and curvature in sub-Riemannian geometry", started in September 2016, supervisors: Davide Barilari, Ugo Boscain.

PhD in progress: Gontran Lance, started in September 2018, supervisors: Emmanuel Trélat and Enrique Zuazua.

PhD in progress: Cyril Letrouit, "Équation des ondes sous-riemanniennes", started in September 2019, supervisor Emmanuel Trélat.

PhD in progress: Jakub Orłowski, "Modeling and steering brain oscillations based on in vivo optogenetics data", started in September 2016, supervisors: Antoine Chaillet, Alain Destexhe, and Mario Sigalotti.

PhD in progress: Eugenio Pozzoli, "Adiabatic Control of Open Quantum Systems", started in September 2018, supervisors: Ugo Boscain and Mario Sigalotti.

PhD in progress: Shengquan Xiang, Stabilisation des fluides par feedbacks non-linéaires, September 2016, supervisor: Jean-Michel Coron.

PhD in progress: Christophe Zhang, started in October 2016, supervisor: Jean-Michel Coron

9.2.3. Juries

- Ugo Boscain was referee and member of the jury of the HDR of Jean-Marie Mirebeau, Université Paris-Sud.
- Mario Sigalotti was member of the jury of the PhD thesis of Abdelkrim Bahloul, Univ. Paris-Saclay.
- Emmanuel Trélat was co-supervisor and member of the jury of the PhD thesis of Camille Pouchol, Sorbonne Université.
- Emmanuel Trélat was member of the jury of the PhD thesis of F. Omnès, Sorbonne Université.
- Emmanuel Trélat was referee and member of the jury of the PhD thesis of S. Mitra, Univ. Toulouse.
- Emmanuel Trélat was referee and member of the jury of the PhD thesis of T. Weisser, Univ. Toulouse.
- Emmanuel Trélat was referee and member of the jury of the PhD thesis of S. Maslovskaya, Univ. Paris-Saclay.
- Emmanuel Trélat was referee and member of the jury of the PhD thesis of A. Vieira, Grenoble University.
- Emmanuel Trélat was member of the jury of the HDR of F. Chittaro, Univ. Toulon.

9.3. Popularization

Emmanuel Trélat is member of the Comité d'Honneur du Salon des Jeux et Culture Mathématique since November 2018

9.3.1. Articles and contents

- Nicolas Augier, Ugo Boscain, and Mario Sigalotti are authors of the popularization article [32] explaining how broken adiabatic paths can be used to enhance the control of a quantum systems.

9.3.2. Education

- Ugo Boscain and Jean-Michel Coron gave a lecture at journée ENS-UPS, ENS Paris
- Emmanuel Trélat gave a lecture at ENS Ulm to first-year students
- Emmanuel Trélat gave a lecture at Université Paris-Diderot to first- and second-year students

9.3.3. Interventions

- Ugo Boscain gave a lecture at Alfaclass, Saint-Barthélemy, Aosta, Italy
- Emmanuel Trélat gave a lecture at Salon des Jeux et Culture Mathématique

MATHERIALS Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

E. Cancès

- is the director of CERMICS, the Applied Mathematics department at École des Ponts,
- is a member of the editorial boards of Mathematical Modelling and Numerical Analysis (2006-), SIAM Journal of Scientific Computing (2008-), SIAM Multiscale Modeling and Simulation (2012-), and the Journal of Computational Mathematics (2017-),
- has co-organized an Oberwolfach workshop (March), an IMA workshop (March), the 2018 SIAM MS conference (July), and an ISCD summer school (July - August),
- was a member of the DFG Review Panel "Mathematics" for Clusters of Excellence, Cologne, April.

V. Ehrlacher

- is a member of the "Conseil d'Enseignement et de Recherche" of Ecole des Ponts,
- has co-organized the GdR MASCOT-NUM Working meeting on "Uncertainty quantification in materials science", at IHP, May (with J. Baccou, J. Reygner and G. Perrin).

G. Ferré and J. Roussel have co-organized the working group J-PSI (Jeunes chercheurs en physique statistique et interactions, until July) at IHP. The working group was provided financial support from the SMAI through a BOUM grant, and ended with a one-day conference in June at Inria Paris.

C. Le Bris is a managing editor of Networks and Heterogeneous Media. He is a member of the editorial boards of Annales mathématiques du Québec (2013-), Archive for Rational Mechanics and Analysis (2004-), COCV (Control, Optimization and Calculus of Variations) (2003-), Mathematics in Action (2008-), Nonlinearity (2005-), Journal de Mathématiques Pures et Appliquées (2009-), Pure and Applied Analysis (2018-). He is a member of the editorial boards of the monograph series Mathématiques & Applications, Series, Springer (2008-), Modelling, Simulations and Applications, Series, Springer (2009-), Springer Monographs in Mathematics, Springer (2016-). He is a member of

- the Cabinet of the High Commissioner for Atomic Energy (until September),
- the "International Scientific Advisory Committee" of the Centre de Recherche Mathématique, Université de Montréal (until mid-2018),
- the "Advisory Board" of the DFG Cluster of Excellence Engineering of Advanced Materials, Erlangen,
- the "International Scientific Advisory Board" of the DFG research center Matheon, Berlin,
- the "Conseil scientifique de la SMAI" (Scientific Council of the French Applied Maths Society),
- the International Mathematical Union Circle,
- the "Conseil de la Faculté des sciences et ingénierie", Sorbonne Université.

He is the president of the scientific advisory board of the Institut des Sciences du calcul et des données, Sorbonne Université. He has held a regular position of Visiting Professor at the University of Chicago.

F. Legoll

- is a member of the editorial board of SIAM MMS (2012-) and of ESAIM: Proceedings and Surveys (2012-),
- is a member of the ANR committee CES-40 "mathématiques et informatique".

T. Lelièvre

- is editor-in-chief of ESAIM: Proceedings and Surveys (with D. Chafai, C. Imbert and P. Lafitte),
- is a member of the editorial boards of IMA: Journal of Numerical Analysis and SIAM/ASA Journal of Uncertainty Quantification,
- is a member of the "Conseil d'Administration" of SMAI and École des Ponts,

Together with G. Stoltz, they have

- co-organized the Workshop "Advances in Computational Statistical Physics", CIRM, September (with G. Pavliotis),
- co-organized the CECAM discussion meeting "Coarse-graining with Machine Learning in molecular dynamics", Sanofi Campus Gentilly, December (with P. Gkeka, P. Monmarché).

G. Stoltz

- is a member of the scientific council of UNIT (Université Numérique Ingénierie et Technologie),
- co-organized with C. Robert the workshop "Computational Statistics and Molecular Simulation: A Practical Cross-Fertilization" (BIRS-Oaxaca, November),
- co-organizes the working group "Machine learning and optimization" of the Labex Bezout (with W. Hachel and R. Elie).

9.1.1. *Conference participation*

Members of the project-team have delivered lectures in the following seminars, workshops and conferences:

- S. Boyaval, weekly seminar of Laboratoire Jean Kuntzmann, Grenoble, February,
- S. Boyaval, GDR EGRIN annual meeting, Clermont-Ferrand, June,
- S. Boyaval, La Trobe University – Kyushu University joint Industrial Math seminar, Melbourne, September,
- E. Cancès, Energy and forces workshop, Cambridge, UK, January,
- E. Cancès, workshop "Mathematical models and computation of nonlinear problems", China, January,
- E. Cancès, weekly seminar of the mathematics department, Sapienza University of Rome, February,
- E. Cancès, weekly seminar of Maison de la Simulation, Saclay, March,
- E. Cancès, 2D materials workshop, Minneapolis, March,
- E. Cancès, Fields Institute workshop, Toronto, May,
- E. Cancès, workshop on computational mathematics, Suzhou, China, June,
- E. Cancès, Centre Henri Lebesgue workshop, Rennes, June,
- E. Cancès, SIAM Materials Science conference, Portland, July,
- E. Cancès, IPAM workshop, Los Angeles, August,
- E. Cancès, GAMM workshop, Aachen, September,
- E. Cancès, Franco-German Meeting Workshop on Mathematical Aspects in Computational Chemistry, Aachen, September,
- E. Cancès, CECAM workshop, Lausanne, November,
- E. Cancès, workshop "Big data challenges for predictive modeling of complex systems", Hong Kong, November,
- V. Ehrlacher, Groupe de travail ENS Rennes, January,
- V. Ehrlacher, workshop on "Mathematical Methods in Quantum Chemistry", Oberwolfach, Germany, March,
- V. Ehrlacher, Séminaire DEFI-MEDISIM-POEMS, October,

- G. Ferré, CERMICS PhD Seminar, Paris, February,

- G. Ferré, Les probabilités de demain, IHP, Paris, March,

- G. Ferré, Congrès National d'Analyse Numérique, Cap d'Agde, May,

- G. Ferré, International Conference in Monte Carlo and Quasi Monte Carlo Methods in Scientific Computing, Rennes, July,

- G. Ferré, SIAM Materials Science conference, Portland, July (two talks),

- G. Ferré, Franco-German Meeting Workshop on Mathematical Aspects in Computational Chemistry, Aachen, September,

- G. Ferré, Student Probability Seminar, Courant Institute of Mathematical Science, New-York, December,

- M. Josien, CANUM conference, Cap d'Agde, May,

- M. Josien, SIAM Materials Science, Portland, USA, July,

- F. Hédin, "PinT 7th Workshop on Parallel-in-Time methods", Roscoff Marine Station, France, May,

- F. Hédin, "CECAM Workshop, Frontiers of coarse graining in molecular dynamics", Zuse Institute Berlin, Germany, July,

- F. Hédin, CIRM Conference "Advances in Computational Statistical Physics", September,

- C. Le Bris, Séminaire Pierre-Louis Lions, Collège de France, January,

- C. Le Bris, Applied Mathematics Colloquium of the University of Maryland, February,

- C. Le Bris, PDE seminar, University of Chicago, April,

- C. Le Bris, Journées de l'Ecole Doctorale Carnot-Pasteur, Université de Besançon, June,

- C. Le Bris, Journées Scientifiques de Marcoule, CEA Marcoule, June,

- C. Le Bris, Journées de Cadarache, CEA Cadarache, June,

- C. Le Bris, (plenary lecture) 25th International Conference on Domain Decomposition Methods, St. John's, Canada, July,

- C. Le Bris, LMS Durham Research Symposium on Homogenization in Disordered Media, Durham, UK, August,

- C. Le Bris, Groupe de travail Calcul des Variations Paris-Ile de France, November

- F. Legoll, EMMC conference, Nantes, March,

- F. Legoll, University of Chicago, CAMP seminar, Chicago, USA, May,

- F. Legoll, AIMS conference, Taipei, Taiwan, July,

- F. Legoll, NumDiff conference, Halle, Germany, September,

- T. Lelièvre, Journée de l'ANR CINE-PARA, Université Paris 13, January,

- T. Lelièvre, Workshop "Interplay of Analysis and Probability in Applied Mathematics", Oberwolfach, Feburary,

- T. Lelièvre, Séminaire de la Maison de la Simulation, Saclay, March,

- T. Lelièvre, Séminaire du LJK, Grenoble, March,

- T. Lelièvre, Séminaire Statistical Machine Learning in Paris, Paris, April,

- T. Lelièvre, Workshop "Data-driven modelling of complex systems", ATI, London, May,

- T. Lelièvre, Workshop "Uncertainty quantification in materials science", IHP, Paris, May,

- T. Lelièvre, Séminaire Mathématiques pour l'Industrie et la Physique, Toulouse, May,

- T. Lelièvre, Fields Institute, "Focus Program on Nanoscale Systems and Coupled Phenomena: Mathematical Analysis, Modeling, and Applications", Toronto, May,

- T. Lelièvre, Workshop "Simulation and probability: recent trends", Rennes, June,

- T. Lelièvre, Workshop "Particle based methods", ICMS, Edinburgh, July,
- T. Lelièvre, CECAM workshop "Frontiers of coarse graining in molecular dynamics", Berlin, July,
- T. Lelièvre, Franco-German Workshop on mathematical aspects in computational chemistry, Aachen, September,
- T. Lelièvre, Séminaire "Simulation, Incertitudes et Méta-modèles", CEA Saclay, October,
- T. Lelièvre, Workshop "Computational Statistics and Molecular Simulation: A Practical Cross-Fertilization", Oaxaca, November,
- T. Lelièvre, Groupe de travail Évolution de Populations et Systèmes de Particules en Interaction, Ecole Polytechnique, December,
- A. Levitt, Mathematical Methods in Quantum Chemistry, Oberwolfach, March,
- A. Levitt, Analytical & Numerical Methods in Quantum Transport, Aalborg, May,
- A. Levitt, Beijing Normal University seminar, June,
- A. Levitt, Chinese Academy of Sciences seminar, June,
- A. Levitt, Franco-German Meeting Workshop on Mathematical Aspects in Computational Chemistry, Aachen September,
- P.-L. Rothé, PhD seminar, Inria Paris, June,
- J. Roussel, SIAM Materials Science conference, Portland, July,
- J. Roussel, Monte Carlo & Quasi-Monte Carlo Methods conference, Rennes, France, July,
- L. Silva Lopes, CECAM Coarse Graining Workshop, Berlin, Germany, July,
- L. Silva Lopes, Advances in Computational Statistical Physics, Marseille, September,
- S. Siraj-Dine, SIAM Materials Science conference, Portland, July,
- G. Stoltz, Seminar of the polymer physics group, ETH Zürich, February,
- G. Stoltz, Applied mathematics seminar Duke University, Durham, North Carolina, USA, February,
- G. Stoltz, Statistical Machine Learning in Paris seminar, Paris, April,
- G. Stoltz, Focus Program on Nanoscale Systems and Coupled Phenomena: Mathematical Analysis, Modeling, and Applications, Fields institute, Toronto, Canada, May,
- G. Stoltz, Journées scientifiques Inria, Bordeaux, France, June,
- G. Stoltz, Applied mathematics seminar Courant Institute of Mathematical Sciences, New York, October,
- G. Stoltz, Inria-LJLL seminar, December,
- P. Terrier, Minerals, Metals & Materials Society Annual Meeting & Exhibition, Phoenix, March,
- P. Terrier, CANUM, Cap d'Adge, June.

Members of the project-team have delivered the following series of lectures:

- E. Cancès, Fourier transform and applications in quantum physics and chemistry, 9h, GDR CORREL spring school, Paris, April,
- E. Cancès, Optimization problems in molecular simulation, 12h, ISCD summer school, Roscoff, July,
- E. Cancès, Mathematical methods and numerical algorithms for quantum chemistry, 12h, MWM autumn school, Gelsenkirchen, October,
- C. Le Bris, Aziz Lectures, University of Maryland, College Park, February,
- C. Le Bris, Fields Institute Coxeter Lecture Series, Toronto, May,
- T. Lelièvre, Mini-school math/chemistry GDR CORREL, 9h, April,
- T. Lelièvre, Lectures on "Stochastic numerical methods and molecular dynamics simulations" (15h), Ecole d'été ISCD (Sorbonne Université), Roscoff, August.

Members of the project-team have presented posters in the following seminars, workshops and international conferences:

- A. Lesage, Fifth workshop on thin structures, Naples, Italy, September,
- J. Roussel, Advances in Computational Statistical Physics, CIRM, Marseille, France, September,
- G. Ferré, Data-driven modelling of Complex Systems, Alan Turing Institute, London,
- G. Ferré, Simulation Aléatoire : problèmes actuels, Inria Rennes,
- G. Ferré, Advances in Computational Statistical physics, CIRM.

Members of the team have benefited from long-term stays in institutions abroad:

- G. Ferré, Courant Institute of Mathematical Science, New York University, New York, USA, October-November,
- P.-L. Rothé, Department of Applied Mathematics, University of Washington, Seattle, USA, April-May.

Members of the project-team have participated (without giving talks nor presenting posters) in the following seminars, workshops and international conferences:

- G. Ferré YES'X Workshop, Scalable Statistics: Accuracy and computational complexity, March,
- M. Josien, Coxeter Lecture Series, Seminar talks, Toronto, Canada, May
- A. Lesage, CANUM conference, Cap d'Agde, May,
- A. Lesage, 6th European conference on computational mechanics, Glasgow, United Kingdom, June,
- M. Ramil, Perspectives en physique statistique computationnelle au CIRM (Centre International de Recherche Mathématiques), Marseille, September,
- M. Ramil, Journées Kolmogorov, Evry, September,
- M. Ramil, ANR EFI workshop, Lyon, November,
- P.-L. Rothé, 6th European conference on computational mechanics, Glasgow, United Kingdom, June,
- P.-L. Rothé, FreeFem++ days, Paris, December,
- S. Siraj-Dine, Workshop Mathematical Challenges in Quantum Mechanics, Rome, February,
- S. Siraj-Dine, Oberwolfach Workshop on Mathematical Methods in Quantum Chemistry, March,
- S. Siraj-Dine, ICMP XIX Congress on Mathematical Physics, Montréal, July.

9.1.2. Software development and contributions

- A. Levitt has implemented a method to construct maximally-localized Wannier functions for metals. A. Levitt and S. Siraj-Dine have implemented a method for the computation of Wannier functions of topological insulators. Both these methods are available at https://github.com/antoine-levitt/wannier.
- J. Roussel and G. Stoltz have restructured the SIMOL code, in particular separating core functions, routines for quantum simulations and advanced features for molecular dynamics, in order to obtain a simpler and more accessible base code. The code is available at https://gitlab.inria.fr/matherials/simol/.
- A first implementation of the Generalized Parallel Replica algorithm, developed by F. Hédin and T. Lelièvre, is available at https://gitlab.inria.fr/parallel-replica/gen.parRep. The objective of the gen.parRep software is to popularize the use of the Parallel Replica algorithm to biological systems. Molecular dynamics is performed by using external codes linked to this program such as OpenMM. This is the first publicly available implementation of the Generalized Parallel Replica method targeting frequently encountered metastable biochemical systems, such as conformational equilibria or dissociation of protein-ligand complexes. We refer to the preprint [22] for more details.

9.2. Teaching - Supervision - Juries

The members of the project-team have taught the following courses.

At École des Ponts 1st year (equivalent to L3):

- Analyse et calcul scientifique, 30h (A. Levitt, G. Stoltz),
- Équations aux dérivées partielles et éléments finis, 15h (F. Legoll, P.-L. Rothé),
- Hydraulique numérique, 15h (S. Boyaval),
- Mécanique quantique, 10h (E. Cancès, A. Levitt),
- Méthodes numériques pour les problèmes en grande dimension, 17h30 (V. Ehrlacher, S. Boyaval),
- Optimisation, 15h, L3 (A. Lesage, A. Levitt),
- Outils mathématiques pour l'ingénieur, 15h (E. Cancès, G. Ferré, F. Legoll, T. Lelièvre, P-L. Rothé),
- Probabilités, 27h (M. Ramil)
- Projets de première année, 15h (J. Roussel, P. Terrier),

At École des Ponts 2nd year (equivalent to M1):

- Analyse de Fourier, 15h (A. Levitt),
- Analyse spectrale et application aux Équations aux dérivées partielles, 36h (F. Legoll, V. Ehrlacher),
- Contrôle de systèmes dynamiques et équations aux dérivées partielles, 18h (E. Cancès),
- Projet du département IMI, 12h (G. Ferré, M. Ramil, J. Roussel, L. Silva Lopes),
- Projets Modéliser Programmer Simuler (T. Lelièvre),
- Simulation moléculaire en sciences des matériaux, 6h (A. Levitt),
- Statistics and data sciences, 24h (G. Stoltz).

At École des Ponts 3rd year (equivalent to M2):

- Méthodes de quantification des incertitudes en ingénierie, 18h (V. Ehrlacher),
- Remise à niveau: outils mathématiques, 6h (A. Lesage).

At the M2 "Mathématiques de la modélisation" of Sorbonne Université:

- Introduction à la physique statistique computationnelle, 20h (G. Stoltz),
- Méthodes numériques probabilistes, 24h (T. Lelièvre),
- Problèmes multiéchelles, aspects théoriques et numériques, 24h (F. Legoll),
- Théorie spectrale et variationnelle, 10h (E. Cancès).

At other institutions:

- Analyse variationnelle des équations aux dérivées partielles, 32h, École Polytechnique (T. Lelièvre),
- Aléatoire, 32h, École Polytechnique (T. Lelièvre),
- Maths 1 et 2, 9h, L3, École des Mines (A. Levitt, G. Stoltz),
- Mathématiques pour l'ingénieur, 36h, L2, UPEC (S. Siraj-Dine),
- Numerical methods for partial differential equations, 21h, University of Chicago (C. Le Bris).

The following PhD theses have been defended in the group at École des Ponts:

- Amina Benaceur, Réduction de modèles en thermique et mécanique non-linéaires, Université Paris-Est, École des Ponts, defended on December 21th, 2018, supervised by A. Ern (CERMICS), co-supervised by V. Ehrlacher,
- Marc Josien, Etude mathématique et numérique de quelques modèles multi-échelles issus de la mécanique des matériaux, Université Paris-Est, École des Ponts, defended on November 20th, 2018, supervised by C. Le Bris,
- Julien Roussel, Analyse théorique et numérique de dynamiques non-réversibles en physique statistique computationnelle, Université Paris-Est, École des Ponts, defended on November 27th, 2018, supervised by G. Stoltz,
- Pierre Terrier, Reduced models for defect migration in metals, Université Paris-Est, École des Ponts and CEA Saclay, defended on December 19th, supervised by G. Stoltz and M. Athènes (CEA).

The following PhD theses are ongoing in the group at École des Ponts:

- Zineb Belkacemi, Machine learning techniques in molecular simulation, Université Paris-Est, Thèse CIFRE Sanofi, started November 1st, 2018, co-supervised by T. Lelièvre and G. Stoltz,

- Robert Benda, Multiscale modeling of functionalized nanotube networks for sensor applications, Ecole Polytechnique, started September 1st, 2018, supervised by E. Cancès and B. Lebental (École Polytechnique),

- Raed Blel, Monte Carlo methods and model redcution, started October 1st, 2018, supervised by V. Ehrlacher and T. Lelièvre,

- Lingling Cao, Mathematical analysis of models of thermo-electronic transport, Université Paris-Est, École des Ponts, started November 1st, 2016, supervised by E. Cancès and G. Stoltz,

- Rafaël Coyaud, Méthodes numériques déterministes et stochastiques pour le transport optimal, Université Paris-Est, École des Ponts, started October 1st, 2017, supervised by A. Alfonsi (CERMICS) and co-supervised by V. Ehrlacher,

- Qiming Du, Mathematical analysis of splitting methods, École Doctorale Sciences Mathématiques de Paris Centre, started September 1st, 2016, supervised by A. Guyader (Sorbonne Université) and T. Lelièvre,

- Grégoire Ferré, Efficient sampling methods for nonequilibrium systems, Université Paris-Est, École des Ponts started October 1st, 2016, supervised by G. Stoltz,

- Adrien Lesage, Multi-scale methods for calculation and optimization of thin structures, started October 1st, 2017, supervised by F. Legoll, co-supervised by V. Ehrlacher and A. Lebée (École des Ponts),

- Sofiane Martel, Modélisation de la turbulence par mesures invariantes d'EDPS, Université Paris-Est, École des Ponts, started January 1st, 2017, supervised by S. Boyaval and co-supervised by J. Reygner (CERMICS),

- Pierre-Loïk Rothé, Numerical methods for the estimation of fluctuations in multi-scale materials and related problems, started October 1st, 2016, supervised by F. Legoll,

- Mouad Ramil, Metastability for interacting particle systems, started October 1st, 2017, supervised by T. Lelièvre and J. Reygner (CERMICS),

- Laura Silva Lopes, Numerical methods for simulating rare events in molecular dynamics, started October 1st, 2016, supervised by J. Hénin (IBPC) and T. Lelièvre,

- Sami Siraj-Dine, Modélisation mathématique des matériaux 2D, École des Ponts, started October 1st, 2017, supervised by E. Cancès, C. Fermanian and co-supervised by A. Levitt.

Project-team members have participated in the following PhD juries:

- E. Cancès, PhD of Marco Vanzini ("Auxiliary systems for observables: dynamical local connector approximation for electron addition and removal spectra"), defended at Ecole Polytechnique in January 2018,

- E. Cancès, PhD of Giovanna Marcelli ("A mathematical analysis of spin and charge transport in topological insulators"), defended at Sapienza University of Rome in February 2018,

- E. Cancès, PhD of Mi-Song Dupuy ("Analyse de la méthode projector augmented-wave pour les calculs de structure électronique en géométrie périodique"), defended at Université Paris Diderot in September 2018,

- E. Cancès, PhD of Carlo Marcati ("Discontinuous hp finite element methods for elliptic eigenvalue problems with singular potentials, with applications in quantum chemistry"), defended at Sorbonne Université in October 2018,

- V. Ehrlacher, PhD of Mi-Song Dupuy, ("Analyse de la méthode projector augmented-wave pour les calculs de structure électronique en géométrie périodique"), defended at Université Paris-Diderot in September 2018.

- V. Ehrlacher, PhD of Nicolas Cagniart, ("Quelques approches non linéaires en réduction de complexité"), defended at Sorbonne Université in November 2018,

- V. Ehrlacher, PhD of Jules Fauque, ("Modèle d'ordre réduit en mécanique du contact. Application à la simulation du comportement des combustibles nucléaires"), defended at Ecole des Mines de Paris in November 2018,

- V. Ehrlacher, PhD of Ahmad Al-Takash, ("Development of numerical methods to accelerate the prediction of the behavior of multiphysics under cyclic loading"), defended at ENSMA in November 2018,

- F. Legoll, PhD of Brian Staber ("Stochastic analysis, simulation and identification of hyperelastic constitutive equations"), defended at Université Paris-Est in June 2018,

- T. Lelièvre, PhD of Bob Pépin ("Time Averages of Diffusion Processes and Applications to Two-Timescale Problems"), défended at Université du Luxembourg, April 2018,

- T. Lelièvre, PhD of Michel Nowak ("Accelerating Monte Carlo particle transport with adaptively generated importance maps"), defended at Université Paris Saclay, September 2018,

- T. Lelièvre, PhD of Ze Lei ("Irreversible Markov Chains for Particle Systems and Spin Models: Mixing and Dynamical Scaling"), défended at Ecole Normale Supérieure, December 2018,

- G. Stoltz, PhD of Sabri Souguir ("Simulation numérique de l'initiation de la rupture à l'échelle atomique"), defended at Ecole des Ponts in November 2018.

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- A. Levitt is a member of the editorial board of Interstices, Inria's popularization website.

9.3.2. Articles and contents

- E. Cancès has been interviewed in "La Jaune et La Rouge", the journal of the alumni of Ecole Polytechnique, in January.

9.3.3. Internal actions

- C. Le Bris organized an open day at CERMICS in June for the administrative staff of École des Ponts.

MATHRISK Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. Member of the Organizing Committees

- A. Alfonsi:

  Co-organizer of the working group seminar of MathRisk "Méthodes stochastiques et finance".

- A. Sulem

  Co-organizer of the seminar Inria-MathRisk /Université Paris 7 LPMA "Numerical probability and mathematical finance". https://www.lpsm.paris/mathfipronum/gt

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- B. Jourdain

  Associate editor of

  - ESAIM : Proceedings and Surveys
  - Stochastic Processes and their Applications (SPA)

- D. Lamberton

  Associate editor of

  - Mathematical Finance,
  - Associate editor of ESAIM Probability & Statistics

- A. Sulem

  Associate editor of

  - Journal of Mathematical Analysis and Applications (JMAA)
  - International Journal of Stochastic Analysis (IJSA)
  - SIAM Journal on Financial Mathematics (SIFIN)

10.1.2.2. Reviewer - Reviewing Activities

- B. Jourdain : Reviewer for *Mathematical Reviews*
- A. Sulem: Reviewer for *Mathematical Reviews*

10.1.3. Invited Talks

- A. Alfonsi

  - 15th of December 2017: "Sampling of probability measures in the convex order and approximation of Martingale Optimal Transport problems." Séminaire Bachelier, Paris.
  - 12th of June 2018: "Sampling of probability measures in the convex order and approximation of Martingale Optimal Transport problems." Conference on Stochastic modeling and financial applications, Verona.
  - 29th and 30th of August 2018: "Introduction to affine processes". Lecture given at the 11th European Summer School in Financial Mathematics, Palaiseau.

- 29th of October 2018: "Sampling of probability measures in the convex order and approximation of Martingale Optimal Transport problems." International Conference on Control, Games and Stochastic Analysis, Hammamet.
- 7th of December 2018: "Approximation de mesures de probabilité dans l'ordre convexe par projections pour la distance de Wasserstein." Séminaire de Mathématiques Appliquées, Collège de France.

- V. Bally
  - Conference SPA (Stochastic Processes and their Applications): "Abstract Malliavin calculus and invariance principles", 11-15 June 2018, Gothenburg, Sweden.
  - Workshop on Analytical Aspects of Stochastic Systems: "Transfer of regularity for Markov semigroups", Växjö, Sweden, June 6-8, 2018.
  - Workshop Recent Advances in Random Processes - Conference in honor of Paolo Baldi's 70th aniversary. Talk: Malliavin Calculus and Invariance Principles"
  - Workshop on Asymptotic expansions and Malliavin calculus 15-16 November 2018, Institut Henri Poincaré. Talk: Malliavin Calculus and Invariance Principles"

- B. Jourdain

  - Inria Mathrisk/LPSM university Paris Diderot seminar, 20 December 2018 : Differentiability of the squared quadratic Wasserstein distance

  - 1st Moscow-UK workshop on stochastic analysis : Wasserstein calculus and related topics, ICMS Edinburgh 19-23 November 2018 : Lifted and geometric differentiability of the squared quadratic Wasserstein distance

  - Seminar of the chair Financial Risks, IHP, 5 October 2018 : A new family of one-dimensional martingales couplings

  - Populations : Interaction and Evolution, IHP, 10-14 September 2018 : Existence of a calibrated regime-switching local volatility model

  - Journées MAS 2018, Dijon, 29-31 August : plenary talk entitled Sampling of probability measures in the convex order and approximation of martingale optimal transport problems

  - 10th world congress of the Bachelier finance society, Dublin, 16-20 July 2018 : Sampling of probability measures in the convex order and approximation of martingale optimal transport problems

  - MCQMC2018, Rennes, 2-6 July 2018 : Sampling of probability measures in the convex order and approximation of martingale optimal transport problems

  - Bachelier course : Systems of rank-based diffusions with mean-field interaction, 4 hours, 23 and 30 March 2018

- D. Lamberton

  Invited speaker: Symposium on optimal stopping, June 25-29 2018, Rice University, Houston. (USA)

- A. Sulem
  - Conference SPA (Stochastic Processes and their Applications): "Stochastic Optimal Control Under Partial Observations", 11-15 June 2018, Gothenburg, Sweden.

10.1.4. Research Administration

- A. Alfonsi

  - Deputy director of CERMICS laboratory

  - In charge of the Master "Finance and Application" at the Ecole des Ponts.

- D. Lamberton

  Vice-president for research at Université Paris-Est Marne-la-Vallée

- B. Jourdain

  - Head of the doctoral school MSTIC, University Paris-Est

- A. Sulem

  - Member of the Committee for scientific positions (Commission des emplois scientifiques), Inria Paris

  - Corresponding member of the comité opérationel d'évaluation des risques légaux et éthiques (COERLE) at Inria Paris research center

  - Member of the Committee for Inria international Chairs

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence :

- A. Alfonsi: 'Probabilités", first year course at Ecole des Ponts.

- V. Bally : "Analyse Hilbertienne", Course L3, UPEMLV

Master :

- A. Alfonsi:

  - "Données Haute Fréquence en finance",Master lectures at UPEMLV.

  - 'Traitement des données de marché : aspects statistiques et calibration", Master lectures at UPEMLV.

  - "Mesures de risque", Master course of UPEMLV and Paris VI.

  - Professeur chargé de cours at Ecole Polytechnique.

- V. Bally

  - Course on "Taux d'Intêret", M2 Finance, UPEMLV

  - Course on "Calcul de Malliavin et applications en finance", M2 Finance, UPEMLV

  - Course on "Analyse du risque", M2 Actuariat, UPEMLV

  - Course on "Processus Stochastiques", M2 Recherche, UPEMLV

- B. Jourdain

  - Course on "Mont-Carlo Markov chain methods and particle algorithms", Research Master Probabilités et Modèles Aléatoires, Sorbonne Université

  - B. Jourdain: course "Mathematical finance", M1, ENPC

- B. Jourdain, B. Lapeyre

  - Course "Monte-Carlo methods", 3rd year ENPC and Master Recherche Mathématiques et Application, University of Marne-la-Vallée

- J.-F. Delmas, B.Jourdain

  - course "Jump processes with applications to energy markets", 3rd year ENPC and Master Recherche Mathématiques et Application, University of Marne-la-Vallée

- B. Lapeyre

  - Monte-Carlo methods in quantitative finance, Master of Mathematics, University of Luxembourg,

- D. Lamberton

  - Calcul stochastique pour la finance, master 1 course, Université Paris-Est Marne-la-Vallée

- A. Sulem

- "Finite difference for PDEs in Finance", Master 2 MASEF, Université Paris IX-Dauphine, Département Mathématiques et Informatique de la Décision et des Organisations (MIDO), 27 h.
- "PDE methods in Finance", Master of Mathematics, University of Luxembourg, 22 h lectures and responsible of the module "Numerical Methods in Finance".

10.2.2. Supervision

PhD Alexandre Zhou, "Theoretical and numerical study of problems nonlinear in the sense of McKean in finance", Ecole des Ponts, defended on October 17th 2018, supervised by B.Jourdain.

PhD Giulia Terenzi, "American options in complex financial models", université Marne la Vallée, defended on December 17th 2018, supervised by D. Lamberton and Lucia Caramellino, University Tor Vergata, Rome.

PhD Marouan Iben Taarit , " On CVA and XVA computations ", "Valorisation des ajustements Xva : de l'exposition espérée aux risques adverses de corrélation", CIFRE Natixis/ENPC, defended on January 8th, ENPC, Supervisor: Bernard Lapeyre.

PhD in progress :

- Anas Bentaleb (started February 2018) : Mathematical techniques for expected exposure evaluation, Supervisor: B. Lapeyre.

- Adel Cherchali, "Numerical methods for the ALM", funded by Fondation AXA, starting from September 2017, Supervisor: A. Alfonsi

- Rafaël Coyaud, "Deterministic ans stochastic numerical methods for multimarginal and martingale constraint optimal transport problems", starting from October 2017, Supervisor: A. Alfonsi

- Rui Chen (Fondation Sciences Mathématiques de Paris grant), "Stochastic Control of mean field systems and applications to systemic risk, from September 2014, Université Paris-Dauphine, Supervisor: A. Sulem.

- Sophian Mehalla (started November 2017), CIFRE agreement Milliman company/Ecole des Ponts (http://fr.milliman.com, Supervisor: B. Lapeyre

- Oumaima Bencheikh (started November 2017) "Acceleration of probabilistic particle methods", Supervisor: B. Jourdain

- Ezechiel Kahn (started September 2018) "Functional inequalities for random matrices models", supervised by B. Jourdain and D. Chafai

- William Margheriti (started January 2018) "Numerical methods for martingale optimal transport problems", supervised by J.-F. Delmas and B. Jourdain

10.2.3. Juries

B. Jourdain :

Jury and report on
- PhD of Hadrien De March, defended on June 29, university Paris Saclay
- PhD of David Krief, defended on September 27, University Paris Diderot

A. Sulem
- PhD of David Krief, defended on September 27, University Paris Diderot (Chair of the Committee)
- PhD of Xiao Wei, November 27, University Paris Diderot
- PhD Hadjer Moussaoui, December 14, Université de Toulon
- HdR of Thomas Lim, ENSIIE, December 4, Université Evry Val d'Essonne
- PEDR CNRS September 2018
- PRIX Inria : Grand Prix Inria - Académie des Sciences; - Prix Jeune Chercheur - Académie des Sciences ; Prix Innovation - Dassault Système (Spring 2018)

MOKAPLAN Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. Member of the Organizing Committees

- G. Carlier was in the organizing committee of the conference *Des mathématiques de la décision aux jeux à champ moyen* held in Honor of Jean-Michel Lasry at Dauphine in July 2018.
- T. O. Gallouët was in the organizing committee of the international conference *Modern mathematical methods for Data analysis* held at Liège (Belgium) in June 2018.
- F-X. Vialard was in the organizing committee of the December 2018 Banff, applied optimal transport, stochastic geometric mechanic and shapes conference.

8.1.2. Scientific Events Selection

8.1.2.1. Reviewer

V. Duval has reviewed contributions to the LVA/ICA conference.

8.1.3. Journal

8.1.3.1. Member of the Editorial Boards

G. Carlier is in the board of Journal de l'Ecole Polytechnique, Applied Mathematics and Optimization, Mathematics and Financial Economics and Journal of Dynamic Games (starting end of 2018).

8.1.3.2. Reviewer - Reviewing Activities

- V. Duval has reviewed papers for the following journals: *ESAIM COCV*, *IEEE Trans. on Signal Processing*, *Information and Inference: a Journal of the IMA*, *Math. Stat. Learning*, *SIIMS*, *Inverse Problems on Imaging*.
- J-D. Benamou has reviewed papers for the following journals: *SINUM*, *Numerische Math.*, ...
- T. O. Gallouët has reviewed papers for ARMA, ...
- P. Pegon has reviewed articles for Journal de Mathématiques Pures et Appliquées and Journal of Functional Analysis.
- F-X. Vialard has reviewed papers for Numerische Math., Siam IS, IEEE TMI, Siaga, P AMS.

8.1.4. Invited Talks

- I. Waldspurger gave talks at the Séminaire de mathématiques appliquées du collège de France, at the Mathematical Image Analysis conference (Berlin), at the Colloquium in Applied and Computational Mathematics of ETH Zurich, at the 7th international conference on computational harmonic analysis (Nashville) and at the SIAM conference on imaging science (Bologne).
- V. Duval has given invited talks at the MAGA workshop (Jan.), Journée Parcimonie Bordeaux of the GdR MIA (May), GdT StatNum at CEREMADE (May), SIAM Imaging Conference (June), ISMP Conference (July), Journées MAS (Aug.).
- J-D. Benamou has given invited talks at : Algebraic and geometric aspects of numerical methods for differential equations Workshop (Institut Mittag-Leffler, Djursholm), Workshop on Moving and Adaptative Meshes for Global Atmospheric Modelling (University of Reading), Gradient flows: challenges and new directions Workshop (ICMS, Edinburgh), Workshop on Monge-Ampère numerical resolution methods (TU Eindhoven), Shape Analysis, Stochastic Geometric Mechanics and Applied Optimal Transport (BIRS, Banff), MIGSAA Mini-Symposium in Optimal Transport and its Applications (University of Edimburgh).

- G. Carlier gave talks at TUM (Munich), workshop Optimisation and Machine Learning in Economics at UCL (Londres), workshop Entropies, the Geometry of Nonlinear Flows, and their Applications (Banff, Canada), SFB Colloquium, TUM, Munich, Workshop PDEs and optimal Transport (Essaouira), PDE seminar, Imperal College (Londres), Optimal Transport and Applications (Pise), ERC Readi closing conference (EHESS Paris).

- Y. De Castro has given invited talks at Société Mathématiques de France national conference, Ecole Normale Supérieure de Lyon, Oxford numerical analysis seminar (invited by Pr Tanner), Ecole des Ponts ParisTech, and Labex Bezout day.

- F-X. Vialard gave talks at siam Imaging Sciences in bologna june 2018, septembre 2018 Lisbonne workshop on optimal transport, geometric mechanics, october 2018, Labex Bézout, université paris-est and wasinvited to Mittag-Leffler institute for a conference on optimal transport, geometry and algebra.

- T. O. Gallouët gave talks at UPMC, Paris, Séminaire du Laboratoire Jacques-Louis Lions, ANR MAGA meeting, Paris and Workshop on New Developments in PDEs and Related Topics, Essaouira, Maroc.

- P. Pegon was invited for 10 days to Penn State College by Alberto Bressan in order to start a collaboration on the theory of ramified transport and applications to biology, and to give lectures (2) in the seminar series on Computational and Applied Mathematics.

- Andrea Natale gave the following talks:
  - Generalized H(div) geodesics and solutions of the Camassa-Holm equation. *BIRS Workshop: "Shape Analysis, Stochastic Geometric Mechanics and Applied Optimal Transport"*, 12/2018, Banff (Canada).
  - An optimal transport approach for the Camassa-Holm variational model. *Canadian Mathematical Society Winter Meeting*, 12/2018, Vancouver (Canada).
  - Generalized H(div) geodesics and solutions of the Camassa-Holm equation. *Oberwolfach Seminar: "Optimal Transport Theory and Hydrodynamics (from Euler to Monge and vice versa)"*, 10/2018, Oberwolfach (Germany).
  - Generalized H(div) geodesics and solutions of the Camassa-Holm equation. *MokaMeeting*, 12/2018, Inria Paris (France).

8.1.5. Research Administration

J-D. Benamou is a member of the *Commision de restauration locale*.

J-D. Benamou is the *Commission Bureau* referent for the 4th floor of building A.

J-D. Benamou is a member of PSL *Conseil Académique*.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence: I. Waldspurger, Analyse 1, 92 heures d'équivalent TD, L1, Université Paris Dauphine, France

Master: V. Duval, project supervision (M2), INSA de Rouen, France

Licence: T. O. Gallouët, Optimisation (TD, L3, Orsay), EDP (TD, 2 ème anné, ENS).

Master, Licence: G. Carlier taught algebra (Licence, Dauphine, 91h), transport and variational methods in economics (Dauphine, M2, 18h) and Convex duality and applications in mass transport and the calculus of variations in Munich (18h).

Licence: Y. De Castro taught optimization to first year engineering school student (10h).

Licence: A. Natale taught (TD) for the course "Calcul Différentiel et Optimisation" (Instructor: Emeric Bouin), 09-12/2018, Université Paris Dauphine, Paris (France).

Licence, Master: P. Pegon taught a crash course in analysis (M1, Dauphine, 12h), and gave exercise sessions in Measure theory and probability (L3, Dauphine, 39h) and on Functional Analysis and PDEs (M1, Dauphine, 19.5h).

8.2.2. *Supervision*

- PhD : Quentin Denoyelle, *Theoretical and Numerical Analysis of Super-Resolution without Grid*, defended on 09/07/2018, G. Peyré and V. Duval.
- PhD in progress : Gabriele Todeschi, Optimal transport and finite volumes, 01/10/2018, T. O. Gallouët.
- PhD in progress : Miao Yu , *Optimal Transport distances for Full Waveform Inversion*, 01/10/2016, J-D. Benamou.
- PhD in progress: Paul Catala, *Low-rank Approaches for Off-the-grid Superresolution*, 01/10/2016, G. Peyré and V. Duval.
- PhD in progress : Lucas Martinet , *Decomposed and Parallel Sinkhorn Algorithm for Optimal Transport*, 01/10/2017, J-D. Benamou.
- PhD in progress : Giorgi Rukhaia , *On the application of Sinkhorn methods in Freeform Optics*, 01/05/2018, J-D. Benamou.
- PhD in progress : Ernesto Araya , *Random Graphs*, Y. De Castro.

8.2.3. *Juries*

G. Carlier was in the HDR committee of Nicolas Juillet and in the Ph.D committees of Michael Orieux, Hadrien de March and Thomas Dumas

8.3. Popularization

8.3.1. *Internal or external Inria responsibilities*

V. Duval was a member of the *Commission d'évaluation scientifique* (CES) of the CRI Paris in 2018, and has been a member of the *Comité de suivi doctoral* since September 2018.

J-D. Benamou was a member of the *CR2 Recruiting Commission* of the CRI Paris in 2018.

8.3.2. *Education*

I. Waldspurger has given a talk at the Mathematic Park seminar (for L1 and L2 students), on the minimization of convex functions with Lipschitz gradient.

8.3.3. *Interventions*

Participation à l'accueil de 15 collégiens dans le cadre de leur stage d'observation (3 heures dans l'équipe MOKAPLAN supervisé par Lucas Martinet).

<p align="center" style="color:red">QUANTIC Project-Team</p>

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. General Chair, Scientific Chair

Pierre Rouchon was the main organizer of the spring thematic quarter at Institut Henri Poincaré entitled "Measurement and control of quantum systems: theory and experiments" (16 April – 13 July 2018). This thematic quarter includes courses, lectures and conferences. In particular a research school of one week at CIRM, two 3-day workshops in May and June and the 2018 issue of PRACQSYS conference in July, were organized in this framework. This thematic quarter involved several hundred of participants. See IHP web page (http://www.ihp.fr/en/CEB/T2-2018), CIRM web page (https://conferences.cirm-math.fr/1732.html) and the specific quarter web site (https://sites.google.com/view/mcqs2018/home).

8.1.1.2. Member of the Organizing Committees

- Zaki Leghtas co-organized a conference on quantum computing ICOQC 2018 at ENS Paris (https://icoqc.sciencesconf.org).
- Mazyar Mirrahimi was a co-organizer of the PRACQSYS conference at IHP in July 2018 (https://sites.google.com/view/mcqs2018/pracqsys-2018).

8.1.2. Journal

8.1.2.1. Member of the Editorial Boards

Pierre Rouchon is member of the editorial board of Annual Reviews in Control.

8.1.2.2. Reviewer - Reviewing Activities

- Zaki Leghtas and Mazyar Mirrahimi were reviewer of Physical Review Journals.
- Pierre Rouchon and Alain Sarlette were reviewer for several automatic control and dynamical systems journals and conferences.

8.1.3. Invited Talks

- Zaki Leghtas: Sirteq 2018. Institut d'optique Paris. Invited by Patrice Bertet.
- Zaki Leghtas: ONE-QOS workshop. Max Planck, Erlangen, Germany. Invited by Florian Marquardt.
- Zaki Leghtas: IHP workshop on quantum control and feedback, Paris, France. Invited by Eleni Diamanti.
- Zaki Leghtas: LIA CNRS-Université de Sherbrooke workshop, Saint-Rémy, France. Invited by Denis Vion.
- Zaki Leghtas: University of Berkeley. Berkeley, USA. Invited by Irfan Siddiqi.
- Zaki Leghtas: Rigetti Quantum Computing. Berkeley, USA. Invited by Chad Rigetti.
- Pierre Rouchon: lecture at the QUACO ANR Meeting in Besançon, September 24-26, Models and feedback issues for open quantum systems.
- Pierre Rouchon: plenary speaker at Mexican Annual Conference on Automatic Control. 10-12 October 2018, San Luis Potosi, Dynamical models and feedback issues for super-conducting quantum circuits.
- Pierre Rouchon: 2-hour course in the Colloquium of the Physics Department, ENS-Paris, October 23 (introduction to quantum cryptography, computation and error correction).

- Alain Sarlette: dynamical systems seminar series, March 2018, Jussieu.
- Alain Sarlette: seminar at IHP trimester on Quantum Control, May 2018.
- Alain Sarlette: Praqcsys: Principles and Applications of Control in Quantum Systems, IHP, Paris, July 2018.
- Mazyar Mirrahimi: American Physical Society March Meeting, Los Angeles, March 2018.
- Mazyar Mirrahimi: Semi-plenary speaker at MTNS (Mathematical Theory of Networks and Systems), Hong Kong, July 2018.
- Mazyar Mirrahimi: Centre de Recherche Mathematique de Montreal, Octobre 2018.
- Mazyar Mirrahimi: 4-hour course at Institut d'Optique, Introduction to Quantum Computing, June 2018.
- Alain Sarlette: lectures on quantum control and quantum computing at the Ecole d'Automatique de Grenoble summer school, August 2018
- Pierre Rouchon, Alain Sarlette, Rémi Azouit, Paolo Forni and Francesca Chittaro have given a lecture series about "adiabatic elimination for open quantum systems" at the IHP trimester on Quantum Control.
- Jérémie Guillaud: Yale university, Nov 2018.

8.1.4. Research Administration

- Pierre Rouchon is a member of the scientific committee of LAGEP (Laboratoire d'Automatique et de Génie des Procédés) since 2017.
- Pierre Rouchon is a membre of the "Conseil Scientifique du DIM Math Innov" since 2017.
- Pierre Rouchon is a member of the "Conseil de la recherche de PSL " since 2016.
- Pierre Rouchon is a member of the "Conseil Scientifique du Conservatoire National des Arts et Metiers" since 2014.
- Mazyar Mirrahimi is the co-president of Inria's comité des emplois scientifiques.
- Mazyar Mirrahimi was a member of ANR Comité d'Evaluation Scientifique on Quantum Technologies.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Cycle Ingénieur : Mazyar Mirrahimi, Automatic Control with Applications in Robotics and in Quantum Engineering, 8 hours amphi and 8 hours TD, 3rd year, Ecole Polytechnique, France.

Cycle Ingénieur : Mazyar Mirrahimi, Contrôle de modèles dynamiques, 36 hours TD, 2nd year, Ecole Polytechnique, France.

Cycle Ingénieur : Mazyar Mirrahimi, Module algorithmique Quantum Control, 24 hours TD, 2nd year, Ecole Polytechnique, France.

Master: Mazyar Mirrahimi and Pierre Rouchon, Dynamics and control of quantum systems, 18 hours amphi, M2, Jussieu, France.

Cycle Ingénieur: Alain Sarlette, Probabilities and Stochastic Processes, 24 hours TD, Mines Paristech, France.

Master: Alain Sarlette, Robotics, 24 hours, Ghent University, Belgium.

Cycle Ingénieur : Zaki Leghtas, Quantum Mechanics and Statistical Physics, Mines ParisTech, 12 hours, France.

Cycle Ingénieur : Zaki Leghtas, Quantum Computing, Mines ParisTech, 20 hours, France.

8.2.2. Supervision

- PhD in progress : Gerardo Cardona, "Beyond static gains in analog quantum feedback control", advisors: Pierre Rouchon and Alain Sarlette, starting date: Nov 2016.

- PhD in progress: Michiel Burgelman, "A systematic study of strongly driven and dissipative quantum systems towards high-accuracy quantum control designs", advisors: Pierre Rouchon and Alain Sarlette, starting date: Nov 2018.

- PhD in progress: Vincent Martin, "Fault-tolerance of quantum systems under continuous-time feedback stabilization", advisors: Mazyar Mirrahimi and Alain Sarlette, starting date Oct 2018.

- PhD in progress: Jérémie Guillaud, "Modular architecture for quantum information processing", advisor: Mazyar Mirrahimi and Pierre Rouchon, starting date Oct 2017.

- PhD in progress: Lucas Verney, "Robust processing of quantum information with superconducting circuits", advisor: Mazyar Mirrahimi and Zaki Leghtas, starting date Oct 2016.

- PhD in progress: Raphaël Lescanne, "Engineering Multi-Photon Dissipation In Superconducting Circuits For Quantum Error Correction", advisors: Zaki Leghtas and Takis Kontos, starting date Sept 2016.

- PhD in progress: Marius Villiers, "Probing the spin entanglement of single Cooper pair", advisors: Zaki Leghtas and Takis Kontos, starting date: September 2018.

- Alain Sarlette has been supervising 2 PhD students with his former institution UGent. Arash Farnam has successfully defended his thesis about distributed systems control in October 2018. Simon Apers has successfully defended his thesis about quantum walks on graphs in November 2018.

8.2.3. *Juries*

Pierre Rouchon was the president of the jury for the Habilitation thesis of Fransceca Chirraro (université de Toulon) and member of the jury for the Habilitation thesis of Nadir Farhi (université Paris-Est).

8.3. Popularization

Alain Sarlette, 5 December 2018, prospective Ordinateur Quantique at the comité de pilotage du CETIM, Senlis.

<p align="center" style="color:red">SIERRA Project-Team</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

> F. Bach: General Chair of ICML 2018 (Stockholm)

10.1.1.2. Member of the Organizing Committees

> Adrian Taylor, Session Organizer: *Computer-assisted analyses of optimization algorithms I & II*, International Symposium on Mathematical Programming, July 2018.

> F. Bach: Co-organization of the workshop "Horizon Maths 2018 : Intelligence Artificielle", November 23, 2018

10.1.2. Scientific Events Selection

10.1.2.1. Chair of Conference Program Committees

> F. Bach: Program Chair of the Journées de Statistiques (Saclay)

10.1.2.2. Reviewer

> Conference on Learning Theory (COLT 2018): Pierre Gaillard, Alessandro Rudi

> Symposium on Discrete Algorithms (SODA 2019): Adrien Taylor,

> Neural Information Processing Systems (NIPS 2018): Pierre Gaillard, Alessandro Rudi

> Conference on Learning Theory (COLT 2018): Pierre Gaillard, Alessandro Rudi, Adrien Taylor

> Symposium on Discrete Algorithms (SODA 2019): Adrien Taylor

> International Conference of Machine Learning (ICML 2018): Pierre Gaillard, Alessandro Rudi

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

> F. Bach: Journal of Machine Learning Research, co-editor-in-chief

> F. Bach: Information and Inference, Associate Editor.

> F. Bach: Electronic Journal of Statistics, Associate Editor.

> F. Bach: Mathematical Programming, Associate Editor.

> F. Bach: Foundations of Computational Mathematics, Associate Editor.

> A. d'Aspremont: SIAM Journal on Optimization, Associate editor

> A. d'Aspremont: SIAM Journal on the Mathematics of Data Science, Associate Editor

> A. d'Aspremont: Mathematical Programming, Associate Editor

10.1.3.2. Reviewer - Reviewing Activities

> SIAM Journal on Optimization: Adrien Taylor

> Mathematical Programming: Adrien Taylor

> Journal of Optimization Theory and Algorithms: Adrien Taylor

> Journal of Machine Learning Research: Pierre Gaillard, Alessandro Rudi

> Applied Computational Harmonic Analysis: Alessandro Rudi

10.1.4. Invited Talks

F. Bach, Trends in Optimization Seminar, University of Washington, November 2018.

Pierre Gaillard. *Distributed averaging of observations in a graph: the gossip problem.* MNL Conference, Paris, November 2018.

Adrien Taylor, *Analysis and design of first-order methods via semidefinite programming*, Seminaire Parisien dOptimisation (SPO), Paris (France), November 2018.

F. Bach, Frontier Research and Artificial Intelligence, European Research Council, Brussels, October 2018.

F. Bach, IDSS Distinguished Speaker Seminar, MIT, October 2018.

F. Bach, Mathematical Institute Colloquium, Oxford, October 2018.

Adrien Taylor, *Convex Interpolation and Performance Estimation of First- order Methods* for Convex Optimization, IBM/FNRS innovation award, Brussels (Belgium), October 2018.

F. Bach, Workshop on Structural Inference in High-Dimensional Models, Moscow, September 2018.

F. Bach, Symposium on Mathematical Programming (ISMP), Bordeaux, plenary talk, July 2018.

Alexandre d'Aspremont, *Sharpness, Restart and Compressed Sensing Performance*, ISMP 2018, Bordeaux, July 2018.

Alessandro Rudi, *FALKON: An optimal method for large scale learning with statistical guarantees*, ISMP 2018, Bordeaux, July 2018.

Adrien Taylor, *Computer-assisted Lyapunov-based worst-case analyses of first- order methods*, International Symposium on Mathematical Programming, Bordeaux (France), July 2018.

F. Bach, SIAM Conference on Imaging Science, Bologna, Italy, invited talk, June 2018.

Pierre Gaillard. *Online prediction of arbitrary time-series with application to electricity consumption.* Conference on nonstationarity. Cergy Pontoise University. June 2018.

Adrien Taylor, *Convex Interpolation and Performance Estimation of First-order Methods for Convex Optimization*, International Symposium on Mathematical Programming: Tucker prize finalist, Bordeaux (France), July 2018.

Alexandre d'Aspremont, *An approximate Shapley-Folkman Theorem*, Isaac Newton Institute, Cambridge, June 2018.

F. Bach,Workshop on Future challenges in statistical scalability, Newton Institute, Cambridge, UK, June 2018.

Adrien Taylor, *Automated design of first-order optimization methods*, Operation Research Seminar, UCLouvain, Louvain-la-Neuve (Belgium), May 2018.

Adrien Taylor, *Automated design of first-order optimization methods*, LCCC Control Seminar, Lund University, Lund (Sweden), May 2018.

Pierre Gaillard. *Distributed learning with orthogonal polynomials*. Inria DGA meetup. May 2018.

F. Bach, Workshop on Optimisation and Machine Learning in Economics, London, March 2018.

Pierre Gaillard. *An overview of Artificial Intelligence*. Hackaton. PSL University. March 2018.

Alexandre d'Aspremont, *Regularized Nonlinear Acceleration*, US and Mexico Workshop on Optimization and its Applications, Jan 2018.

Alessandro Rudi, *Learning with Random Features*, Isaac Newton Institute, Cambridge, Jan 2018.

Pierre Gaillard. *Online nonparametric regression with adversarial data.* Smile seminar. Paris. Jan 2018.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

F. Bach (together with N. Chopin), *Graphical models*, 30h, Master M2 (MVA), ENS Cachan, France.

F. Bach, *Optimisation et apprentissage statistique*, 20h, Master M2 (Mathématiques de l'aléatoire), Université Paris-Sud, France.

Alexandre d'Aspremont, *Optimisation Combinatoire et Convexe*, avec Zhentao Li, (2015-Present) cours magistraux 30h, Master M1, ENS Paris.

Alexandre d'Aspremont, *Optimisation convexe: modélisation, algorithmes et applications* cours magistraux 21h (2011-Present), Master M2 MVA, ENS PS.

F. Bach and P. Gaillard, *Apprentissage statistique*, 35h, Master M1, Ecole Normale Supérieure, France.

P. Gaillard (together with V. Perchet), *Prediction of individual sequences*, 21h, Master M2 MVA, ENS Cachan, France.

Gregoire Mialon, Python for Machine Learning, 21h, M2 MASH, Dauphine-ENS-PSL, Paris.

10.2.2. Supervision

Anaël Bonneton, PhD defended on July 2018, co-advised by Francis Bach, located in Agence nationale de la sécurité des systèmes d'information (ANSSI).

Damien Scieur, PhD defended on September 2018. *Sur l'accélération des méthodes d'optimisation*, supervised by Alexandre d'Aspremont and Francis Bach.

Jean-Baptiste Alayrac, PhD defended on September 2018, *Structured Learning from Videos and Language*, supervised by Simon Lacoste-Julien, Josef Sivic and Ivan Laptev.

Antoine Recanati, PhD. defended on November 2018. *Application du problème de sériation au séquençage de l'ADN et autres relaxations convexes appliquées en bioinformatique*, supervised by Alexandre d'Aspremont.

Rémi Leblond, PhD defended on November 2018, *Asynchronous Optimization for Machine Learning*, supervised by Simon Lacoste-Julien.

Mathieu Barre, PhD in progress *Méthodes d'extrapolation, au-delà de la convexité*, supervised by Alexandre d'Aspremont.

Grégoire Mialon, PhD in progress *Algorithmes d'optimisation, méthodes de régularisation et architectures pour les réseaux de neurones profonds dans un contexte où les données labellisées sont rares*, supervised by Alexandre d'Aspremont.

Radu-Alexandru Dragomir, PhD in progress *Non-Euclidean first-order methods*, supervised by Alexandre d'Aspremont and Jérôme Bolte.

Thomas Kerdreux, PhD in progress *Optimisation and machine learning*, supervised by Alexandre d'Aspremont.

Margaux Brégère, PhD in progress started September 2017, supervised by Pierre Gaillard, Gilles Stoltz and Yannig Goude (EDF R&D).

Raphaël Berthier, PhD in progress started September 2017, supervised by Francis Bach and Pierre Gaillard.

Loucas Pillaud-Vivien, PhD in progress, supervised by Francis Bach and Alessandro Rudi.

Alex Nowak, PhD in progress, supervised by Francis Bach and Alessandro Rudi.

Ulysse Marteau Ferey, PhD in progress, supervised by Francis Bach and Alessandro Rudi.

Dmitry Babichev, PhD in progress, started is September 2015, co-advised by Francis Bach and Anatoly Judistky (Univ. Grenoble).

Tatiana Shpakova, PhD in progress, started September 2015, advised by Francis Bach.

10.2.3. Juries

Alexandre d'Aspremont, Habilitation à diriger des recherches. Thomas Bruls, Genoscope, Université d'Evry.

10.3. Popularization

10.3.1. Creation of media or tools for science outreach

Design and implementation of a demonstration for the permanent exhibit at Palais de la Découverte: "L'apprenti illustrateur" (J.-B. Alayrac, F. Bach)

ANGE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

- Y. Penel and J. Sainte-Marie organised (with E. Fernández-Nieto) the workshop "non-hydrostatic effects in oceanography " that took place at Sevilla univ. on 15-16th October and that gathered 35 international researchers [0].

- J. Sainte-Marie took part of the organization of the 6th EGRIN summer school that took place at Le Lioran from 18th to 21st of June and that gathered 40 researchers [0].

- J. Sainte-Marie took part of the organization of the Workshop COMMODORE "Community for the numerical modeling of the global, regional and coastal ocean" [0] (17-19/9/18).

- B. Haspot and Y. Penel organise the monthly ANGE seminar [0].

- J. Salomon co-organises the LJLL-Inria meetings [0] (twice a month).

- J. Salomon co-organised the minisymposium "Domain-decomposition methods for integral equation problems " at the 25th International Domain Decomposition Conference, DD XXV, in St. John's, Newfoundland, Canada, July 23-27, 2018.

- L. Boittin co-organises the Junior Seminar at Inria–Paris.

- M. Parisot and J. Salomon organise a workshop entitled "Scientific computing and optimisation processes for renewable energies" at Inria [0] on January 2018.

10.1.1. Journal

The summary of the reviewing activities of the team is given in the next table.

Member	Journal
Julien Salomon	CRAS, SIAM SISC
Cindy Guichard	J. Comp. Phys., J. Sci. Comp., CRAS, J. Comp. Math., Num. Math.
Jacques Sainte-Marie	M2AN, Computer and Fluids, Ocean Modelling, J. Comp. Phys., J. Sci. Comp. Adances in Comp. Math.
Martin Parisot	J. Hydraulic Research, Computers and Fluids, J. Comp. Phys., J. de Math. Pures et Appliquées
Vivien Mallet	ANR, Journal of Machine Learning Research
Edwige Godlewski	Sinum

---

[0] https://team.inria.fr/ange/workshop-non-hydrostatic-effects-in-oceanography/
[0] https://indico.math.cnrs.fr/event/3345/overview
[0] https://commodore2018.sciencesconf.org/
[0] https://team.inria.fr/ange/gdt-slides/
[0] https://project.inria.fr/rencontresljll/fr/
[0] https://emrsim2018.sciencesconf.org/

10.1.2. Invited and contributed Talks

Conference	Location	Month	Members involved
Julien Salomon	7-th Parallel-in-time Integration Workshop (PinT 2018).	Roscoff, France	02-05/05/2018
Julien Salomon	25-th International Conference on Domain Decomposition Methods (DD25).	St-Johns, Canada	23-27/07/18
Julien Salomon	Séminaire du laboratoire de mathématiques Blaise Pascal.	Clermont-Ferrand, France	01/02/18
Julien Salomon	Séminaire du CMAP.	Palaiseau, France	15/5/18
Julien Salomon	Séminaire du Laboratoire J.-L. Lions	Paris, France	30/03/18
Julien Salomon	Séminaire du groupe d'analyse	Universität Konstanz	14/11/18
Fabien Wahl	Simulation et Optimisation pour les Energies Marines Renouvelables	Inria Paris	11/01/18
Fabien Wahl	GdT ANGE	Inria Paris	10/10/18
Fabien Wahl	EGRIN	Le Grand Lioran	18/06/18
Bilal Al Taki	Journée interne du LJLL	Paris diderot (P7)	05/04/18
Bilal Al Taki	Séminaire du laboratoire	Marseille	20/11/18
Frédéric Allaire	8th International Conference on Forest Fire Research (ICFFR)	Coimbra, Portugal	12-16/11/18
Virgile Dubos, Martin Parisot	Non-hydrostatic effects in oceanography	Séville, Espagne	15-16/10/18
Virgile Dubos	18th Spanish-French Sch. J.-L. Lions, Num. Sim. in Phy. and Eng.	Las Palmas, Espagne	25-29/06/18
Cindy Guichard	rencontres Inria-LJLL en calcul scientifique	Paris	05/11
Cindy Guichard	Mini-symposium, CANUM	Cap d'Agde	29/05
Cindy Guichard	séminaire d'analyse numérique, CEA/DIF	Bruyères-le-Châtel	03/05/18
Cindy Guichard	journée interne du LJLL	Paris	05/04/18
Cindy Guichard	séminaire d'analyse numérique des EDP	univ. Orsay	22/03/18
Yohan Penel	Mini-symposium, CANUM	Cap d'Agde	29/05/18
Yohan Penel	GDR Manu (poster)	Roscoff, France	02/07/18
Yohan Penel	Workshop "non-hydrostatic effects in oceanography"	Séville, Espagne	16/10/18
Jacques Sainte-Marie	Plenary in " Free Surface Flows: from Hydrostatic to Non-Hydrostatic Models"	Saint-Malo	6/6/18
Jacques Sainte-Marie	Séminaire du laboratoire N. Oresme - université de Caen	Caen	12/02/18
Léa Boittin	GdT ANGE	Inria Paris	21/02/18
Léa Boittin	GTT LJLL	LJLL, Paris	30/1
Léa Boittin	CMWR XXII (poster)	Saint-Malo	04/06/18
Léa Boittin	EGRIN	Le Grand Lioran	18/6/18
Martin Parisot	Seminaire d'équipe LEMON	Montpellier	6/2/18
Martin Parisot	SIMAI-UMI Congres	Wroclaw, Poland	16-20/09/18
Martin Parisot	Séminaire du Laboratoire Jean Leray	Nantes	11/10/18
Martin Parisot	Conference Balance laws in fluid mechanics, geophysics, biology	Orléans	19-22/10/18
Martin Parisot	Séminaire "Math et Eau"	Montpellier	25/10/18
Martin Parisot	Colloque LEFE	Clermont-Ferrand	28-30/03/18
Martin Parisot	Workshop Non Hydro, Séville	Séville	10/18
Jacques Sainte-Marie	Séminaire du laboratoire de	Beyrouth université	19/12/2018

10.1.3. Leadership within the Scientific Community

Yohan Penel is a member of the Council Administration of SMAI (2015-2018).

10.1.4. Scientific Expertise

- Yohan Penel was rewiewer for the grant CNRS INSU LEFE
- Vivien Mallet was reviewer for ANR

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Member	Level	Institution	Duration	Type	Topic
J. Salomon	M2	Univ. Paris-Dauphine	15	CM	Cours de rentrée : méthodes numériques pour les EDP
J. Salomon	M2	Univ. Paris-Dauphine	30	CM	Méthodes numériques pour des modèles incluants des EDP
L. Lu	L1	SU	27.4	TD	Analyse et algèbre pour les sciences
B. Al Taki	L1	SU	36	TD	Analyse et algèbre pour les sciences
F. Allaire	L1	SU	38.5	TD	Calculus
V. Dubos	L3	Polytech Sorbonne	32	TP	Mathématiques appliquées
V. Dubos	M1	Polytech Sorbonne	14+22	CM+TP	Traitement numérique
V. Dubos	L3	Polytech Sorbonne	10	TP	Projet d'initiation
C. Guichard	M2	SU	22	CM+TD	Méthodes numériques
C. Guichard	M1	SU	58	TP	Fondements des méthodes numériques
C. Guichard	L3	SU	21	TP	Python
C. Guichard	M1	SU	18	CM	Mise en oeuvre de la méthode des éléments finis
B. Di Martino	L1	Univ. Corse	18	CM+TD	Techniques mathématiques et physiques pour les sciences de la vie
B. Di Martino	L2	Univ. Corse	72	CM+TD+TP	Analyse et TP Python Sage algèbre et analyse
B. Di Martino	L3	Univ. Corse	54	CM+TD+TP	Analyse numérique matricielle
B. Di Martino	M2	Univ. Corse	24	CM+TD+TP	Modélisation master Gestion Intégrée du Littoral et Valorisation Halieutique
Y. Penel	L2	SU	12	CM	Analyse vectorielle et intégrales multiples
Y. Penel	M1	Univ. Paris Descartes	37.5	CM+TD+TP	Modélisation déterministe en sciences du vivant
J. Sainte-Marie	M1	IPGP	40	CM	Modélisation des écoulements gravitaires
J. Sainte-Marie	M2	IPGP	30	CM et TP	Méthodes numériques, appli. géosciences
J. Sainte-Marie	M2	SU	20	CM	Méthodes numériques pour les systèmes hyperboliques Applications aux énergies renouvelables
N. Boulos	L1	Paris 13	48	TD	Mathématiques pour le parcours aménagé
L. Boittin	L3	SU	24,5	TD	Méthodes numériques pour les EDO
M. Parisot	L3	Polytech	46	CM+TP	Méthodes numériques

10.2.2. Supervision

Supervisor ANGE	Type	Name	Institution	Time	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
BDM, BH	Post Doc	Bilal AL Taki	Inria	09/17-12/18	Understanding and modeling the rheology of complex surface flow
NA, EA, MP	stage M2	Nelly BOULOS	Inria	04-08/2018	Analyse et simulation de modèles d'écoulement à surface libre intégrés selon la verticale
EA, MP, JSM, MOB	PhD	Léa Boittin	Paris 6	2015-2019	Modelling, analysis and efficient numerical resolution for erosion processes,
MP, NA, EA, MP	PhD	Nelly BOULOS	Paris 13	2018-2021	Modélisation et simulation numérique de la dynamique d'un acquifère érodable
VM	PhD	Ngoc Bao Tran Le	Inria	2016-2019	Uncertainty quantification based on model reduction for atmospheric dispersion
VM	Post Doc	Janelle Hammond	Inria	2017-2019	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

JS : J. Salomon, VM : Vivien Mallet, JSM : Jacques Sainte-Marie, YP : Yohan Penel, CG : Cindy Guichard, BDM : Bernard Di Martino, BH : Boris Haspot, NA: Nina Aguillon, EA : Emmanuel Audusse, MP : Martin Parisot, EG : Edwige Godlewski

10.2.3. Juries

Member	Date	Type (PhD, HdR)	role	Name	Institution	Title
JS	Novembre	PhD	rapporteur	Quentin Ansel	Univ. Dijon, TUM Munich	Optimal control ofinhomogeneous spin ensembles: Applications in NMR and Quantum optics
JS	Décembre	PhD	rapporteur	Pierre Terrier	ENPC, Université Paris-Est	Simulations numériques pour la prédiction de l'évolution microstructurale d'alliages ferritiques.Une étude de la dynamique d'amas.
JS	Décembre	PhD	rapporteur	Amina Benaceur	ENPC, Université Paris-Est	Réduction de modèles en thermique etmécanique non-linéaires
YP	Septembre	comité de mi-thèse	examinateur	Moustoifa Rafiou	Univ. Toulon	Modélisation et simulation numérique d'un écoulement à faible nombre de Mach. Application à un réacteur à eaux pressurisées.
JSM	Novembre	PhD	rapporteur	Nicolas Peton	IFPEN et univ. Paris-Saclay	Étude et simulation d'un modèle stratigraphique advecto-diffusif non-linéaire avec frontières mobiles
JSM	Janvier	PhD	président	Charles Demay	EDF et univ. Savoie Mont-Blanc	Modelling and simulation of transient air-water two-phase flows in hydraulic pipes
EG	mars	PhD	membre	Alexis Marboeuf	Ecole Polytechnique	Schémas ALE multi-matériaux totalement conservatifs pour l'hudrodynamique
EG	juillet	PhD	présidente	Camilla Fiorini	UVSQ	Analyse de sensibilité pour systèmes hyperboliques non linéaires
EG	octobre	PhD	présidente	Julie Llobell	UCA (Nice)	Schémas Volumes Finis à mailles décalées pour la dynamique des gaz
EG	novembre	PhD	présidente	Nicolas Cagnart	SU	Quelques approches non linéaires en réduction de complexité
EG	novembre	PhD	rapporteure	David Iampetro	AMU (EDF Saclay)	Contribution à la simulation

JS : J. Salomon, VM : Vivien Mallet, JSM : Jacques Sainte-Marie, YP : Yohan Penel, EG : Edwige Godlewski

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Julien Salomon is a member of the "Comité des usagers de la rue Barrault" in view of the move of Paris Inria Center to Rue Barrault.

10.3.2. Articles and contents

Julien Salomon wrote a vulgarization article "Décomposer et itérer pour résoudre un problème " for the CNRS website " Images des mathématiques " (12/2018)

10.3.3. Education

- Edwige Godlewski is the president of the "commission française pour l'enseignement des mathématiques" (CFEM)
- Jacques Sainte-Marie is a member of the "Groupe de travail : Recherche et développement durable" at the French Ministry of Research.

10.3.4. Interventions

- Julien Salomon took part of the "Salon Culture et Jeux mathématiques" - Stand AMIES (Paris, 24/05/18)
- Julien Salomon gave a talk at Waterford Kamhlaba United World College, Mbabane, Eswatini (Swaziland, 5/8/2018).
- Julien Salomon took part of "Fête de la science", and gave a talk at école rue st-Isaure, 18ème (Paris,11/10/2018)
- Léa Boittin 25/5/18 took part of the "Salon Culture et Jeux mathématiques" - Stand AMIES (Paris, 25/05/18)
- Vivien Mallet gave a talk "Bruit dans la ville", for the association "Versailles environnement initiative" (01/12/18)

10.3.5. Internal action

Julien Salomon gave talk (3.4.18) at the internal meeting "La demi-heure de science": "Décomposer et itérer pour résoudre un problème complexe, quelques exemples en calcul scientifique".

Anne Mangeney gave talk (4.9.18) at the internal meeting "La demi-heure de science": "Les ondes sismiques : une mine d'informations sur les risques naturels".

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 served as Program Chair for the eight International Workshop on Biomedical Image Registration (WBIR'18, Leiden, The Netherlands)
- F. De Vico Fallani served as Program Chair for the Network Neuroscience Satellite (NETSCI'18, Paris, France)
- F. De Vico Fallani served as Program Chair for the Brainhack Networks workshop (ICM, Paris, France)

10.1.1.2. Member of the Organizing Committees

N. Burgos co-organized the international workshop on Simulation and Synthesis in Medical Imaging (SASHIMI) 2018, a satellite workshop of MICCAI 2018.

S. Epelbaum was session co-chair at the Alzheimer Association International Conference in Chicago 14-18th July 2018

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 (Houston, USA, 2018) and for the international workshop PatchMI (Granada, Spain, 2018).
- F. De Vico Fallani served as Program Committee member for the following international conferences: NETSCI (Paris, 2018), Complex Networks (Cambridge, UK, 2018), ComplNet (Zaragoza, Spain, 2018)

10.1.2.2. Reviewer

- N. Burgos acted as a reviewer for the international workshops on Deep Learning in Medical Image Analysis (DLMIA) and on Simulation and Synthesis in Medical Imaging (SASHIMI).
- 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.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- S. Durrleman is associate editor of the journals: IEEE Transactions on Medical Imaging, and Neurons, Behavior, Data analysis, and Theory (NBDT)
- F. De Vico Fallani is associate editor of the journal PLoS One
- O. Colliot is a member of the Editorial Board of the journal Medical Image Analysis (Elsevier).
- S. Epelbaum is member of the editorial board for the "Médecine, Cognition et Vieillissement" Scientific Journal.

10.1.3.2. Reviewer - Reviewing Activities

- N. Burgos acted as a reviewer for IEEE Transactions on Medical Imaging; NeuroImage; Medical Image Analysis; Journal of Nuclear Medicine; IEEE Transactions on Radiation and Plasma Medical Sciences; IEEE Journal of Biomedical and Health Informatics; EJNMMI Physics; International Journal of Radiation Oncology, Biology, Physics; Sensors.

- Olivier Colliot acted as a reviewer for Medical Image Analysis, NeuroImage, NeuroImage: Clinical, IEEE Transactions on Medical Imaging.

- F. De Vico Fallani acted as a reviewer for IEEE TNRSE, Neuroimage, PLoS Comp Biol, PLoS One, Cereb Cortex.

- S. Epelbaum acted as a reviewer for Alzheimer's & Dementia, the Journal of Alzheimer's disease, Brain and BMJ Neurology.

10.1.4. Invited Talks

N. Burgos gave an invited lecture at the workshop on Machine Learning in Radiology in Lausanne, Switzerland, November 2018.

N. Burgos gave an invited presentation at the course "Pattern Recognition for Neuroimaging" at the Annual Meeting of the Organization for Human Brain Mapping, Singapore, June 2018.

O. Colliot gave an invited presentation at the Singapore-France Artificial Intelligence Workshop, Singapore, June 2018.

O. Colliot gave an invited presentation at the Netherlands-France "Erasmus-Descartes" Artificial Intelligence Workshop, Paris, France, November 2018.

S. Durrleman gave an keynote presentation at the MICCAI workshop ShapeMI (Shape in medical imaging), Granada, Septembre 2018, and an invited presentation at the Symposium on Multivariate analyses, Modelling and Machine Learning in Neuroimaging Research, University Paul Sabatier of Toulouse.

S. Epelbaum and S. Durrleman gave a plenary lecture at College de France for the colloquium "Imagerie médicale et apprentissage automatique : vers une intelligence artificielle ?"

F. De Vico Fallani gave invited lectures at CuttingEEG International conference (ICM, Paris, 2018)

F. De Vico Fallani gave a plenary lectures at Neurospin CEA Institute (Saclay, France)

10.1.5. Scientific Expertise

- Olivier 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.

- Olivier Colliot acts as an expert for GENCI (the national facility for high-performance computing).

10.1.6. Research Administration

- S. Durrleman serves as the coordinator of the ICM Center for Neuroinformatics, and the scientific director of the iCONICS core facility on data management and analytics.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master: Olivier Colliot coordinates the course "Méthodes d'imagerie médicale" of the Master 2 in Computer Science of Sorbonne University.

Master: Olivier Colliot, Master in Computer Science, 4.5 hours (eqTD), Sorbonne University

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", Université Pierre et Marie Curie

Medical school: Didier Dormont, Courses for Medical Students, Université Pierre et Marie Curie

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

S. Durrleman, Geometrical approaches in Statistical Learning, 21 hours, Master 2 "Mathématiques, Vision, Apprentissage", ENS Paris Saclay, France.

Master: Stéphane Epelbaum, Master in Neuroscience, 4 hours (eqTD), Université Pierre et Marie Curie

Medical school: Stéphane Epelbaum gives lectures in Neurology on the topic of degenerative diseases for medical students of the UPMC (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 : 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 : Catalina Obando-Forero, "Graph models of cortical plasticity in temporal brain networks", Inria, started in 2015, advisor: Fabrizio De Vico Fallani

PhD in progress : Jeremy Guillon, "Méthode d'analyse multimodale de connectivités neuronales basée sur la théorie des réseaux complexes multicouches", Université Pierre et Marie Curie, started in 2015, advisors: Fabrizio De Vico Fallani and Mario Chavez

PhD Cifre in progress : Fanny Grosselin, "Fouille des données EEG et suivi longitudinal grande échelle pour le diagnostic et la prédiction du niveau de stress chez l'homme", EDITE Université Pierre et Marie Curie, started in 2016, advisors: Fabrizio De Vico Fallani and Mario Chavez,

PhD in progress : Junhao Wen, "Cortical morphometry for discovering new biomarkers of neurodegenerative diseases", Université Pierre et Marie Curie, Started in 2015, advisors: Olivier Colliot, Anne Bertrand and Stanley Durrleman

PhD in progress : Jorge Samper-Gonzalez, "Learning from heterogeneous data for prediction of Alzheimer's disease", Université Pierre et Marie Curie, Started in 2015, advisors: Olivier Colliot and Theodoros Evgeniou

PhD in progress : Alexandre Routier, "Multimodal neuroimaging for characterization of primary progressive aphasias", Université Pierre et Marie Curie, Started in 2015, advisors: Marc Teichmann, Olivier Colliot and Marie-Odile Habert

PhD in progress: Pascal Lu, "Machine learning from multimodal genetic and neuroimaging data for personalized medicine", Université Pierre et Marie Curie, Started 2016, advisor: O. Colliot

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

PhD in progress: Manon Ansart, "Automatic recommendation systems built on the statistical exploitation of longitudinal medical data sets", started 2016, advisors: D. Dormont and S. Durrleman

PhD in progress: Maxime Louis, "Learning spatiotemporal trajectories of iconic-geometric data sets", started 2016, advisors: S. Durrleman

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

PhD in progress: Raphael Couronné, "Spatiotemporal analysis of the progression of the Parkinson's Disease informed by multimodal longitudinal data", advisor: S. Durrleman

PhD in progress: Thomas Lartigue, "Mixture Models in Gaussian Graphical Models", advisors: S. Allassonnière and S. Durrleman

PhD in progress: Vianney Debavelaere, "Analysis of distribution of spatiotemporal trajectories in heterogeneous populations", advisors: S. Allassonnière and S. Durrleman

PhD in progress: Lou Albessard, "analyse de la covariation du crâne et de l'endocrâne dans le genre *Homo*", advisors: D. Grimaud-Hervé and S. Durrleman

PhD in progress: Johann Faouzi, "Machine learning approaches to predict impulse control disorders in Parkinson's disease", advisors: O. Colliot and J.-C. Corvol

PhD in progress: Simona Bottani, "Machine learning for differential diagnosis of neurodegenerative diseases from multimodal data", 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", advisors: D. Dormont and N. Burgos

PhD in progress: Federica Cacciamani, "Awareness for cognitive decline in the earliest stages of Alzheimer's disease", advisor: S. Epelbaum

10.2.3. Juries

- Olivier Colliot participated, as referee, to the PhD committee of Matthieu Van Houtte (University of Lille).
- Olivier Colliot participated, as examiner, to the HDR committee of Stanley Durrleman (Sorbonne University).
- Olivier Colliot participated to the progress report PhD committee of Ekaterina Kalinicheva (ISEP).
- S. Durrleman participated, as examiner, to the PhD committee of W. Huizinga at Erasmus University Rotterdam, The Netherlands.
- S. Durrleman participated, as co-supervisor, to the PhD committee of L. Albessard at Museum National d'Histoire Naturelle, Paris, France.
- Stéphane Epelbaum participated, as examiner, to the PhD committee of Benoît Souchet (CEA).
- Stéphane Epelbaum participated, as examiner, to the PhD committee of Adrien Julian (University of Poitiers).

10.3. Popularization

10.3.1. Articles and contents

- S. Durrleman's interviews were published in the magazines Le Point, Sciences et Avenir, Usine Nouvelle, Le Temps, revue Pharma, and were broadcasted on the radio France Culture. He published also an article in the special issue on artificial intelligence of the newspaper Libération.
- S. Durrleman did popularization presentations at Rotary Club Chamonix, Cercle des amis de l'ICM, and Salon de l'argus de l'assurance.
- F. De Vico Fallani did a popularization presentation at La Française - Investing group, Paris
- Olivier Colliot gave an interview for the TV channel France 5, for the program "Magazine de la Santé.
- Stéphane Epelbaum participated to multiple events dedicated to general audience outreach including: articles in journals (L'Express, Cerveau & Psycho, Sciences Avenir), Radio shows and podcasts (France inter: Grand Bien vous fasse, Figaro Live) and TV shows (Pourquoi docteur, Questions aux experts).

- The team contributed to the book "Le Grand Atlas du Cerveau" (Glénat).

10.3.2. Interventions

- O. Colliot gave a presentation to members of the German Bundestag, Paris, France, December 2018.
- Stéphane Epelbaum participated to a charity event at the Foire internationale d'Art Contemporain (FIAC) 2018 on the 20th of November 2018.

10.3.3. Internal action

- O. Colliot gave a presentation for the charity event ("Evènement solidaire" of Inria, September 2018.

MAMBA Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- Jean Clairambault, with Jean-Frédéric Gerbeau, Huaxiong Huang, Benoît Perthame and Sivobal Sivaloganathan: organisers of the First Inria-Sorbonne-Université-Fields Institute international workshop on mathematics in medicine, Fields Institute, Toronto, January 31 to February 2, 2018. http://www.fields.utoronto.ca/activities/17-18/math-medicine

- Jean Clairambault, with Guillemette Chapuisat, Florence Hubert, Urszula Ledzewicz and Vitaly Volpert: organisers of the International 5-day workshop on Mathematical perspectives in the biology and therapeutics of cancer, CIRM Luminy, July 9-13, 2018. https://mathscancer.sciencesconf.org/

- Jean Clairambault, with Tomás Alarcón and Thomas Hillen: organisers of the BIRS-CMO 5-day workshop on Mathematical Challenges in the Analysis of Continuum Models for Cancer Growth, Evolution and Therapy (18w5115), Casa Matemática Oaxaca (Mexico), November 25-30, 2018. http://www.birs.ca/events/2018/5-day-workshops/18w5115

- Benoît Perthame, Luis Almeida, Diane Peurichard and Delphine Salort: organizers of the workshop 'Asymptotic approaches to spatial and dynamical organizations', july 2018, LJLL, Sorbonne Université, and organizers of the math-bio working group at LJLL, Sorbonne Université

- Diane Peurichard, Dirk Drasdo: organizers of the internal seminar 'Open MAMBA seminar' (https://team.inria.fr/mamba/open-mamba-seminar/)

- Marie Doumic, with Doron Levy (U. of Maryland, USA), M. Bergmann (Med. University of Vienna) and N. Mauser (Wolfgang Pauli Institute, Vienna) organised a workshop on "Mathematical Models in Cancer", on July 20th and 21st, 2018.

- Marie Doumic, together with J. Haskovec (KAUST Univ., Saoudi Arabia), M.-T. Wolfram (Univ. of Warwick, UK), K. Fellner (Univ. of Graz, Austria) and L. Neumann (U. of Innsbruck, Austria), organised a workshop on "Applied PDEs and kinetic equations: from physics to life sciences and beyond", in the honor of C. Schmeiser's 60th birthday.

- L. Almeida, B. Perthame, D. Peurichard and D. Salort have organized the international conference "Asymptotic approach to spatial and dynamical organizations", 4-6 july 2018 (60 participants)

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- Philippe Robert was in the PC of the conference "Stochastic Networks" held in Edimburgh 25-29 June 2018.

- Pierre-Alexandre Bliman was in the Editorial Board of the conference "European Control Conference", Limassol, 12-15 June 2018.

- Dirk Drasdo was member of the Program committee of the SBMC 2018 (Bremen, Germany), July 4-6, 2018.

10.1.2.2. Reviewer

- Pierre-Alexandre Bliman, reviewer for the conferences IEEE Conference on Decision Control, European Control Conference, Indian Control Conference, Joint 9th IFAC Symposium on Robust Control Design and 2nd IFAC Workshop on Linear Parameter Varying Systems

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Philippe Robert is Associate Editor of the journal "Queueing Systems, Theory and Applications".
- Benoît Perthame is co-editor in chief of Acta Applicandae Mathematicae (Springer).
- Dirk Drasdo is associate editorial member of J. Theor. Biol. and Royal Society Open Science.
- Luis Almeida is Associate Editor of the Journal of Dynamics and Games AIMS.

10.1.3.2. Reviewer - Reviewing Activities

- Jean Clairambault, reviewer for different journals in 2018: PLoS Computational Biology, PLoS One, Integrative Biology, Applied Mathematical Modelling, Letters in Biomathematics, Journal of Theoretical Biology, Bulletin of Mathematical Biology, Mathematical Biosciences and Engineering
- Pierre-Alexandre Bliman, reviewer for the journals Automatica, Proceedings of the Royal Society of Edinburgh, Systems and Control Letters
- Diane Peurichard: reviewer for Journal of the Royal Society Interface, Processes, Computation
- Marie Doumic, reviewer for J. Math. Biol., SIAM App. Math., Ann. IHP, M2AN, Inverse Problems

10.1.4. Invited Talks

- Jean Clairambault: Workshop "Computational Systems Biology for Cancer", Paris, January 2018; Spring school "Mathematical Modelling of Tumour Growth and Therapy", CRM, Bellaterra (UAB, Barcelona), April 2018; Workshop "Modelling Biological Phenomena from Nano to Macro Scales", The Fields Institute, Toronto, May 2018; 4th Annual workshop on mathematics in medicine: mathematical models in cancer, Wolfgang Pauli Institut, Vienna, July 2018; Seminar, DIMEAS, Politecnico di Torino, October 2018; Mathematical and Computational Biology Workshop, Tirana, October 2018; International Conference on Applied Mathematics, Fes (Morocco), October 2018 ; Seminar on mathematical modelling of tissue growth, Les Treilles (Tourtour, France), November 2018; Workshop on Mathematical Challenges in the Analysis of Continuum Models for Cancer Growth, Evolution and Therapy, CMO, Oaxaca, November 2018 (see above: organisation of scientific events); International Program in Mathematical Biology Sep.-Dec. 2018, Institut Mittag-Leffler (Stockholm), December 2018
- Diane Peurichard: Oct 16-18 PSU-P6 workshop "Mathematics of living matter", Penn State; Jul 23-Jul 27 11th ECMTB Conference, Lisbon, Portugal; Apr 30 May 04 Workshop "Collective dynamics and self-organization in biological sciences", Edinburgh, Scotland.
- Marie Doumic: Keynote speaker at the BIOMATH 2018 conference, Sofia, Bulgaria, June 25-29 2018; 3h Minicourse for the Doctoral School of Vienna, Weissensee, July 2-5; Workshop "Collective dynamics and self-organisation in biological sciences", Edinburgh, April 30-May 4
- Dirk Drasdo: Paris, France, Sanofi, 7/11, Seminar: Spatial-temporal MultiScale-multilevel modeling OF DRUG-INDUCED LIVER DAMAGE and ITS Regeneration : Steps towards a VIRTUAL Liver; Paris, France, Ecopa, 6/11, Symposium: how new experimental tools in life science challenge the 3R vision. (5/6.11): Spatial-temporal MultiScale-multilevel modeling of APAP damage and its consequence on ammonia detoxification : Steps towards a virtual Liver; Palaiseau, France, Ecole Polytechnique, 19/10, Guess lecture. Integrated and spatial-temporal multiscale modeling of liver guide in vivo experiments in healthy & chronic disease states: a blue print for systems medicine?; Rome, Italy, 10/10, Mathematics for Biomedicine, 8-11/10: Integrated and spatial-temporal multiscale modeling of liver guide in vivo experiments in healthy & chronic disease states: a blue print for systems medicine?; Pisa, Italy, 5/10, Multiscale modeling and simulations to bridge molecular and cellular scales, 1-5/10: Multi-scale and integrated mathematical modeling of liver function and regeneration: Using mathematical models to guide experiments; Heidelberg, Germany, 1/11, BIOMS-Symposium 2018, 1-2/11: Multi-scale and integrated mathematical modeling of liver function and regeneration: Using mathematical models to guide experiments; Inst. Pasteur, France

20/9, Inst. Seminar: From systems biology to systems medicine: an example: Paracetamol overdose-caused damage & its regeneration: Virtual experiments in organ micro-architectures; Paris, France, 14/4, EASL, 11-14/4: Parameterization of liver metabolism; Lyon, France : From systems biology to systems medicine: an example: Paracetamol overdose-caused damage & its regeneration: Virtual experiments in organ micro-architectures

10.1.5. 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)

10.1.6. Scientific Expertise

- Jean Clairambault and Dirk Drasdo: members of the ANR CES 45 (mathematics and digital sciences for health and biology) selection committee
- Jean Clairambault: member of the review committee for the German FZJ (ForschungsZentrum Jülich)-BMBF funding measure "Demonstrators for Individualised Medicine" within the Framework of the Research and Funding Concept "e:Med Ð Paving the Way for Systems Medicine", Frankfurt, September 2018
- Jean Clairambault: member of the review committee for the German DLR (Deutsches Zentrum für Luft und Raumfahrt)-BMBF initiative "Systems medicine research consortia", Berlin, November 2018
- Jean Clairambault: representative of Inria (until June 2018) to the expert group of the ITMO Cancer (Aviesan) and member of the steering committee of the HTE program (2016-2020)
- Diane Peurichard and Marie Doumic: Ambassadeur FSMP for Austria
- Diane Peurichard: member of the selection committee Sorbonne Université, maitre de conference position
- Diane Peurichard: member of the Inria scientific selection committee (CORDI-S PhD, post-docs, delegation)
- Benoît Perthame has been member of the "Chern Prize" committee awarded at ICM 2018 in Rio.

10.1.7. Research Administration

- Pierre-Alexandre Bliman: Coordinator of the ECOS-Nord project C17M01 "News methods for controle of dengue and arboviroses epidemics".
- Marie Doumic: nominated in Dec. 2018 at the Scientific Council of INSMI, CNRS.
- Dirk Drasdo is member of the scientific leadership board of the German flagship project LiSyM (Liver Systems Medicine) financed by BMBF (Germany).
- Dirk Drasdo guides a research group bi-localized at Inria de Paris and IfADo, Dortmund, currently composed of 3 research engineers, 3 postdocs.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : Philippe Robert, "Large Stochastic Networks", 24h, M2, Sorbonne Université, France.

Master: Marie Doumic, "Inverse problems in Biological Dynamics", 24h, M2, Sorbonne Université, France

Jean Clairambault: teaching in Spring school "Mathematical Modelling of Tumour Growth and Therapy" (4 one-hour lectures), UAB, Barcelona, April 2018 (see above); Fall teaching (3 one-hour lectures), Politecnico di Torino, October 2018 (see above)

Licence : Pierre-Alexandre Bliman, "Calculus 3", 90h, L2 and "Analyse", 60h, L3, Fundação Getulio Vargas, Rio de Janeiro, Brazil

Master : Diane Peurichard, "Fondements des méthodes numériques", 20h, "Calcul matriciel numérique" 20h

Licence : Diane Peurichard, Licence: "Introduction to Python" 20h

Master : Dirk Drasdo, "Agent-based models of tissue organization", UPMC M2 course, Paris **24 h / yr**

10.2.2. Supervision

PhD : Wen Sun, "A study of interacting stochastic networks : large scale, long time behavior and fluctuations", Sorbonne Université, June, 11, 2018, Philippe Robert

PhD : Veronica Quintuna Rodriguez, "New Network / IT Command: Virtualized Function Performance for a Programmable Infrastructure", Sorbonne Université, October 3, 2018, Fabric Guillemin and Philippe Robert.

PhD in progress : Gaëtan Vignoud, "Plasticity of Stochastic Neural Networks", September 1st, 2018, Philippe Robert, Laurent Venance

Jean Clairambault: supervision of the M2 ('mathematics of modelling') internship of Loïs Naudin: "Modélisation du métabolisme énergétique tumoral glycolytique vs. respiratoire oxydatif" and of two groups of four students of the L3 unit 3M101: "Excitabilité cellulaire : une première approche des systèmes dynamiques" and "Étude des équations de Lotka-Volterra"

Jean Clairambault: Supervision of PhD students Camille Pouchol (with Michèle Sabbah and Emmanuel Trélat, ED 386, Sorbonne Univerité, thesis defence June 2018: "Analysis, control and optimisation of PDEs, application to the biology and therapy of cancer" [1] and Ghassen Haddad (ED 386, Sorbonne Université, and Université Tunis-El Manar, co-supervisor: Slimane Ben Miled), thesis defence planned in December 2018: "Optimisation du traitement du cancer")

Internship: Supervision of Valeria Caliaro, M1 student from University of Verona (3months internship) on interacting particle networks, Diane Peurichard

Internship: Supervision of S. Zhenyu, M1 student from LJLL, Sorbonne University (3months internship) on coarse graining of a fluid filled with obstacles, Diane Peurichard

Diane Peurichard, Luis Almeida, Benoit Perthame: supervision of project CEMRACS (6weeks)

PhD defended: Noémie Boissier PhD defence in June 2018, supervision by D. Drasdo and I. Vignon-Clementel

PhD in progress: Adrian Friebel, "Software of image processing and analysis of liver tissue at histological scales", supervision by D. Drasdo and S. Hoehme

Internship: Ismael Gonzalez Valverde,PhD student from Zaragoza by Paul Van Liedekerke and Dirk Drasdo.

10.2.3. Juries

- Ph.D thesis of C. Pouchol, defended on June 29th: participation in the committee of J. Clairambault and B. Perthame.
- Ph.D thesis of M. Strugarek, defended on September 7th: participation in the committee of M. Doumic and B. Perthame.
- Dirk Drasdo was in 2018 member of the ANR-grant selection committee for mathematical modeling in medicine and biology.

10.3. Popularization

10.3.1. Interventions

- Marie Doumic: participation in a round table on December 13th, in Forum Emploi Maths, La Villette, Paris; Participation in a round table on "Science Meets Medicine", May 29th, in Vienna; presentation to a 12-year old class of pupils of mathematics for biology.
- Several Mamba members have taken part to the activities of the year of mathematical biology declared by European Mathematical Society.
- Dirk Drasdo on liver research and EASL: https://www.inria.fr/centre/paris/actualites/dirk-drasdo-et-ses-recherches-sur-le-foie

REO Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. Member of the Organizing Committees

- Laurent Boudin
  - Member of the organizing committee of the 7th "Forum Emploi Maths", December 2018, Paris
  - Member of both Boards of Mathematics Licence and Master, Sorbonne Université
  - Member of the IREM (Institutes for Research on Mathematics Teaching) Scientific Committee
  - Member of the SMAI (French Society for applied and industrial mathematics) Teaching Committee.
- Céline Grandmont
  - Co-organizer of Inria-LJLL meeting in scientific computing
  - Co-organizer of the CEMRACS 2018
- Irene Vignon Clementel
  - Minisymposium with F. Van de Vosse (Eindhoven U.) at WCCB, Dublin, Ireland.
  - Minisymposium at GDR mecabio January, Toulouse, France.
  - Session to foster collaboration between scientists and medical doctors at the Inria/CentraleSupelec/APHP meeting, November 12, Paris, France.

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- Irene Vignon Clementel
  - Steering committee, multidisciplinary workshop on surgical innovation WIC, 23-25 June, Cabourg, France
  - Programme committee member, Computational and Mathematical Biomedical Engineering Conference
  - Conference steering committee, International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease

10.1.2.2. Member of the Editorial Boards

- Jean-Frédéric Gerbeau
  - Member of the editorial board of the SIAM Journal of Scientific Computing (SISC).
  - Series editor of "SEMA SIMAI Series", Springer.
  - Member of the editorial board of Journal Advances in Computational Mathematics (ACOM), Springer
  - Member of the editorial board of International Journal for Numerical Methods in Biomedical Engineering (IJNMBE), Wiley.
  - Member of the editorial board of Communications in Applied and Industrial Mathematics, SIMAI/De Gruyter.

- – Member of the editorial board of Journal for Modeling in Ophthalmology, Kugler.
- Céline Grandmont
  - – Member of the editorial board of Mathematical Modelling of Natural Phenomena
- Marc Thiriet
  - – Member of the editorial board of Digital Medicine
  - – Member of the editorial board of Computer Methods in Biomechanics and Biomedical Engineering–Imaging and Visualization
- Irene Vignon Clementel
  - – Associate Editor of the International Journal for Numerical Methods in Biomedical Engineering

10.1.3. Leadership within the Scientific Community

- Jean-Frédéric Gerbeau
  - – Elected member of the Board of Directors of SMAI (French Society for Industrial and Applied Mathematics), in charge of the SMAI publications (M2AN, COCV, etc.)

10.1.4. Research Administration

- Muriel Boulakia
  - – Supervisor of the teaching of mathematics at the engineer school Polytech Sorbonne
- Miguel Ángel Fernández Varela
  - – Deputy Head of Science, Inria Paris
  - – Member of the Scientific Positions Commission, Inria Paris
  - – Member of the Inria Evaluation Committee
- Jean-Frédéric Gerbeau
  - – Head of science, Inria Paris (until Sept. 2017)
  - – Member of the scientific committee of Labex NUMEV, Montpellier.
  - – Service activity abroad: member of the Reference Committee of the PhD program Mathematical Models and Methods in Engineering (Politecnico di Milano, Italy).
- Céline Grandmont
  - – Member of the Inria Evaluation Committee
  - – Member of the Inria Parity Committee
- Irene Vignon-Clementel
  - – Technology grant committee (Commission de développement technologique), Inria Paris center
  - – Committee member for PhD students at Inria "Commission consultative des doctorants", since July 2016.
  - – Mediator between PhD students and their supervisors for Inria Paris

10.1.5. Conferences

- Ludovic Boilevin-Kayl
  - – Contributed talk in minisymposium, 13th World Congress on Computational Mechanics, July 22th – 27th, 2018, New York City, USA.
  - – Seminar, Jacques-Louis Lions Laboratory In-House Day, Sorbonne Université, April 5, 2018, Paris, France.
- Laurent Boudin

- Seminar, Lab. de mathématiques appliquées du Havre, Univ. Le Havre Normandie, February 2018, Le Havre, France
- Seminar, Cemracs 2018, August 2018, Marseille, France
- Seminar of Partial Differential Equations, IRMA, Univ. Strasbourg, November 2018, Strasbourg, France

- Muriel Boulakia
  - congres Inverse Problems, Modeling and simulation, Malta, May 2018
  - Inria-LJLL meeting in scientific computing, October 2018
- Miguel Ángel Fernández Varela
  - Keynote talk in minisymposium, 13th World Congress on Computational Mechanics, July 22-27, 2018, New York City, USA.
- Felipe Galarce Marin
  - Contributed talk in minisymposium, 8th World Congress of Biomechanics, July 8-12, 2018, Dublin, Ireland
- Jean-Frédéric Gerbeau
  - Contributed talk in minisymposium, 8th World Congress of Biomechanics, July 8-12, 2018, Dublin, Ireland
  - Keynote talk in minisymposium, 6th European Conference on Computational Mechanics, June 11-15, 2018, Glasgow, UK
- Céline Grandmont
  - Seminar EDP, Nice, Jan. 2018
  - Seminar, Nantes, May 2018
  - Colloquium, Paris 5 Univ., Nov. 2018
  - Invited Speaker, Workshop Interfaces entre mathématiques et biologie, Nancy Univ., Nov. 2018
- Florian Joly
  - Weekend d'Innovation Chirugicale, Cabourg, Jun. 2018
  - Journées du GDR MécaBio à Montpellier, Nov. 2018
- Damiano Lombardi
  - CMM-Fields-Inria Workshop on Mathematics for Medicine, Toronto (Canada)
  - VPH 2018 Zaragoza (Spain), minisymposium of data assimilation
  - Workshop of matematics for biomedicine, Roma (Italy)
  - Ncardia workshop, Cologne (Germany)
- Marc Thiriet
  - Invited lecture, 15th International Symposium Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization March 27th – 30th, 2018, Lisbon, Portugal
  - Invited lecture, 2nd International Conference on Digital Medicine, May 25–27, 2018, Guangzhou, China
  - Invited lecture, France–Taiwan Science Festival, Sept. 14, 2018, Taipei, Taiwan
- Alexandre This
  - INdAM Workshop "Mathematical and Numerical Modeling of the Cardiovascular System",April 16 - 19, 2018, Rome, Italy.

- – Contributed talk in minisymposium, 8th World Congress of Biomechanics, July 8 - 12, 2018, Dublin, Ireland.
- Marina Vidrascu
  - – Contributed talk in minisymposium, 13th World Congress on Computational Mechanics, July 22th – 27th, 2018, New York City, USA.
- Irene Vignon Clementel
  - – Seminar (biomechanics), Ecole Polytechnique, Nov 16th, Palaiseau, France
  - – Keynote lecture at the Workshop on Advanced Computational Biomechanics in Cardio-Vascular Surgery, Nov 8th, Saint-Etienne, France
  - – Talk and poster, World conference of biomechanics, July 15-19 2018, Dublin, Ireland
  - – Keynote, SBMC (systems biology in mammalian cells) conference, July 4-6, Brehmen, Germany
  - – Invited talk, Weekend de l'innovation chirurgicale (WIC), Jun 22-24, Cabourg, France.
  - – Invited talk, MRI and modeling workshop, June 22nd, Saclay, France
  - – Poster presentation, EASL international conference (clinical liver conf.), April 11-15, Paris, France
  - – Invited talk, GDR MecaBio (national biomechanics conference), Jan 10-12th, Toulouse, France

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence:

- Laurent Boudin
  - – Introduction to series for signal theory, 18h, L2, UPMC
  - – Calculus, 38.5h, L1, UPMC
  - – Numerical methods for ODE, 53h, L3, UPMC
- Muriel Boulakia
  - – Projects on differential equations, 34h, L3, Polytech Sorbonne, Sorbonne University
  - – Nonlinear systems and optimization, 35h, L3, Polytech Sorbonne, Sorbonne University
  - – Numerical approximation of functions, 36h, L3, Sorbonne University
- Jean-Frédéric Gerbeau
  - – Control of dynamical systems, 32h, L3, Ecole Polytechnique.
- Damiano Lombardi
  - – Analysis and Scientific Computing, 32h, L3, ENPC
  - – Numerical Methods, 48h, L3, Polytech'Paris
  - – Reduced models for problems in high dimension, 18h, ENPC, L3
- Irene Vignon Clementel
  - – Numerical Methods for Ordinary Differential Equations, 24h ETD, L3, UPMC
  - – Numerical simulations of blood flow, 2h30, as part of the undergraduate "continuum mechanics", AgroParisTech

Master:

- Laurent Boudin

- – Basics for numerical methods, 29h, M1, UPMC
- – Student advising for orientation and professional insertion, 20h, M1, UPMC
- Muriel Boulakia
  - – Preparatory course for teaching admission examination "Agrégation", 40h, M2, Sorbonne University
- Miguel Ángel Fernández Varela
  - – Modeling and numerical methods for hemodynamics, 30h, M2, UPMC
- Irene Vignon Clementel
  - – MEC 550 - Biofluid Mechanics and Mass Transport, M2, 1h30, Ecole Polytechnique (engineering school), France
  - – Annual ZCCE workshop, M2, 1h30, College of Engineering, Swansea University
  - – Innovations thrapeutiques: du fondamental à l'appliqué, bioengineering module, M2, 1h, Paul Brousse Hospital, France
  - – IFSBM (Institut de Formation Supérieure BioMédicale), M2, 1h30, Marie Lannelongue Hospital, France
  - – M2 Sciences Chirurgicales de l'Université Paris Sud, 1h30, France

10.2.2. Supervision

PhD in progress: Ludovic Boilevin-Kayl, Modeling of cardiac implantable devices, since February 2016. Supervisors: J.-F. Gerbeau & M.A. Fernández Varela

PhD in progress: Alexandre This, Fusion data/simulation for the assessment of mitral regurgitation, since January 2016. Supervisor: J.-F. Gerbeau

PhD in progress: Chen-Yu Chiang, Transport on biological systems and some applications, since February 2016. Supervisor: M. Thiriet

PhD in progress: Felipe Galarce, Enhancing hemodynamics measurements with mathematical modeling, since December 2017. Supervisors: J.-F. Gerbeau & D. Lombardi.

PhD in progress: Fannie Maria Gerosa, Immersed boundary methods for fluid-structure interaction with topological changes, since January 2018. Supervisor: M.A. Fernández Varela

PhD in progress: David Michel, Mathematical analysis of fluid-kinetic coupled models, since September 2018. Supervisors: L. Boudin & A. Moussa

PhD in progress: Nicolas Golse, Contributions of anatomical and hemodynamic modeling of the liver in the anticipation, realization and teaching of liver surgery, since November 2018. Supervisors: E Vibert and I. Vignon-Clementel.

10.2.3. Juries

- Laurent Boudin
  - – PhD committee: Nisrine Outada, Sorbonne Université & Caddi Ayad University, Gentien Marois, Insa Toulouse, Onera & CEA
  - – HDR committee: Ayman Moussa, Sorbonne Université
- Muriel Boulakia
  - – PhD committee: Pierre-Elliott Bécue, Inria Bordeaux Sud-Ouest; Guillaume Delay, Univ Toulouse (referee); Sourav Mitra, Univ. Toulouse; Josef Kolumban, Univ. Dauphine; Fabien Wahl, Inria Paris
  - – Hiring committee: CDI researcher, Univ. Bordeaux
- Miguel Angel Fernández Varela

– PhD committee: Rabii Mlika, INSA Lyon (president), Guillaume Delay, Universtié de Toulouse (member), Karol Cascavita, ENPC (member)

– Hiring committee: Inria (DR2).

- Céline Grandmont

  – Member of the "agrégation" jury in mathematics.

  – Hiring committees: Inria Rennes (CR2), Inria CRCN.

  – PHD committee: J.-C. Casanova, Toulouse University (referee), J. Kolomban, Dauphine Univ. (president), S. Girel, Lyon Univ. (referee), C. Taing, Sorbonne Univ.

  – HDR committee: A. Moussa, Sorbonne Univ.

- Irene Vignon Clementel

  – Hiring committee: Nice University (MdC), Inria (CRCN), Inria (DR2, admission).

  – PHD committee: Clara Jaquet, ESIEE (member), Jules Dichamp, IMFT (referee) Noémie Boissier, UPMC (co-advisor) Mohamed Bekheit, U. Paris-Saclay (president).

10.3. Popularization

10.3.1. Interventions

- Céline Grandmont

  – Conference "Métier": Master Maths students, UPMC, Oct 2018

  – Conference at "Rendez-vous des Jeunes Mathématiciennes et Informaticiennes", Inria Oct. 2018

  – High school discussion on scientific career, 18th January, Blanche de Castille, Le Chesnay, France

  – High school conference, 9th January, Blanche de Castille, Le Chesnay, France

<p style="color:red;text-align:center;font-weight:bold;">SERENA Project-Team</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

Géraldine Pichot was the co-chair of the Computational Methods in Water Resources 2018 conference.

Ibtihel Ben Gharbia and Martin Vohralík have organized a 1-day workshop Journée contrat cadre IFP Energies Nouvelles/Inria.

10.1.1.2. Member of the Organizing Committees

Michel Kern was the member of the local organizing committee of the Computational Methods in Water Resources 2018 conference.

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

Alexandre Ern is a member of the Scientific Committee for the European Finite Element Fair.

Michel Kern was a member of the program committee for the JCAD 2018 (Journées Calcul et Données, Lyon October 2018).

Géraldine Pichot co-organized a mini-symposium, entitled "Numerical methods for processes in fractured media" at the InterPore 2018 - 10th Annual Meeting and Jubilee, New Orleans, United States, June 2018.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

François Clément was a member of the editorial board of Matapli until June 2018.

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 served as reviewer for dozens of papers in different journals.

Michel Kern was a reviewer for OGST, BIT, Mathematics and Computers in Simulation, Computers and Geosciences.

Martin Vohralík served as reviewer for dozens of papers in different journals.

10.1.4. Invited Talks

Alexandre Ern gave an invited lecture at the BAIL 2018 conference in Glasgow (*International conference on Boundary and Interior Layers*).

Géraldine Pichot was an invited speaker at the InterPore 2018 - 10th Annual Meeting and Jubilee, New Orleans, United States, June 2018 and at the Workshop Reactive Flows in Deformable, Complex Media, Oberwolfach, Germany, August 2018.

Martin Vohralík was an invited speaker at the workshop FEEC and High Order Methods, Oslo, Norway, the Seventh Conference on Finite Difference Methods: Theory and Applications, Lozenetz, Bulgaria, and the Workshop Reactive Flows in Deformable, Complex Media, Oberwolfach, Germany, August 2018.

10.1.5. Leadership within the Scientific Community

Alexandre Ern is the leader of the Master Mathématiques et applications, Ecole nationale des ponts et chaussées.

M. Kern is a member of the Scientific Committee of Orap (ORganisation Associative du Parallélisme), of the steering committee of Géosciences franciliennes of the Scientific Board of GDR Calcul, and of the jury and executive board of Label C3I.

M. Vohralík is a member of the steering committees of Géosciences franciliennes and Summer schools CEA–EDF–Inria.

M. 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. Scientific Expertise

M. Kern is a reviewer for the German Supercomputing Center JARA program.

10.1.7. 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.

François Clément was the *AMIES facilitator* of the Inria Research Center of Paris until June 2018.

M. Kern is Deputy Director of Maison de la Simulation, a joint project between CEA, CNRS, Inria, Université de Paris 11, and Université de Versailles, focused on applications of high end computing.

M. Kern is a member of the *Comité de site* of the Inria center of Paris.

Géraldine Pichot was a member of the *Comité local d'hygiène, de sécurité et des conditions de travail* of the Inria Research Center of Paris until Sep 2018.

Géraldine Pichot was a member of the *Commission de développement technologique* of the Inria Research Center of Paris until March 2018.

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, Optimal Control, 20h, L3, Ecole Polytechnique, France.

Licence : Alexandre Ern, Partial differential equations, 10h, L3, Ecole nationale des ponts et chaussées, France.

Master : Alexandre Ern, Discontinuous Galerkin methods, 20h, M2, Sorbonne University, France.

Master: Michel Kern, Inverse Problems, 26h, M1, Mines-ParisTech, France

Master: Michel Kern, Advanced Numerical Analysis, 30h, M2, Institut Galilée, Université Paris 13, France

Master: Michel Kern, Subsurface flows, 30h (with E. Mouche), M2, Université Paris Saclay, France

Master: Martin Vohralík, A posteriori error estimates for efficiency and error control in numerical simulations, 36h, M2, Charles University, Prague, Czech Republic.

10.2.2. Supervision

PhD: Amina Benaceur, Model reduction for nonlinear thermics and mechanics, 21 Dec 2018, Alexandre Ern.

PhD: Karol Cascavita, Hybrid discretization methods for Signorini contact and Bingham flow problems, 18 Dec 2018, Alexandre Ern and Xavier Chateau.

PhD in progress: Jad Dabaghi, A posteriori error estimates and adaptive stopping criteria for formulations with complementarity constraints, 01 November 2015, Martin Vohralík and Vincent Martin.

PhD in progress: Patrik Daniel, Adaptive hp-finite elements with guaranteed error contraction and inexact multilevel solvers, 01 October 2015, Martin Vohralík and Alexandre Ern.

PhD in progress: Frédéric Marazzato, Discrete element methods for fracture and fragmentation, 01 October 2016, Alexandre Ern.

PhD in progress: Riccardo Milani, Compatible Discrete Operator schemes for Navier–Stokes equations, 01 October 2017, Alexandre Ern.

PhD in progress: Ani Miraci, Robust a posteriori error control and adaptivity with inexact solvers, 01 October 2017, Martin Vohralík and Alexandre Ern.

PhD in progress: Nicolas Pignet, Hybrid High-Order methods for nonlinear mechanics, 01 November 2016, Alexandre Ern.

10.2.3. Juries

Alexandre Ern, Referee, PhD A. Bensalah, ENSTA ParisTech, Jul 2018.

Alexandre Ern, Examiner, PhD G. Morel, Sorbonne University, Sep 2018.

Alexandre Ern, Referee, PhD P. Vega, University of Concepcion, Chile, Nov 2018.

Alexandre Ern, Referee, PhD G. Pennesi, Politecnico Milano, Italy, Dec 2018.

Michel Kern, Examiner, HDR J. Carrayrou, University of Strasbourg, 21 March 2018.

Martin Vohralík, Referee, PhD O. Gorynina, Université de Bourgogne Franche-Comté, Besançon, Feb 2018.

Martin Vohralík, Examiner, PhD M. Botti, Université de Montpellier, Nov 2018.

10.3. Popularization

10.3.1. Interventions

- M. Kern: présentation "Des mathématiques pour modéliser et simuler le monde", Lycée des Pierres–Vives (Terminale S), Carrières–sur–Seine, May 2018.

- M. Vohralík: "Advancing scientific knowledge together to support innovation", dissemination video, IFP Energies Nouvelles. Available here. February 2018.

Major publications by the team in recent years:

<h1 style="text-align: center; color: red;">ALPINES Project-Team</h1>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- Xavier Claeys was co-chair of the "Symposium of the International Association for Boundary Element Methods" in June 26-28 2018, an international conference that took place in Jussieu campus of Sorbonne Université and hosted 140 participants.
- Frederic Hecht organized the 10th FreeFem++ days (December 12-14, 2018, Paris), https://freefem.org/ff-days/

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- Laura Grigori, March 2014 – current. Member of the editorial board for the SIAM book series Software, Environments and Tools. See http://bookstore.siam.org/software-environments-and-tools/.
- Laura Grigori, January 2016 – current. Associate Editor, SIAM Journal on Scientific Computing.
- Laura Grigori, January 2017 – current. Associate Editor, SIAM Journal on Matrix Analysis and Applications.
- Laura Grigori, January 2016 – current. Editorial board, Numerical linear algebra with applications Journal, Wiley.
- Frédéric Nataf, January 2015 – current, Editorial board, Journal of Numerical Mathematics, de Gruyter.

10.1.3. Invited Talks

- Xavier Claeys was invited speaker at the second national congress of the Société Mahématique de France (SMF) in June 2018.
- Laura Grigori was
  - Keynote speaker, International Symposium on Computational Science at Scale, September 2018, Erlangen-Nurnberg Germany.
  - Invited plenary speaker, SIAM Conference on Applied Linear Algebra, Hong Kong May 2018.
- Frédéric Nataf was invited speaker at
  - Workshop for Robert Scheichl's farewell, Bath University, November 2018.
  - NUMACH 2018: Numerical Methods for Challenging Problems, Mulhouse (France) July 2018.
  - 10th International Workshop on Parallel Matrix Algorithms and Applications (PMAA'18) in ETH Zurich (Switzerland) June 2018.
- Frédéric Hecht was invited speaker at
  - XVIII Spanish-French school Jacques-Louis Lions about numerical simulation in physics and engineering, Las Palmas de Gran Canaria, 25-29 June 2018.

10.1.4. Leadership within the Scientific Community

- Laura Grigori, member elected of SIAM Council, January 2018 - December 2020, the committee supervising the scientific activities of SIAM. Nominated by a Committee and elected by the members of SIAM.
- Laura Grigori, member of the PRACE (Partnership for Advanced Computing in Europe) Scientific Steering Committee, September 2016 - current.
- Laura Grigori and Frédéric Hecht are coordinators of the High Performance in Scientific Computing Major of second year of Mathematics and Applications Master, Sorbonne University.

10.1.5. Scientific Expertise

- Laura Grigori: November 2015 - current, expert to the Scientific Commission of IFPEN (French Petroleum Institute). Evaluation of research programs, PhD theses, work representing a total of 5 days per year.

10.1.6. Research Administration

- Laura Grigori is vice-president of the committee CE46 of ANR, September 2017 - July 2018.
- Frédéric Nataf is president of the committee CE40 of ANR, September 2017 - current.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master 2: Laura Grigori, Course on *High performance computing, large scale linear algebra, and numerical stability* (*Calcul haute performance, algorithmes parallèles d'algèbre linéaire à grande echelle, stabilité numérique* in french), https://who.rocq.inria.fr/Laura.Grigori/TeachingDocs/UPMC_Master2/Spr2018.html, Master 2nd year, Mathematics & Applications, UPMC, 24 hours of lectures per year.

Master 2: Laura Grigori, Winter 2018, Participation in the course on High Performance Computing given at UPMC, Computer Science, intervention for 8 hours per year.

Master 2: Laura Grigori, Course on *High performance computing for numerical methods and data analysis*, https://who.rocq.inria.fr/Laura.Grigori/TeachingDocs/UPMC_Master2/HPC_MN_DA.html, Master 2nd year, Mathematics & Applications, UPMC, 24 hours per year.

Master 1: Xavier Claeys, supervision of a student project for a group of 4 students in the curriculum Polytech, 40hrs, UPMC.

Master 1: Xavier Claeys, Initiation to C++, 36 hrs of programming tutorials in C++, UPMC.

Master 1: Xavier Claeys, Computational Linear Algebra, 32 hrs of lectures, UPMC.

Master 1: Xavier Claeys, Approximation of EDPs, 24 hrs of programming tutorials in Python, UPMC.

Master 2: Frédéric Nataf, Course on Domain Decomposition Methods, UPMC

Master 1: Frédéric Hecht, Initiation au C++, 24hrs, UPMC, France

Master 2: Frédéric Hecht, Des EDP à leur résolution par la méthode des éléments finis (MEF), 36hrs, M2, UPMC, France

Master 2: Frédéric Hecht, Numerical methods for fluid mechanics, 10hrs, UPMC, France

Master 2: Frédéric Hecht, Calcul scientifique 3 / projet industriel FreeFem++, 28hrs, M2, UPMC, France

Master 2: Frédéric Hecht, Ingénierie 1 / Logiciel pour la simulation (FreeFem++), 21hrs, UPMC, France

Master 2: Frédéric Hecht, Ingénierie 2 / Projet collaboratif, 21hrs, UPMC, France

10.2.2. Supervision

PhD: Alan Ayala, Complexity reduction methods applied to the rapid solution to multi-trace boundary integral formulations, Sorbonne Université, November 2018 (funded by NLAFET H2020 project), co-advisors Xavier Claeys and Laura Grigori.

PhD: Hussam Al Daas, Solving linear systems arising from reservoirs modelling, Sorbonne Université, December 2018, (funded by contract with Total), advisor Laura Grigori.

PhD in progress : Sebastien Cayrols, since October 2013 (funded by Maison de la simulation), adivsor Laura Grigori.

PhD in progress: Olivier Tissot, since October 2015 (funded by NLAFET H2020 project), advisor Laura Grigori.

PhD in progress: Rim El Dbaissy, since November 2015 (funded by Univ. St Joseph, Liban), advisors Tony Sayah, Frédéric Hecht.

PhD in progress: Pierre Marchand, since October 2016 (funded by ANR NonLocalDD project), advisors Xavier Claeys and Frédéric Nataf.

PhD in progress: Zakariae Jorti, since February 2016 (funded by IFPen), advisor Laura Grigori.

PhD in progress: Igor Chollet, since October 2017 (funded by ICSD), advisors Xavier Claeys, Pierre Fortin, Laura Grigori.

PhD in progress: Thanh Van Nguyen, since November 2017 (funded by ANR CinePara), advisor Laura Grigori.

10.2.3. Juries

- Xavier Claeys was examiner at the PhD defense of Wen Xu on the 17th of July 2018 at École Centrale Supélec. Title of the thesis: "Relevant numerical methods for mesoscale wave propagation in heterogeneous media".
- Laura Grigori was examiner of the Phd defense of Gilles Moreau, ENS Lyon, December 2018.
- Laura Grigori was president of the HDR habilitation defense of Pierre Fortin, Sorbonne University, July 2018.
- Laura Grigori was examiner of the Phd defense of Amanda Bienz, June 2018, University of Illinois at Urbana Champaign.
- Frédéric Nataf was examiner at the Phd defense of Louis Viot, 2018, ENS Cachan
- Frédéric Nataf was president of the PhD defense of H. Al Daas, 2018, UPMC
- Frédéric Hecht was referee of the HDR habilitation defense of S. Glockner, 2018, I2M, Bordeaux
- Frédéric Hecht was referee of the PhD defense of G. Dollé, 2018, Univ. Strasbourg
- Frédéric Hecht was examiner at the Phd defense of G. Morel, 2018, Sorbonne University

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Laura Grigori is vice-president of the Evaluation Commission of Inria, March 2018 - current.

<p style="text-align: center; color: red;">**DELYS Team**</p>

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. General Chair, Scientific Chair

Marc Shapiro, Organiser of Dagstuhl Workshop on "Data Consistency in Distributed Systems: Algorithms, Programs, and Databases" (19-0117), February 2018.

Swan Dubois, PC Track Chair (track A: Theoretical and Practical Aspects of Stabilizing Systems) of the 20th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS 2018).

8.1.1.2. Member of the Organizing Committees

- Marc Shapiro, Steering Committee of Workshop on Principles and Practice of Consistency for distributed Data (PaPoC).

- Franck Petit, Steering Committee of the *International Symposium on Stabilization, Safety, and Security of Distributed Systems* (SSS).

- Pierre Sens, since 2014: Member of Steering Committee of International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD).

8.1.2. Scientific Events Selection

8.1.2.1. Member of Conference Program Committees

Pierre Sens, 28th International Symposium on Software Reliability Engineering (ISSRE 2018), 17th IEEE International Symposium on Network Computing and Applications (NCA 2018), 37th IEEE International Symposium on Reliable Distributed Systems (SRDS 2018), 32rd International Symposium on DIStributed Computing (DISC 2018).

Marc Shapiro, Program Committee of Int. Conf. on Middleware (Middleware 2018).

Marc Shapiro, Program Committee of European Conference on Computer Systems (EuroSys 2019).

Marc Shapiro, Program Committee of Symposium on Principles of Distributed Computing (PODC 2019).

Dimitri Vasilas, Shadow Program Committee of European Conference on Computer Systems (EuroSys 2019).

Franck Petit, 20th Workshop on Advances in Parallel and Distributed Computational Models (APDCM 2018), 24th Conférence d'informatique en Parallélisme, Architecture et Système (COMPAS 2018), 20th Rencontres Francophones sur les Aspects Algorithmiques de Télécommunications (ALGOTEL 2018). Tutorial chairman of Latin-American Symposium on Dependable Computing (LADC 2018).

Luciana Arantes, 17th IEEE International Symposium on Network Computing and Applications (NCA 2018), 14th European Dependable Computing Conference (EDCC 2018), Latin-American Symposium on Dependable Computing (LADC 2018), Conférence d'informatique en Parallélisme, Architecture et Système (COMPAS 2018) .

Swan Dubois, PC member of the ACM Symposium on Principles of Distributed Computing (PODC 2018).

8.1.3. Journal

8.1.3.1. Member of Editorial Boards

Pierre Sens, Associate editor of International Journal of High Performance Computing and Networking (IJHPCN)

Franck Petit, Special Issue on Stabilization, Safety, and Security, Journal on Theory of Computing Systems (ToCS).

Marc Shapiro, Associate Editor for Letters of the IEEE Computer Society (LOCS).

8.1.3.2. Reviewer, Reviewing Activities

Pierre Sens, reviewer Journal of Parallel and Distributed Systems (JPDC), and IEEE Transactions on Parallel and Distributed Systems (TPDS).

Franck Petit, reviewer Journal of the ACM (JACM), Journal of Parallel and Distributed Systems (JPDC), and the International Colloquium on Structural Information and Communication Complexity (SIROCCO 2018).

Luciana Arantes, reviewer Journal of Parallel and Distributed Systems (JPDC), and IEEE Transactions on Parallel and Distributed Systems (TPDS).

Swan Dubois, reviewer Theoretical Computer Science (TCS), ACM Transactions on Computer Systems (TOCS), and The International Symposium on DiStributed Computing (DISC 2018).

8.1.4. Invited Talks

Pierre Sens, *Fault tolerance in dynamic distributed systems*. Invited keynote speaker, "Insights for the Future of Computing", LIG, Grenoble, Avril 2018.

Franck Petit, *Robustness: a New Form of Heredity Motivated by Dynamic Networks*, Invited speaker, 9th Workshop on GRAph Searching, Theory & Applications (GRASTA 2018), Berlin, Germany, Sept. 2018.

Marc Shapiro, *Just-Right Consistency: As available as possible, As consistent as necessary, Correct by design*. Invited speaker, Verification of Distributed Systems workshop, Essaouira, Morocco, May 2018.

Marc Shapiro, *Just-Right Consistency: As available as possible, As consistent as necessary, Correct by design*. Keynote presentation, DotScale, the European Tech Conference on Scalability, Distributed Systems & DevOps, Aubervillers, June 2018.

Marc Shapiro, *Just-Right Consistency*. Keynote presentation, Conf on Advances and Computing and Communication Engineering, Paris, June 2018.

Marc Shapiro, *Just-Right Consistency: As available as possible, Synchronous when necessary, Correct by design*. Invited Keynote talk, I/O Labs annual workshop, Châtillon, France, Oct. 2018.

Marc Shapiro, *Life after consistency*. Workshop of the EuroSys Program Committee, Dec. 2018.

8.1.5. Scientific Expertise

Pierre Sens, Project in Indo-French Centre for the Promotion of Advanded Research

Marc Shapiro, member of Panel PE6 (Computer Science) of European Research Council Starting Grants 2018.

8.1.6. Research Administration

Franck Petit, since 2014: deputy director of the LIP6 laboratory

Pierre Sens, since 2016: Member of Section 6 of the national committee for scientific research CoNRS

Pierre Sens, since 2012: Member of the Executive Committee of Labex SMART, Co-Chair (with F. Petit) of Track 4, Autonomic Distributed Environments for Mobility.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Julien Sopena is Member of "Directoire des formations et de l'insertion professionnelle" of Sorbonne Université, France

Master: Julien Sopena is responsible of Computer Science Master's degree in Distributed systems and applications (in French, SAR), Sorbonne Universités, France

Master: Luciana Arantes, Swan Dubois, Jonathan Lejeune, Franck Petit, Pierre Sens, Julien Sopena, Advanced distributed algorithms, M2, Sorbonne Université, France

Master: Jonathan Lejeune, Designing Large-Scale Distributed Applications, M2, Sorbonne Université, France

Master: Maxime Lorrillere, Julien Sopena, Linux Kernel Programming, M1, Sorbonne Université, France

Master: Luciana Arantes, Swan Dubois, Jonathan Lejeune, Pierre Sens, Julien Sopena, Operating systems kernel, M1, Sorbonne Université, France

Master: Luciana Arantes, Swan Dubois, Franck Petit, Distributed Algorithms, M1, Sorbonne Université, France

Master: Jonathan Lejeune, Julien Sopena, Client-server distributed systems, M1, Sorbonne Université, France.

Master: Julien Sopena, Marc Shapiro, Ilyas Toumlilt, Francis Laniel. Kernels and virtual machines (*Noyaux et machines virtuelles*, NMV), M2, Sorbonne Université, France.

Licence: Pierre Sens, Luciana Arantes, Julien Sopena, Principles of operating systems, L3, UPMC Sorbonne Université, France

Licence: Swan Dubois, Initiation to operating systems, L3, Sorbonne Université, France

Licence: Swan Dubois, Multi-threaded Programming, L3, Sorbonne Université, France

Licence: Jonathan Lejeune, Oriented-Object Programming, L3, Sorbonne Université, France

Licence: Franck Petit, Advanced C Programming, L2, Sorbonne Université, France

Licence: Swan Dubois, Julien Sopena, Introduction to operating systems, L2, Sorbonne Université, France

Licence: Mesaac Makpangou, C Programming Language, 27 h, L2, Sorbonne Université, France

Ingénieur 4ème année : Marc Shapiro, Introduction aux systèmes d'exploitation, 26 h, M1, Polytech Sorbonne Université, France.

Licence : Philippe Darche (coordinator), Architecture of Internet of Things (IoT), 2 × 32h, L3, Institut Universitaire Technologique (IUT) Paris Descartes, France.

Engineering School: Philippe Darche (coordinator), Solid-State Memories, 4th year, ESIEE, France.

DUT: Philippe Darche (coordinator), Introduction to Computer Systems - Data representation, 60h, Institut Universitaire Technologique (IUT) Paris Descartes, France.

DUT: Philippe Darche (coordinator), Computer Architecture, 32h, Institut Universitaire Technologique (IUT) Paris Descartes, France.

DUT: Philippe Darche (coordinator), Computer Systems Programming, 80h, Institut Universitaire Technologique (IUT) Paris Descartes, France.

8.2.2. Supervision

PhD: Florent Coriat, "Géolocalisation et routage en situation de crise", Dec. 2018, Sorbonne Univ., Anne Fladenmuller (NPA-LIP6) and Luciana Arantes.

PhD: Lyes Hamidouche, "Data replication and data sharing in mobile networks", Sorbonne Univ., CIFRE, Apr. 2018, Sébastien Monnet, Pierre Sens, Dimitri Refauvelet (Magency).

PhD: Denis Jeanneau, "Failure detectors in Dynamic Systems," Sorbonne Université, Dec. 2018, Luciana Arantes, Pierre Sens.

PhD: B Ngom. "FreeCore: a system for indexing document summaries on a Distributed Hash Table (DHT)," Sorbonne Université, Jul. 2018, Mesaac Makpangou.

PhD: Alejandro Z. Tomsic, Sorbonne Univ., defended Apr. 2018, Marc Shapiro. "Computing over widely-replicated data in a hybrid cloud."

PhD: Gauthier Voron, "Big-Os : un OS pour les grands volumes de données,", Sorbonne Univ., Mar. 2018, Gaël Thomas, Pierre Sens.

PhD in progress: João Paulo de Araujo, "L'exécution efficace d'algorithmes distribués dans les réseaux véhiculaires", funded by CNPq (Brésil), since Nov.2015, Pierre Sens and Luciana Arantes.

PhD in progress: Sébastien Bouchard, "Gathering with faulty robots", Sorbonne Univ., since Oct. 2016, Swan Dubois, Franck Petit, Yoann Dieudonné (University of Picardy Jules Verne)

PhD in progress: Marjorie Bournat, "Speculation and Graceful Degradability for Robots in Highly Dynamic Environments", Sorbonne Univ., since Sep. 2015, Swan Dubois, Franck Petit, Yoann Dieudonné (University of Picardy Jules Verne)

PhD in progress: Damien Carver, "HACHE : HorizontAl Cache cHorEgraphy - Toward automatic resizing of shared I/O caches.", Sorbonne Univ., CIFRE, since Jan. 2015, Sébastien Monnet, Pierre Sens, Julien Sopena, Dimitri Refauvelet (Magency).

PhD in progress: Arnaud Favier, "Algorithmes de coordination répartis dans des réseaux dynamiques", Sorbonne Univ., since Sep. 2018, Pierre Sens and Luciana Arantes.

PhD in progress: Saalik Hatia, "Efficient management of memory and storage for CRDTs," Sorbonne Univ., since Oct. 2018. Advised by Marc Shapiro.

CIFRE PhD in progress: Guillaume Fraysse, Orange Lab - Inria, "Ubiquitous Resouces for Service Availability." Since Jul. 2017, advised by Pierre Sens, Imen Grida Ben Yahia (Orange-Lab) , Jonathan Lejeune, Julien Sopena.

PhD in progress: Francis Laniel, Sorbonne Univ., since Sept. 2017. Advised by Marc Shapiro, Julien Sopena, Jonathan Lejeune. "Vers une utilisation efficace de la mémoire non volatile pour économiser l'énergie."

PhD in progress: Sreeja Nair, Sorbonne Univ., since April 2018. "Just-Right Consistency for massive gee-replicated storage." Advised by Marc Shapiro.

CIFRE PhD in progress: Jonathan Sid-Otmane. "Étude des critères de distribution et de l'usage d'une base de données distribuée pour un OS Telco." Advised by Marc Shapiro, with Sofiane Imadali and Frédéric Martelli, Orange Labs.

PhD in progress: Ilyas Toumlilt, Sorbonne Univ. "Bridging the CAP gap, all the way to the edge." Advised by Marc Shapiro.

CIFRE PhD in progress: Dimitrios Vasilas, Sorbonne Univ., "Indexing in large-scale storage systems." Advised by Marc Shapiro, with Brad King, Scality.

8.2.3. *Juries*

Franck Petit was the reviewer of:

- Alessia Milani, HDR, LaBRI, Bordeaux
- Laurent Feuilloley, PhD, IRIF, Paris

Franck Petit was Chair of

- Florent Coriat, PhD, LIP6, Paris

Pierre Sens was the reviewer of:

- Matthieu Roy, HDR, LAAS, Toulouse
- Thouraya Louati, PhD, Sfax Univ., Tunisie
- Yacine Taleb, PhD, IRSIA, Rennes
- Ye Xia, PhD, LIG, Univ. Grenoble

Pierre Sens was Chair of

- Soraya Zertal, HDR, UVSQ, Versailles
- Nikolaos Georgantas, HDR, Sorbonne Univ. - Inria, Paris
- Alejandro Tomsic, PhD, LIP6, Paris
- Veronica Quintuna Rodriguez, PhD, Sorbonne Univ. - Inria, Paris

Marc Shapiro was a member of the following committees:

- Aurélie Hurault, HdR, ENSEEIHT, Toulouse.
- Soraya Zertal, Comité de suivi doctoral, UVSQ, Versailles.

8.3. Popularization

Jonathan Lejeune and Julien Sopena animated an activity during the Science Festival 2018 at Sorbonne Univ.

<p align="center" style="color:red">DYOGENE Project-Team</p>

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. Member of the Organizing Committees

- B. Błaszczyszyn was in the Organizing Commitee of *Stochastic Geometry Days 2018* 14–18 mai 2018 Paris (France); https://geosto-2018.sciencesconf.org/.
- A. Busic was in the Organizing Commitee of *ALEA Days 2018* 12–16 March 2018 at CIRM, Luminy (France); https://conferences.cirm-math.fr/1776.html

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Editorial Boards

- M. Lelarge: IEEE's Transactions on Network Science and Engineering, Bernoulli Journal, Queueing Systems.

9.1.3. Invited Talks

- Analysis of Algorithms 2018, Uppsala (Sweden), June 2018.
- European Conference on Queueing Theory (ECQT) 2018, Jerusalem, July 2018.
- Rencontres de Probabilités de Rouen 2018, September 2018, invited talk.
- Societal Networks, RTDM program, Simons Institute, UC Berkeley, USA, March 2018, invited talk; video: https://simons.berkeley.edu/talks/ana-busic-3-29-18.
- Advances in Modelling and Control for Power Systems of the Future (CAESARS 2018), EDF Palaiseau, September 2018, invited talk.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Licence: B. Blaszczyszyn (Cours) **Théorie de l'information et du codage** 24 heqTD, L3, ENS, France.
- Licence: A. Busic (Cours) and S. Samain (TD) Structures et algorithmes aléatoires 60heqTD, L3, ENS, France.
- Master: B. Blaszczyszyn (Cours) **Processus ponctuels, graphes aléatoires et géeométrie stochastique** 39heqTD, M2 Probabilités et Modèles Aléatoires, UPMC, France
- Master: A. Busic (Cours) and L. Stephan (TD) **Modéles et algorithmes de réseaux** 60heqTD, M1, ENS, France.
- Master: A. Busic (Cours) **Fondements de la modélisation des réseaux** 18 heqTD, M2 MPRI, France.
- Master: M. Lelarge (Cours) **Deep Learning Do it Yourself**, M1, ENS
- Doctorat: A. Busic (Cours) **Markov chains and exact sampling**, 7heqTD, Ecole thématique CNRS, MathExp 2018 "Mathématiques expérimentales: méthodes et pratiques", 21 mai-1 juin 2018, Saint Flour, France. https://mathexp2018.sciencesconf.org/

9.2.2. Supervision

- PhD: Dalia-Georgiana Herculea "Les Hyperfractales pour la Modelisation des Reseaux sans Fil" since October 2016, defence 21 November 2018; PhD CIFRE co-advised by B. Błaszczyszyn, and Ph. Jacquet.
- PhD: Alexandre Hollocou, defense December 19 2018, Nouvelles approches pour le partitionnement de graphes, co-advised by M. Lelarge and T. Bonald (Telecom ParisTech)
- PhD in progress: Léo Miolane, since 2016, High dimensional statistics, advised by M. Lelarge
- PhD in progress: Alexis Galland, since 2017, Deep Learning on Graphs, advised by M. Lelarge
- PhD in progress: Quentin Le Gall "Crowd networking : modélisation de la connectivité D2D" since October 2017; PhD CIFRE co-advised by B. Błaszczyszyn and E. Cali (Orange).
- PhD in progress: Antoine Brochard "Signal processing for point processes and statistical learning for telecommunications", since September 2018; PhD CIFRE co-advised by B. Błaszczyszyn and Georgios Paschos (Huawei).
- PhD in progress: Md Umar Hashmi, Decentralized control for renewable integration in smartgrids, since from December 2015, advised by A. Busic.
- PhD in progress: Sébastien Samain, Monte Carlo methods for performance evaluation and reinforcement learning, since November 2016, advised by A. Busic.
- PhD in progress: Arnaud Cadas, Dynamic matching models, since October 2017, supervised by A. Busic.

9.2.3. Juries

- B. Błaszczyszyn, member of the PhD defense jury of Dalia-Herculea Popescu; 21 November 2018.
- A. Busic, member of the PhD defense jury of J. Horta (Télécom ParisTech, France); 16 Avril 2018.
- C. Fricker, PhD defense of Farah Slim (Orange- Bretagne Loire University), 13/03/2018.

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- B. Błaszczyszyn is an ENS adjunct professor since September 2018.
- B. Błaszczyszyn and A. Busic are members of the ENS Computer Science Department Board (Conseil du Laboratoire).
- A. Busic is member of the Committee for the Technological Development, Inria Paris

9.3.2. Education

C. Fricker: member of the jury of *Agrégation de Mathématiques*.

<p style="text-align:center; color:red;">**EVA Project-Team**</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organization

10.1.1.1. General Chair, Scientific Chair

- **Thomas Watteyne** is TPC co-chair of the 6th International Workshop on Computer and Networking Experimental Research using Testbeds (CNERT), held in conjunction with IEEEINFOCOM, Paris, France, 29 April-2 May, 2019. More information at https://infocom2019.ieee-infocom.org/cnert-computer-and-networking-experimental-research-using-testbeds.

- **Paul Muhlethaler** was general co-chair with Eric Renault of the first conference of application of Machine Learning for Networks (MLN 2018 27-28 November 2018), conference hosted by Inria Paris.

- **Pascale Minet** was general co-chair with Leila Saidane from ENSI (Tunisia) of the PEMWN 2018 conference, the 7th IFIP/IEEE international conference on Performance Evaluation and Modeling of Wired and Wireless Networks, technically co-sponsored by IFIP WG6.2 and IEEE ComSoc (see https://sites.google.com/site/pemwn2018/). This conference was held in Toulouse (IUT of Blagnac), the 26th, 27th and 28th of September 2018. The organization co-chairs were Thierry Val, Adrien Van Den Bossche, and Rejane Dalce. Three tutorials were given:
    - *D2D communications in 5G networks: opportunities and challenges* by Salah Eddine Elayoubi, Centrale Supelec, Paris.
    - *Drone aided networks: from collecting data to connecting people* by Riadh Dhaou, Institut National Polytechnique de Toulouse (INPT).
    - *Continuity of the Positioning Service* by François Spies, University Bourgogne Franche-Comte.

- **Thomas Watteyne** was co-chair of the 6TiSCH 2 Plugtests, Inria, Paris,2-4 February 2018.

10.1.1.2. Member of the Organizing Committees

- **Paul Muhlethaler** organized the DGA Inria workshop on Artificial Intelligence for telecommunications and networks in May 2018.

10.1.2. Scientific Events Selection

10.1.2.1. Chair of Conference Program Committees

- **Paul Muhlethaler** was in Steering committee member of MobileHealth Workshop 2018.
- **Anis Louiti** was in Steering committee member of MobileHealth Workshop 2018.

10.1.2.2. Member of the Conference Program Committees

- **Pascale Minet**
    - CoRes 2018, 3emes Rencontres Francophones sur la Conception de Protocoles,
    - DCNET 2018, 9th International Conference on Data Communication Networking, July 2018,
    - ETFA 2018, 22th IEEE International Conference on Emerging Technologies & Factory Automation, September 2018,
    - EUSPN 2018, 9th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN), November 2018,

– GlobeCom 2018, IEEE Global Communications Conference, December 2018.
– MLN 2018, Machine Learning for Networking, November 2018,
– MSPN 2018, 4th International Conference on Mobile, Secure and Programmable Networking, June 2018,
– PEMWN 2018, 7th International Conference on Performance Evaluation and Modeling in Wired and Wireless Networks, September 2018,
– PECCS 2018, 8th International conference on Pervasive and Embedded Computing and Communication Systems, July 2018,
– SITIS 2018, 14th International Conference on Signal Image Technology & Internet Based Systems, November 2018,
– VTC 2018, 87th IEEE Vehicular Technology Conference, June 2018,
– Wireless Days 2018, IFIP/IEEE Wireless Days, March 2018,
– WiSEE 2018, 6th IEEE International Conference on Wireless for Space and Extreme Environments, October 2018.

- **Paul Muhlethaler**:
  – ITST 2018 15- 17 October, Lisbon, Portugal ,
  – ISCC 2018, 25-28 June 2018, Natal Brazil,
  – Mownet 2018, International Conference on Selected Topics in Mobile & Wireless Networking, 20 -22 June 2018,
  – PEMWN 2018, 7th International Conference on Performance Evaluation and Modeling in Wired and Wireless Networks, 26 - 28 November 2018, Toulouse,
  – Wireless Days, IFIP/IEEE Wireless Days 3 - 5 April 2018, Dubai,
  – WiOpt 2018, 7 - 11 March 2018 Shangai, China.

10.1.3. Journal

10.1.3.1. Reviewer - Reviewing Activities

- **Paul Muhlethaler**
  – Reviewer Ad Hoc Networks Journal (Elsevier),
  – Reviewer Annals of telecommunications,
  – Reviewer International Journal of Distributed Sensor Networks. Hindawi,
  – Reviewer IEEE Transactions on Information Theory,
  – Reviewer IEEE Transactions on Vehicular Technology,
  – Reviewer IEEE Transactions on Wireless Communications.

- **Pascale Minet**
  – Acta Astronautica,
  – Ad Hoc Networks,
  – Annals of Telecommunications,
  – Computer Communications,
  – Computer Networks,
  – Engineering Applications of Artificial Intelligence,
  – IEEE Access,
  – IEEE Internet of Things,
  – IEEE Transactions on Mobile Computing,
  – IEEE Transactions on Green Communications and Networking,

- – IEEE Transactions on Industrial Electronics,
- – IEEE Transactions on Industrial Informatics,
- – International Journal of Communication Systems,
- – International Journal of Ad Hoc and Ubiquitous Computing,
- – Sensors Journal,
- – Wireless Networks.

- **Thomas Watteyne**
  - – MDPI Sensors, 2018.
- Nadjib Achir
  - – Reviewer Sensor Networks (MDPI)
  - – Reviewer Wireless Communications and Mobile Computing (Wiley)
  - – Reviewer Internet of Things Journal (IEEE)
  - – Reviewer Ad Hoc Networks Journal (Elsevier)
- Selma Boumerdassi
  - – Reviewer Ad Hoc Networks Journal (Elsevier);
  - – Reviewer The journal of Future Generation Computer Systems (Elsevier).
- Samia Bouzefrane
  - – The International Journal of Computer and Telecommunications Networking (Elsevier),
  - – The IEEE Transactions on Mobile Computing,
  - – The Information and Software Technology Journal (Elsevier)
  - – The Springer Multimedia Tools and Application Journal
  - – The ACM Transaction on Internet Technology
  - – The Concurrency and Computation Practice and Experience Journal
  - – the Journal of Systems and Software (Elsevier)

10.1.4. Invited Talks

- **Thomas Watteyne**
  - – Panelist on "New Trends for IoT and Satellite Networks", talking about "Industrial IoT, A Reality Check – Standards, Products and Research Challenges" at IoT Week 2018, Bilbao, Spain, 6 June 2018.
  - – Boostez la Performance the vos Objects Connectes. Inria Tech talk, French Tech central, Station F, Paris, France. 24 October 2018.
  - – Getting Your Hands Dirty with the Industrial IoT and SmartMesh IP. Summer School on Dependable IoT. TU Graz, Graz, Austria. 20 July 2018.
  - – SmartMesh IP. Captronic/Arrow mesh networking day. ESSIE, Paris, France. 25 October 2018.
  - – The Internet of (Important) Things. French Tech Central, Station F, Paris, France. 24 October 2018.
  - – "IoT research, standardization and interop using testbeds", Fed4FIRE Engineering Conference, Brugge, Belgium, 8-9 October 2018.
  - – From Research, to Product, to Standardization: A Journey into TSCH. TU Graz, Graz, Austria, 19 July 2018.
  - – Reality Check on IoT Solutions producing data for people to analyze. Boston Consultancy Group semine series, Station F, Paris, France. 7 July 2018.

- – (keynote) Industrial IoT, A Reality Check : Standards, Products and Research Challenges. IIoT Workshop, Strasbourg, France, 3 July 2018.
- – "IPv6 over the TSCH mode of IEEE 802.15.4e: overview of standardization, tooling, open-source initiative and commercial products", Workshop on Design, Deployment and Testing of Internet of Things Technologies (DDT-IoT), IEEE BalkanCom, Podgorica, Montenegro, 8 June 2018.
- – "Industrial IoT, A Reality Check: Standards, Products and Research Challenges", IoT Week, Bilbao, Spain, 4-8 June 2018.
- – A Turn-Key Solution for Real-World IoT, presented together with Keoma Brun-Laguna. LIRIMA Workshop on Smart Agriculture in Africa. 3-4 April 2018.
- – Intro to Dr. Malisa Vucinic' keynote "The Devil is in the Detail: How a Real-World IoT Technology is Made – IETF 6TiSCH" at the Information Technology Conference, Montenegro, 20 February 2018.

10.1.5. Leadership within the Scientific Community

Thomas Watteyne co-chairs the IETF 6TiSCH standardization group.

10.1.6. Scientific Expertise

Thomas Watteyne regularly consults with major player in the (Industrial) IoT space.

10.1.7. Research Administration

- • **Thomas Watteyne** is member of the Inria-Paris "Commission de Developpement Technologique", since 2018, where we ensure Inria project teams get sufficient engineering resources to change the world.
- • **Paul Muhlethaler** is member of the Inria-Paris "Comite de Centre", since 2016 (suppléant of Michel Kern).
- • **Thomas Watteyne** is member of the Inria-Paris "Comite de Centre", since 2016, where we work on making sure Inria-Paris will always remain one of the greatest places to work at!

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

- • Intensive 1-week course on IoT, with associated hands-on labs. ENSTA ParisTech. Graduate level. **Thomas Watteyne** and Ziran Zhang. 9-12 October 2017.
- • 1/2-day crash course on the Industrial IoT. Telecom ParisTech. Graduate level. **Thomas Watteyne**. 28 September 2017..
- • 6-week course on IoT, with associated hands-on labs. ENSTA ParisTech. Undergraduate level. **Thomas Watteyne**, Keoma Brun-Laguna and Dominique Barthel. Spring 2017.

10.2.2. Supervision

- • PhD : Fouzi Boukhalfa, Low and high reliability access in Vehicular Ad-hoc NETworks. Sorbonne University. **Paul Muhlethaler**.
- • PhD (ongoing) Mina Rady, Heterogeneous architectures for the IoT, Sorbonne University. **Thomas Watteyne** and **Paul Muhlethaler**, under a CIFRE agreement with Orange Labs, Meylan, France.
- • PhD (viva on 18 December 2018) Keoma Brun-Laguna, Deterministic networking for the Industrial Internet of Things, Sorbonne University. **Thomas Watteyne** and **Pascale Minet**.
- • PhD (in progress) Jonathan Munoz, Time slotted systems for long range communications, Sorbonne University, **Thomas Watteyne** and **Paul Muhlethaler**.

- PhD (in progress) Amar Abane, Name Data Networks in the Internet of Things, CNAM. Samia Bouzefrane and **Paul Muhlethaler**.

- PhD (in progress) Abdallah Soheby, Etude et evaluation de la dissemination des informations dans la 5G. Eric Renault and **Paul Muhlethaler**.

- PhD (in progress) Mamoudou Sangara, Utilisation de techniques de Machine Leraning dans les reseaux VANETs. Samia Bouzefrane and **Paul Muhlethaler**.

- PhD (in progress) Iman Hmedoush, Connection protocols for the 5G IoT. Cedric Adjih and **Paul Muhlethaler**.

10.2.3. Juries

- HdR:
    - Oyunchimeg Shagdar, "Optimizing wireless communications in dense mobile environments", University of Paris-Saclay, prepared at the University of Versailles-Saint Quentin, September 2018, **Pascale Minet** examiner.
    - Imen Jemili, "Optimisation des ressources dans les réseaux mobiles sans fil", University of Bordeaux, November 2018, **Pascale Minet** examiner.
    - Khaled Boussetta "Dimensionnement, adaptation et placement de fonctionnalités réseaux pour des applications sensibles aux délais", University of Paris 13, December 2018, **Paul Muhlethaler** reviewer.

- PhD:
    - Keoma Brun-Laguna, "Deterministic networking for the Industrial Internet of Things", Sorbonne University, December 2018, **Thomas Watteyne** and **Pascale Minet**, PhD advisers.
    - of Jetmir Haxhibeqiri, "Flexible and Scalable Wireless Communication Solutions for Warehouse Applications", imec – IDLab Ghent – Ghent University, Belgium, December 2018, **Thomas Watteyne** reviewer.
    - Narjes Boulila "Communication vehiculaire garantissant les contraintes temps reel pour les systèmes de prevention de collision", University de la Manouba, December 2018, **Paul Muhlethaler** reviewer.
    - Dinh Van Nguyen "Reseaux de capteurs sans-fil pour la cartographie à l'interieure et la localisation precise servant la navigation à basse vitesse dans les villes intelligentes", Mines ParisTech, December 2018, **Paul Muhlethaler** examiner.
    - Veronica Quintuna Rodriguez "Performance Analysis of Virtualized Network", University of Paris 6, October 2018, **Paul Muhlethaler** examiner.
    - Mohamed Tahar Hammi, "Sécurisation de l'Internet des Objets", Telecom ParisTech, September 2018, **Pascale Minet** examiner.
    - Lilia Lassouaoui, "Ordonnancement et routage pour l'augmentation de la duree de vie dans les reseaux de capteurs sans fil", CNAM, July 2018, **Pascale Minet** examiner.
    - Thiwiza Bellache. "Controle dynamique des communications dans une environnement V2V et V2I", University Versailles Saint Quentin February 2018. **Paul Muhlethaler** examiner.
    - Philippe Erzan "Optimisation de la topologie des reseaux sans fil", University Centrale-Supelec, January 2018, **Paul Muhlethaler** examiner.
    - Moussa Déthié Sarr, "Spécification d'un mécanisme de construction automatique de topologies et d'adressage permettant la gestion dynamique de réseaux de capteurs sans fil lineéaires", University of Clermont, January 2018, **Pascale Minet** reviewer.
    - Pengwenlong Gu, "Détection des comportements malveillants dans les réseaux véhiculaires", Telecom ParisTech, February 2018, **Pascale Minet** examiner.

10.3. Popularization

10.3.1. Interventions

- Keoma Brun-Laguna
    - "Solsystem: IoT Industriel et déploiement en milieux réels" démo at RII meeting ("Mobilités et environnements, 20 Novembre 2018, Station F, Paris")
- **Thomas Watteyne**
    - The Inria-Paris OpenTestbed (you might already have noticed...). Inria Seminar, Paris, 2 October 2018.
    - "Le tour du monde en 1,000 capteurs!". Inria Rocquencourt seminar series. 6 June 2018.
    - Construire son Reseau IoT en 10min. Conférence d'ouverture de la semaine des Mathématiques. Inria-Paris, Paris, France, 12 March 2018.

10.3.2. Dans les Medias

- **Thomas Watteyne**
    - Edge computing: on vous dit tout sur les technos qui mettent le cloud dans votre poche, 01net, 10 September 2018.
    - Qu'est-ce que l'IoT? Boston Consultancy Group podcast, 9 September 2018.
    - Retour Semaine des maths 2018 : conference de Thomas Watteyne à l'Inria, Academie de Paris, 15 March 2018.

10.3.3. Creation of media or tools for science outreach

A video concerning the research on protocols for VANETs of Mohamed Hadded has been done by Inria.

<p style="text-align:center">**GANG Project-Team**</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- Amos Korman: BDA 2018, General Chair of the organizing committee.
- Adrian Kosowski: WENDY Paris, chair of workshop.

10.1.1.2. Member of the Organizing Committees

Organisation of Dagstuhl Seminar 18211 *Formal Methods and Fault-Tolerant Distributed Computing: Forging an Alliance*, by Javier Esparza (TUM, Munick, Germany), Pierre Fraigniaud (IRIF and Inria GANG, Paris, France), Anca Muscholl (LaBRI, Bordeaux, France), and Sergio Rajsbaum (UNAM, Mexico, Mexique).

10.1.1.3. Chair of Conference Program Committees

- Amos Korman: BDA 2018, co-chair.

10.1.1.4. Steering Committee Member

- Amos Korman: ADGA 2018.
- Pierre Fraigniaud: *Highlights of Algorithms* (HALG) from January 2015.

10.1.1.5. Member of the Conference Program Committees

- Adrian Kosowski: MFCS 2018, SIROCCO 2018.
- Carole Delporte-Gallet: NETYS 2018.
- Pierre Fraigniaud: SPAA 2018, DISC 2018, ICALP 2018, WWW 2018, IPDPS 2018, LATIN 2018, HiPC 2018, ICDCN 2018.
- Michel Habib: WG 2018.

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- Pierre Fraigniaud is a member of the Editorial Board of Distributed Computing (DC).
- Pierre Fraigniaud is a member of the Editorial Board of Theory of Computing Systems (TOCS).
- Adrian Kosowski is a member of the Editorial Board of Mathematical Foundations of Computing (AIMS MFOC)

10.1.2.2. Editors of a special issue

- Carole Delporte is co-editors with Parosh Abdulla of the Special Issue on NETYS'2016 published in Computing ([27]).

10.1.3. Invited Talks

- Hugues Fauconnier gives a seminar in College de France entitled "Failure detectors", December 2018.

10.1.4. Scientific Expertise

- Adrian Kosowski was an expert panel member for grant panel PE6 of the National Science Center, Poland (Spring 2018).
- Pierre Fraigniaud was member of the *shadow committee* of the ERC Starting Grants selection panel in 2018.

- Pierre Fraigniaud was vice-president of the HCERES committee of Laboratoire d'Informatique de Polytechnique (LIX), November 2018.

10.1.5. Research Administration

- Hugues Fauconnier is director of the UFR d'informatique of Université Paris Diderot.
- Carole Delporte-Gallet is deputy director of the UFR d'informatique of Université Paris Diderot.
- Laurent Viennot is leader of the "Algorithms and discrete structures" department of the Institute de Recherche en Informatique Fondamentale (IRIF).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master: Carole Delporte and Hugues Fauconnier, Algorithmique distribuée avec mémoire partagée, 6h, M2, Université Paris Diderot

Master: Hugues Fauconnier, Cours programmation répartie, 33h, M2, Univ. Paris Diderot

Master: Carole Delporte, Cours et TP Protocoles des services internet, 44h, M2, Univ. Paris Diderot

Master: Carole Delporte, Cours Algorithmes répartis, 33h, M2, Univ. Paris Diderot

Master: Carole Delporte and Hugues Fauconnier, Théorie et pratique de la concurrence, 48h, M1, Université Paris Diderot

Licence: Carole Delporte and Hugues Fauconnier, Culture informatique, 16h, L2, Univ. Paris Diderot

Licence: Boufkhad Yacine, Algorithmique et Informatique, 132h, L1, IUT de l'Université Paris Diderot

Licence: Boufkhad Yacine, Programmation Orientée Objet, 60h, L2, IUT de l'Université Paris Diderot

Licence: Boufkhad Yacine, Traitement de données, 16h, L2, IUT de l'Université Paris Diderot

Master: Pierre Fraigniaud, Algorithmique parallèle et distribuée, 24h, Ecole Centrale Supélec Paris, M2

Master: Adrian Kosowski, Randomization in Computer Science: Games, Networks, Epidemic and Evolutionary Algorithms, 18h, M1, École Polytechnique

Licence: Adrian Kosowski, Design and Analysis of Algorithms, 32h, L3, École Polytechnique

Master: Pierre Fraigniaud and Adrian Kosowski, Algorithmique distribuée pour les réseaux, 24h, M2, Master Parisien de Recherche en Informatique (MPRI)

Master: Fabien de Montgolfier, Grand Réseaux d'Interaction, 44h, M2, Univ Paris Diderot

Licence: Fabien de Montgolfier, Protocoles Réseau (TP/TD), 24h, M1, Univ Paris Diderot

Licence: Fabien de Montgolfier, Programmation avancée (cours/TD/projet, bio-informatique), 52h, L3, Univ. Paris Diderot

Master: Fabien de Montgolfier, Algorithmique avancée (bio-informatique), 26h, M1, Univ Paris Diderot

Licence: Fabien de Montgolfier, Algorithmique (TD), 26h, L3, Ecole d'Ingénieurs Denis Diderot

Master : Laurent Viennot, Graph Mining, 6h, M2 MPRI, Univ. Paris Diderot

Licence: Pierre Charbit, Elements d'Algorithmique, 24h, L2, Université Paris Diderot, France

Licence: Pierre Charbit, Automates finis, 36h, L2, Université Paris Diderot, France

Licence: Pierre Charbit, Internet et Outils, 52h, L1, Université Paris Diderot, France

Master: Pierre Charbit, Programmation Objet, 60h, M2Pro PISE, Université Paris Diderot, France

Master: Pierre Charbit, Algorithmique de Graphes, 12h, M2 MPRI, Université Paris Diderot, France

10.2.2. Supervision

PhD defended: Lucas Boczkowski (co-advised by Amos Korman and Iordanis Kerenidis). Title of thesis is: "Computing with Limited Resources in Uncertain Environments" [2]. Started September 2015, defended on November 30th, 2018.

PhD defended: Laurent Feuilloley (advised by Pierre Fraigniaud). Title of thesis is: "Synchronous Distributed Computing" [3]. Started September 2015, defended on September 19th, 2018.

PhD defended: Léo Planche (co-advised by Étienne Birmelé and Fabien de Montgolfier). Title of thesis is : "Graph Decomposition into Shortest Paths and Cycles of Small Eccentricity" [4]. Started October 2015, defended on November 23rd, 2018.

PhD defended: Vitaly Aksenov (co-advised by Petr Kuznetsov, Anatoly Shalyto and Carole Delporte). Title of thesis is : "Synchronization Costs in Parallel Programs and Concurrent Data Structures" [1]. Started October 2015, defended on September 26, 2018.

PhD in progress: Simon Collet (co-advised by Amos Korman and Pierre Fraigniaud). Title of thesis is: "Algorithmic Game Theory Applied to Biology". Started September 2015.

PhD in progress: Brieuc Guinard (advised by Amos Korman). Title of thesis is: "Algorithmic Aspects of Random Biological Processes". Started October 2016.

PhD in progress: Mengchuan Zou (co-advised by Adrian Kosowski and Michel Habib). Title of thesis is: "Local and Adaptive Algorithms for Optimization Problems in Large Networks". Started October 2016.

PhD in progress: Alkida Balliu and Dennis Olivetti (PhD students from L'Aquilla University and Gran Sasso Science Institute) are supervised by Pierre Fraigniaud.

PhD in progress: Lucas Hosseini (co-advised by Pierre Charbit, Patrice Ossona de Mendez and Jaroslav Nešetřil since Sept. 2014). Title : Limits of Structures.

Master internship (MPRI): Duc-Minh Phan (advised by Laurent Viennot). (March-August 2018) Title of report: "Public Transit Routing with Unrestricted Walking using Hub Labelling".

10.2.3. Juries

Michel Habib was on the jury committee of the PhD thesis of Léo Planche: "Décomposition de graphes en plus courts chemins et en cycles de faible excentricité", Paris Descartes and Paris Diderot Universities, 23th novembre 2018.

Michel Habib was president of the jury committee of the PhD thesis of Julien Fradin : "Graphes complexes en biologie : problèmes, algorithmes et évaluations", Nantes University, 4th december 2018.

Michel Habib was on the jury committee of the PhD thesis of Mostafa Darwiche : "When operation research meets structural pattern recognition : on the solution of error-tolerant graph matching problems", Tours University, 5th december 2018.

Michel Habib was member of the jury for the HDR thesis of Jean-Sébastien Sereni : "Sur des aspects algébriques de la coloration de graphes : coloration fractionnaire et nombre de colorations", Université de Loraine, 13 février 2018.

Laurent Viennot was referee and on the jury committee of the HDR thesis of Frédéric Giroire on "Optimisation des infrastructures réseaux. Un peu de vert dans les réseaux et autres problèmes de placement et de gestion de ressources" at the University of Nice-Sophia Antipolis, October 2018.

Laurent Viennot was president of the jury committee of the PhD thesis of Matthieu Boutier "Routage sensible à la source" at Paris Diderot University, September 2018.

Laurent Viennot was on the jury committee of the PhD thesis of Alexandre Hollocou on "Novel Approaches to the Clustering of Large Graphs" at PSL University, December 2018.

Hugues Fauconnier was president of the jury committee of the PhD thesis of Vitaly Aksenov "Synchronization Costs in Parallel Programs and Concurrent Data Structures" at Paris Diderot University, September 2018.

Carole Delporte is on the jury committee of the PhD thesis of Vitaly Aksenov "Synchronization Costs in Parallel Programs and Concurrent Data Structures" at Paris Diderot University, September 2018.

Carole Delporte was president of the jury committee of the PhD thesis of Laurent Feuilloley "Local certification in distributed computing: error-sensitivity, uniformity, redundancy, and interactivity" at Paris Diderot University, September 2018.

Carole Delporte was referee and on the jury committee of the PhD thesis of Denis Jeanneau "Failure Detectors in Dynamic Distributed Systems" at Sorbonne université, December 2018.

Carole Delporte was president of the jury committee of the PhD thesis of Thibault Rieutord "Combinatorial Characterization of Asynchronous Distributed Computability" at Université Paris Saclay, Octobre 2018.

Pierre Fraigniaud was referee for the HDR thesis of Christine Tasson (IRIF, Paris Diderot) "Sémantiques vectorielles, probabilistes et distribuées", 23 novembre 2018.

Pierre Fraigniaud was referee for the HDR thesis of Alessia Milani (LaBRI, Bordeaux) "Asynchronous Distributed Computing", 12 novembre 2018.

Pierre Fraigniaud was member of the jury for the HDR thesis of Jean-Sébastien Sereni : "Sur des aspects algébriques de la coloration de graphes : coloration fractionnaire et nombre de colorations", Université de Loraine, 13 février 2018.

Pierre Fraigniaud was member of the jury for the PhD thesis of Lucas Boczkowski "Distributed Computing Applied to Biology", 30 novembre 2018.

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Laurent Viennot was "commissaire scientifique" for the permanent exposition on "Informatique et sciences du numérique" at Palais de la déécouverte in Paris (opened in March 2018).

10.3.2. Education

- Carole Delporte was president of a jury of baccalaureat.

<p style="text-align:center;color:red;font-weight:bold;font-size:1.5em;">MIMOVE Project-Team</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Selection

10.1.1.1. Chair of Conference Program Committees

- V. Issarny, TPC co-chair of ICSE-SEIS'2018 - Software Engineering in Society Track of the ICSE'18 conference. Gotheborg, SE, May 2018.
- V. Issarny, TPC co-chair of CIC'2018 - 4th IEEE International Conference on Collaboration and Internet Computing. Philadelphia, USA, October 2018
- V. Issarny, TPC co-chair of SCF-ICIOT - 2019 International Conference on Internet of Things Services at the Services Conference Federation. San Diego, USA, June 2019.

10.1.1.2. Member of the Conference Program Committees

- V. Christophides, PC member of IEEE Data Engineering Conference 2018.
- V. Issarny, PC member of COOPIS'18, FASE'18 & 20, IC2E'19, ICDCS'18, ICSE'18 & 20, ICSE-SEIS-19, IOTDI'19, Middleware'18, OPODIS'18, WWW'19.
- R. Teixeira, PC member of ACM SIGCOMM 2018.
- R. Teixeira, PC member of ACM HotNets workshop 2018, ACM SIGCOMM Workshop on Self-Driving Networks 2018.
- N. Georgantas is PC member of the following international conferences: SAC'18&'19, AmI'18, SOSE'18&'19, WWW'19.
- N. Georgantas is PC member of the following international workshops: MRT'18, SERENE'18, IoT-ASAP'18&'19, ARM'18, SESOS-ICSE'18.

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- V. Issarny, Associate editor, ACM Transactions on Internet of Things (TIOT)
- V. Issarny, Associate editor, IEEE Transactions on Services Computing (TSC)
- V. Issarny, Associate editor, IEEE Transactions on Software Engineering (TSE)
- N. Georgantas, Associate editor, International Journal of Ambient Computing and Intelligence (IJACI)
- V. Christophides, Associate editor, MDPI Open Access Journal of Internet of Things (IoT)
- V. Christophides, Associate editor, MDPI Open Access Journal of Future Internet

10.1.2.2. Reviewer - Reviewing Activities

- V. Christophides, Reviewer for the ACM Journal Transactions on Internet of Things (TIOT)
- V. Christophides, Reviewer for the Springer Journal Knowledge and Information Systems (KAIS)

10.1.3. Invited Talks

- V. Christophides "IoT Data Analytics", Invited Tutorial at the French Database Community (BDA) Summer School on Scalable Data Analytics Aussois, Modane June 17-22, 2018.
- V. Issarny, "USNB - Enabling Universal Online Social Interactions", Keynote, ECSCW - The 16th European Conference on Computer-Supported Cooperative Work: The International venue on Practice-centred computing and the Design of cooperation technologies. Nancy, FR, June 2018.

- V. Issarny, "When service-oriented and cloud computing meets the IoT: A use case in the context of urban mobile crowd-sensing", Keynote, ESOCC Conference. COMO, IT, September 2018.
- R. Teixeira, "Diagnosis of Internet Quality of Experience in Home Networks", Keynote, 6th International Conference, NETYS 2018, Essaouira, Morocco, May 9–11, 2018.
- N. Georgantas, "Challenges in Enabling Effective Smart Cities and Communities: Global Perspectives", Plenary panel, IEEE SMARTCOMP 2018, Taormina, Sicily, June 18-20, 2018.

10.1.4. Leadership within the Scientific Community

- V. Christophides, Member of the EDBT Association (since 2014).
- V. Issarny, Council member, ACM Europe (since 2017).

10.1.5. Scientific Expertise

- V. Issarny, Elected member: *Commission d'Evaluation Inria*.
- V. Issarny, Scientific council member: ARCEP (since September 2018).
- V. Issarny, Committee member: *Advanced Data science Alliance Expert Panel of the Canadian Networks of Centres of Excellence* (NCE) (Ottawa, Canada, 08/18); *JPI Urban Europe and NSFC China pilot call on Sustainable and Liveable Cities and Urban Areas* (Paris, 10/18); *FWO Expert panel for PhD fellowships strategic basic research* (Bruxelles, 11/18)
- R. Teixeira, evaluator for the H2020-ICT-2018-2 call, topic ICT-21-2018 "EU-US Collaboration for advanced wireless platforms" organised by the European Commission.
- R. Teixeira, monitor for the H2020 projects CogNet, SUPERFLUIDITY.
- R. Teixeira, Member of the acceptability committee for the competitive selection of young researchers (CR), 2018.
- R. Teixeira, Member of the admission committee for the competitive selection of young researchers (CR), 2018.
- V. Christophides, Member of the appointment committee for faculty position on «Machine Learning with focus on Bioinformatics» University of Crete, December 2017.
- N. Georgantas, monitor for the ANR project INTEROP.

10.1.6. Research Administration

- V. Issarny, Scientific coordinator: IIL Inria@SiliconValley (till 08/18) and IPL CityLab@Inria (till 11/18).
- N. Georgantas, member of the PhD monitoring committee at Inria Paris (till 10/18).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master: V. Christophides, "Big Data Processing and Analytics", 25h M2, Ecole CentraleSupelec, France. Created this new master's level class in Spring 2016.

Master : R. Teixeira, "Methodology for research in networking", 4h CM, M2, Sorbonne University, France

Master : R. Teixeira, "Network Metrology", 4h CM, M2, Sorbonne University, France

E-learning

V. Issarny, MOOC & SPOC *Implementing Successful Processes for Citizen Participation: Supporting Methods and Civic Tech*, 5 weeks, 1,600 registered students in the session of November 2018.

R. Teixeira, MOOC "Internet Measurements: a Hands-on Introduction", 5 weeks in FUN platform, session May 2018.

10.2.2. Supervision

PhDs in progress:

- Yifan Du (Since October 2017): "In-network collaborative crowd-Xing", Sorbonne University, V. Issarny and F. Sailhan (CNAM)
- Thibaut Ehlinger (Since November 2017): «Causal Modelling of User Quality Experience (QoE) from Network Quality of Service (QoS)» University of Côte d'Azur. advisors: V. Christophides and C. Barakat (Inria)
- Grigoris Piperagkas (Since October 2018): "Leveraging universal social networking and the IoT for urban-scale participatory systems", Sorbone University, V. Issarny and R. Angarita (ISEP).
- Israel Marquez Salinas (Since October 2018): "Optimization of Internet Quality of Experience in Home Networks", S. Ayoubi, R. Teixeira.
- Dimitris Tsolovos (Since March 2017): "A privacy-by-design middleware for urban-scale mobile crowdsensing", UVSQ, N. Anciaux (Inria PETRUS @ Saclay) and V. Issarny.
- Fethi Dilmi (Since October 2017): "End-to-end monitoring and diagnosis of video Quality of Experience", F. Bronzino and R. Teixeira.
- Sarah Wassermann (Since October 2017): "Passive analysis and opitimization of Internet Quality of Experience", R. Teixeira.
- Sara El Aouad (Since May 2013): "Building a personalized summary from movie reviews", V. Christophides, R. Teixeira, C. Diot (Google).
- Patient Ntumba (Since August 2018): "Dynamic adaptation of middleware-layer protocols for emergent mobile systems", Sorbonne University, N. Georgantas.

10.2.3. Juries

V. Christophides: External evaluator of the Ph.D. Thesis of Giorgos Borboudakis entitled "Efficient and Accurate Feature Selection, with Extensions for Multiple Solutions and to Big Data", University of Crete, Greece, November 2018

V. Issarny: President of the PhD defense committee of Saad El Jaouhari on the topic "A secure design of WoT services for smart cities", IMT-Atlantique, Rennes, FR, December 2018

R. Teixeira, external evaluator of the Ph.D dissertation of Danilo Cicalese on "Anycast nowadays" (Telecom ParisTech, 2018).

R. Teixeira, external evaluator of the Ph.D dissertation of Luca Vassio on "Data Analysis and Modelling of Users' Behaviour on the Web" (Politecnico di Torino, 2018).

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- V. Issarny, Appointed member: CODEV, *Métropole du Grand Paris* (Since December 2018).

<p align="center" style="color:red">WHISPER Project-Team</p>

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Selection

10.1.1.1. Chair of Conference Program Committees

- Gilles Muller: DSN 2018
- Julia Lawall: ASE 2018 Tool Demo track.

10.1.1.2. Member of the Conference Program Committees

- Gilles Muller: OSDI 2018, EuroSys 2018
- Julia Lawall: EuroSys 2018, ICSE-NIER 2018, ASPLOS 2018 ERC, PEPM 2018, SCAM 2018, APSys 2018, USENIX ATC 2018, CARI 2018

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- Julia Lawall: Editorial board of Science of Computer Programing (2008 - present).

10.1.2.2. Reviewer - Reviewing Activities

- Julia Lawall: Transactions on Software Engineering, Software: Evolution and Process, IEEE Transactions on Reliability, ACM Transactions on Embedded Computing Systems

10.1.3. Invited Talks

- Gilles Muller:
    - "Provably Work Conserving Multicore Schedulers", University of Bordeaux, June 13, 2018.
    - "Safe multicore scheduling in a Linux cluster environment", 3rd GDR RSD and ASF Winter School on Distributed Systems and Networks, Sept Laux, March 20, 2018.
- Julia Lawall:
    - "Coccinelle: 10 Years of Automated Evolution in the Linux Kernel", 8th Inria/Technicolor Workshop On Systems, Rennes, December 11, 2018.
    - "Software evolution and bug finding using Coccinelle", Lightweight analysis and verification techniques, Verimag, Grenoble, December 11, 2018.
    - "Coccinelle: 10 Years of Automated Evolution in the Linux Kernel", Conférence d'informatique en Parallélisme, Architecture et Système (COMPAS), Toulouse, July 3, 2018.
    - "Coccinelle: Practical Program Transformation for the Linux Kernel", EJCP 2018 : École Jeunes Chercheurs et Jeunes Chercheuses en Programmation 2018, June 25, 2018.
    - "Introduction to Coccinelle and its usage in the Linux Kernel", Conférence MiNET, Telecom SudParis, May 24, 2018.
- Pierre-Évariste Dagand gave a seminar at the Collège de France entitled "Types dépendants : tout un programme" (November 28, 2018), as part of Xavier Leroy's chair "Sciences du logiciel".
- Lucas Serrano: "Inference of Semantic Patches from Code Examples", The Seventh International Workshop on Software Mining, with ASE, September 3, 2018.

- Cedric Courtaud "Toward an Efficient Data Plane for Memory Systems Interference Regulation in COTS Multi-core Systems", The NExt Step TOwards multi-core Real-time systems workshop, ULB, May 18, 2018.

10.1.4. Scientific Expertise

- Julia Lawall was part of the midterm review panel of the NSF Expedition in Computing project DeepSpec.

10.1.5. Research Administration

- Julia Lawall: IFIP TC secretary (2012 - present). Elected member of IFIP WG 2.11 (Program Generation).

  Member of a hiring committee for a Maître de conférences position at Université Paris Diderot

  Board member of Software Heritage (https://www.softwareheritage.org/).

- Gilles Muller: Elected member of IFIP WG 10.4 (Dependability), representative of Inria in Sorbonne University's advisory committee for research, member of the project committee board of the Inria Paris Center.

- Bertil Folliot: Elected member of the IFIP WG10.3 working group (Concurrent systems)

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

- Professional Licence: Bertil Folliot, Programmation C, L2, UPMC, France
- Professional Licence: Bertil Folliot, Lab projects, L2, UPMC, France
- Master: Pierre-Évariste Dagand, Specification and Validation of Programs, M2, UPMC, France
- Licence: Pierre-Évariste Dagand, INF311: Introduction to Programming, L1, École Polytechnique, France
- Master: Pierre-Évariste Dagand, INF559: Computer Architecture and Operating Systems, M1, École Polytechnique, France

10.2.2. Supervision

- PhD : Mariem Saeid, soutenue le 25/9/2018, Jens Gustedt (Camus), Gilles Muller.
- PhD in progress : Cédric Courtaud, CIFRE Thalès, 2016-2019, Gilles Muller, Julien Sopéna (Delys).
- PhD in progress : Redha Gouicem, 2016-2019, Gilles Muller, Julien Sopéna (Delys).
- PhD in progress : Darius Mercadier, 2017-2020, Pierre-Évariste Dagand, Gilles Muller.
- PhD in progress : Lucas Serrano, 2017-2020, Julia Lawall.

10.2.3. Juries

- Julia Lawall: PhD juries of Ferdian Thung, SMU (reporter), Thibaut Girka, Université Paris Diderot (president), Thomas Durieux, Lille (examiner).

10.3. Popularization

- Julia Lawall: Coordinator of the Outreachy internship program for the Linux kernel, until March 2018. Outreachy provides remote 3-month internships twice a year for women and other underrepresented minorities on open source projects. Julia Lawall also mentored Aishwarya Pant as part of this program.

- Julia Lawall, "Building Stable Trees with Machine Learning", Open Source Summit North America, August 2018, with Sasha Levin. Open Source Summit Europe, October 2018, with Sasha Levin. Linux Plumbers Conference, kernel summit track, November 2018, with Sasha Levin.

- Julia Lawall, "Coccinelle: 10 Years of Automated Evolution and Bug Finding in the Linux Kernel", Open Source Summit Europe, October 2018.

- Julia Lawall, "Panel Discussion: Outreachy Kernel Internship Report" (moderator), Open Source Summit Europe, October 2018.

- Julia Lawall, "Panel Discussion: An Exploration of Insights & Issues Related to Mentoring Programs" (participant), Open Source Summit Europe, October 2018.

- Julia Lawall, "Interprocedural Static Analysis Strategies for the Linux Kernel: Detecting SAC Bugs as an Example (Work in Progress)", Linux Kernel Real Time Summit, October 2018.

- Julia Lawall, "Kernel Panel" (participant), Linux Plumbers Conference, November 2018.

ALMAnaCH Team

9. Dissemination

9.1. Promoting Scientific Activities

- LR was invited to present an overview of information extraction methods in the humanities in the context of the conference cycle: Ringvorlesung "Open Technology for an Open Society", Jan 2018, Berlin, Germany

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- LR: Co-chair of the Lexical Data Masterclass, Berlin, 3-7 December https://digilex.hypotheses.org/551
- Mohamed Khemakhem: Chair of the GROBID-Camp: Inria de Paris 27th March 2018

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program/Scientific/Reviewing Committees

- BS: Member of the Program, Scientific or Reviewing Committee of the following conferences and workshops: ACL 2018, NAACL 2018, International Morphology Meeting 2018, Int'l Colloquium on Loanwords and Substrata 2018
- LR: Member of the Program, Scientific or Reviewing Committee of the following conferences and workshops: Fourteenth Joint ACL - ISO Workshop on Interoperable Semantic Annotation, COLING 2018, TPDL 2018, ACL 2018, NAACL-HLT 2018, TOTh 2018, ELPUB 2018, DHd2018, LDL-2018, DH 2018
- DS: Member of the Program, Scientific or Reviewing Committee of the following conferences and workshops: ACL 2018, EMNLP 2018,CoNLL 2018, COLING 2018, EthicNLP 2018, LREC 2018, WNUT 2018, LAW-MWE-CxG 2018.
- EVdLC: Program Committee member and reviewer for LREC, ACL, COLING, NAACL, ToTH, EMNLP

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- LR: Member of the JTEI advisory board
- LR: Member of the scientific board of the Revue Humanités numériques

9.1.3.2. Reviewer - Reviewing Activities

- BS: Reviewer for the following journals: *Language Resource and Evaluation*, *Traitement Automatique des Langues*
- LR: Reviewer for the following journals: Language Resource and Evaluation Journal, Journal of the TEI
- DS: Reviewer for the following journals: TALLIP, LRE, NLE, Poznan Studies in Contemporary Linguistics, Computational Linguistics

9.1.4. Invited Talks

- BS was invited to give a talk to Master 2 computational linguistics students and University staff at the Université Grenoble Alpes (November)

- LR was invited to give talks at Open-Access-Tage, Sep 2018, Graz; Workshop DARIAH-CH, University of Neuchâtel, November 2018; "Stay tuned to the future", an international conference on the impact of research infrastructures for social sciences and humanities – bologna, January 2018; NIMS, Tskuba, Japan, September 2018; Rétro-numérisation de documents historiques et partage dans le Web sémantique : l'exemple de la lexicographie – Atelier de formation annuel du consortium Cahier – Montpellier – 26-29 juin 2018; "Serving Learning and Scholarship", Fiesole retreat, Barcelona, April 2018
- DS was invited to give a talk at the Indiana University's department of linguistics (October), at Bar Ilan University (November) respectively on Noisy User-Generated Content Treebanking and on Tackling language variability via diachronic word embeddings.

9.1.5. Training

- Mohamed Khemakhem chaired and tutored the GROBID-Dictionaries series:
    - BBAW & Praxiling joint workshop - Berlin: February 2018
    - Atelier de formation annuel du consortium Cahier – Montpellier – 26-29 June 2018
    - SADiLaR GROBID-Dictionaries Workshop (Pretoria) : October 26, 2018
    - SADiLaR GROBID-Dictionaries Workshop (Potchefstroom) : October 30, 2018 from
    - SADiLaR GROBID-Dictionaries Workshop (StellenBosch) : November 2, 2018
    - Lexical Data Masterclass 2018 - Berlin 3-7 December 2018
- Mathilde Reignault attended the ESSLLI 2018 Summer School in Language and Information as part of her doctoral studies training.

9.1.6. Leadership within the Scientific Community

- LR: President of the board of directors of DARIAH (until August 2018)
- LR: Member of the board of directors or the TEI consortium
- LR: President of ISO committee TC 37 (Language and terminology)
- LR: Member of the ELEXIS Interoperability and Sustainability Committee (ISC) — ELEXIS is the European Lexicographic Infrastructure (https://elex.is)
- EVdLC: Chairman of the ACL special interest group SIGPARSE
- BS: Member, Deputy Treasurer and Member of the Board of the Société de Linguistique de Paris
- DS: Board member of the French NLP society (Atala, 2017-2020), Vice-President of the Atala and program chair of the "journée d'études".
- DS: Member of the ACL's BIG (Broad Interest Group) Diversity group.
- : Charles Riondet: Co-chair of the DARIAH Guidelines and Standards Working Group.
- : Marie Puren: Co-chair of the DARIAH Guidelines and Standards Working Group.

9.1.7. Scientific Expertise

- BS: member of the recruitment committee for the new "ingénieur d'études" position in Inria Paris's communication department
- LR: has carried out various project assesment expertises for: City University Honk Kong, the go!digital programm at the Austrian Academy of Sciences, the Haifa-Technion Joint Research Submission to Milgrom Foundation, teh Swiss National Science Foundation
- DS: Project evaluation for the Flanders Research Agency.
- EVdLC: Evaluator for a European COST proprosal
- EVdLC: Evaluator for the Program Call of DGLFLF on "Langue et Numérique"

9.1.8. Research Administration

- BS: Member of the Board of Inria Paris's Scientific Committee ("Comité des Projets")
- BS: Member of the International Relations Working Group of Inria's Scientific and Technological Orientation Council (COST-GTRI)
- BS: Deputy Head of the research strand on Language Resources of the LabEx EFL (Empirical Foundations of Linguistics), and is therefore a deputy member of the Governing Board of the LabEx; BS and DS are in charge of several research operations in the LabEx
- LR: President of the board of directors of DARIAH
- LR: President of the scientific committee of ABES (Agence Bibliographique de l'Enseignement Supérieur)
- LR: President of ISO committee TC 37 (Language and Terminology)
- Mohamed Khemakhem and LR: Project leaders of the ISO 24613-4 LMF "TEI Serialisation"
- LR: Convener of ISO working group TC 37/SC 4/WG 4 (lexical resources)
- LR: Member of the Text Encoding Initiative board
- LR: advisor for scientific information to the director for science at Inria

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Master: Benoît Sagot (with Emmanuel Dupoux), "Speech and Language Processing", 20h, M2, Master "Mathématiques, Vision, Apprentissage", ENS Paris-Saclay, France
- Licence: Djamé Seddah, "Certificat Informatique et Internet", 30h, L1-L2-L3, Université Paris Sorbonne, France
- Master: Djamé Seddah, "Modèles pour la linguistique computationnelle",36h, M1, Université Paris Sorbonne, France
- Master: Djamé Seddah, "Traduction automatique", 30h, M2, Université Paris Sorbonne, France
- Master: Loïc Grobol, "Introduction à la fouille de textes", 39h, M1, Université Sorbonne Nouvelle, France
- Master: Yoann Dupont and Loïc Grobol, "Langages de script", 39h, M2, INALCO, France

9.2.2. Supervision

HdR: Benoît Sagot, "Informatiser le lexique — Modélisation, développement et exploitation de lexiques morphologiques, syntaxiques et sémantiques", 28th June 2018, mentored by Laurent Romary

PhD in progress: Mohamed Khemakhem, "Structuration automatique de dictionnaires à partir de modèles lexicaux standardisés", September 2016, Paris Diderot, supervised by Laurent Romary

PhD in progress: Loïc Grobol, ""Reconnaissance automatique de chaînes de coréférences en français par combinaison d'apprentissage automatique et de connaissances linguistiques", "Université Sorbonne Nouvelle", started in Oct. 2016, supervised by Frédéric Landragin (main superviser), Isabelle Tellier[†] (main superviser), Éric de La Clergerie and Marco Dinarelli

PhD in progress: Jack Bowers, "Technology, description and theory in language documentation: creating a comprehensive body of multi-media resources for Mixtepec-Mixtec using standards, ontology and Cognitive Linguistics", started in Oct. 2016, EPHE, supervised by Laurent Romary

PhD in progress: Axel Herold, "Automatic identification and modeling of etymological information from retro-digitized dictionaries", October 2016, EPHE, Laurent Romary

PhD in progress: Mathilde Regnault,"Annotation et analyse de corpus hétérogènes", "Université Sorbonne Nouvelle", started in Oct. 2017, supervised by Sophie Prévost (main superviser), Isabelle Tellier[†], and Éric de la Clergerie

PhD in progress: Pedro Ortiz, "Automatic Enrichment of Ancient Dictionaries", October 2018, Sorbonne Université, supervised by Laurent Romary and Benoît Sagot

PhD in progress: Benjamin Muller, "Multi-task learning for text normalisation, parsing and machine translation", October 2018, Sorbonne Université, supervised by Benoît Sagot and Djamé Seddah

PhD in progress: José Carlos Rosales, supervised by Guillaume Wisnewski (Limsi) and Djamé Seddah

9.2.3. Juries

- BS: president of the Habilitation committee for Kim Gerdes at Université Paris Nanterre on November 29th (Title: "Same Same but Different: Paradigms in Syntax"; Mentor: Sylvain Kahane)

- BS: reviewer ("rapporteur") in the PhD committee for Sébastien Delecraz at Aix-Marseille Université on December 10th (Title: "Approches jointes texte/image pour la compréhension multimodale de documents"; Supervisor:)

- LR: member of the PhD committee for Cyrille Suire, University of La Rochelle, September 2019 (Title: "Recherche d'information et humanités numériques : une approche et des outils pour l'historien")

- BS: member of the recruiting committee for a communication officer at Inria Paris (Aug–Oct 2018)

- LR: member of the selection committee for the assistant professor position on linguistics and NLP at University of Orléans (May 2018)

9.3. Popularization

9.3.1. Interventions

- Welcoming of schoolchildren at Inria Paris (half a day with ALMAnaCH members within an one-week-long stay; December 2018)

- ALMAnaCH members were involved in the Profiterole ANR project's presentation at the *Salon de l'Innovation* of the conference TALN 2018 (the "SiTAL" show).

- Presentation in Education Network ISN "Informatique et Science du Numérique" (March)

- Invited speaker in a citizen debate on Artificial Intelligence (association "Les coteaux en Seine", Bougival, November 21st 2018)

COML Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- E. Dupoux Co-Program Chair of NIPS 2018 workshop on intuitive physics, Montreal.
- E. Dupoux Co-Program chair of of the LEGRAIN Conference on Learning in Humans and Machines, Ecole Normale Supérieure, 2018 (this conference had a scientific, an industrial and a general public track)

9.1.1.2. Member of the Organizing Committees

- Executive committee of SIGMORPHON (Association for Computational Linguistics Special Interest Group, http://www.sigmorphon.org/).
- Executive committee of DARCLE www.darcle.org.

9.1.2. Scientific Events Selection

9.1.2.1. Reviewer

Invited editor for international conferences: Interspeech, NIPS, ACL, etc. (around 5-10 papers per conferences, 2 conferences per year)

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

Member of the editorial board of: Mathématiques et Sciences Humaines, L'Année Psychologique, Frontiers in Psychology.

9.1.3.2. Reviewer - Reviewing Activities

Invited Reviewer for Frontiers in Psychology, Cognitive Science, Cognition, Transactions in Acoustics Signal Processing and Language, Speech Communication, etc. (around 4 papers per year)

9.1.4. Invited Talks

- Nov/29/2018, E. Dupoux, Invited Department Colloquium, Linguistics, U. Maryland: Reverse Engineering Language Acquisition
- Nov/21/2018, E. Dupoux, Invited Department Colloquium, LORIA, Nancy: Developmental AI
- Oct/17/2018, E. Dupoux, Invited Seminar, Departement Physics ENS& chaire Sciences des Données: Reverse Engineering Cognitive Development
- Jul/4/2018, E. Dupoux, Invited Seminar, PRAIRIE AI Summer School: Unsupervised Speech Technology
- Nov/23/2018, E. Dupoux, Invited Seminar, GDR "Cognitive Neurosciences of Development": What AI can bring to Cognitive Development (and vice versa)
- 2018, N. Zeghidour, invited Seminar, LORIA, Nancy: learning from raw waveforms
- 2018, N. Zeghidour, invited Talk, Legrain Conference on AI and Cognition, Paris: learning from raw waveforms

9.1.5. Scientific Expertise

E. Dupoux is invited expert for ERC, ANR, and other granting agencies, or tenure committees (around 2 per year).

9.1.6. Research Administration

E. Dupoux is on the Executive committee of the Foundation Cognition, the research programme IRIS-PSL "Sciences des Données et Données des Sciences", the industrial chair Almerys (2016-) and the collective organization DARCLE (www.darcle.org).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Master : E. Dupoux, "Theoretical Cognitive Science: Connections and symbols", 8h, M1/M2, PSL,Paris 5, Paris France
- Master : E. Dupoux (with B. Sagot, ALMANACH, N. Zeghidour & R. Riad, COML), "Algorithms for speech and language processing", 30h, M2, (MVA), ENS Cachan, France
- Master : E. Dupoux, "Cognitive Engineering", 80h, M2, ITI-PSL, Paris France
- Doctorat : E. Dupoux, "Computational models of cognitive development", 32 h, Séminaire EHESS, Paris France

9.2.2. Supervision

- PhD : Julia Maria Carbajal, Separation and acquisition of two languages in early childhood: a multidisciplinary approach, Ecole Normale Supérieure, sept 21, 2018, co-advised E. Dupoux, S. Peperkamp
- PhD : Adriana Rukoz Gevara, Decoding perceptual epenthesis: Experiments and Modelling., Ecole Normale Supérieure, oct 19, 2018, co-advised E. Dupoux, S. Peperkamp
- PhD in progress : Neil Zeghidour, Learning speech features from raw signals, Feb 2015, co-advised E. Dupoux, N. Usunier (Facebook-CIFRE)
- PhD in progress : Elin Larsen, Models of word learning in infants, Sept 2017, co-advised E. Dupoux, A. Cristia– abandon
- PhD in progress : Rama Chaabouni, Language learning in artificial agents, Sept 2017, co-advised E. Dupoux, M. Baroni (Facebook-CIFRE)
- PhD in progress : Ronan Riochet, Learning models of intuitive physics, Sept 2017, co-advised E. Dupoux, I. Laptev, J. Sivic
- PhD in progress : Rachid Riad, "Speech technology for biomarkers in neurodegenerative diseases" , Sept 2018, co-advised E. Dupoux, A.-C. Bachoud-Lévi

9.2.3. Juries

E. Dupoux participated in the PhD Jury of Andreux Mathieu, Nov 12, ENS, 2018.

9.3. Popularization

E. Dupoux talked in two general public conferences on speech technologies, one organized by the Institut Carnot Cognition (La Vilette, oct, 2018), one by the Institut IA in Toulouse (oct 2018), both with around 200 participants. He gave and/or organized smaller meetings geared towards enhancing contacts between industry and research in the general area of AI and Cognition (1 day and a half of scientific meetings between PSL and Facebook, seminar-style intervention with MSR, and with the CVT Athena). He co-chaired the conference Legrain on AI and Cognition which, besides the scientific track had a general public track and an industry track, which were both attended by 100-200 attendees (see http://olivierlegrain.ens.psl.eu/ia-et-cognition.html).

N. Zeghidour did a high level presentation of AI in Vivatech on the Facebook Stand (100 000 visitors). He presented the state of the art in ASR and TTS in the BNP Paribas-PRAIRIE Summer School with participants from the IT Industry. He co-redacted a 5 pages popularization article on neural networks and deep learning in the magazine "Tangent, the mathematical adventure" for high school students, 20,000 printed copies.

RITS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

Mohammad Abualhoul and Fawzi Nashashibi: chairs and co-organizers of the 1st CA2V workshop at the IEEE VTC'18 conference, Porto (Portugal), June 2018.

Fawzi Nashashibi and Mohammad Abualhoul: chairs and co-organizers of the CA2V workshop at the IEEE ICVES'18 conference, Madrid (Spain), September 2018.

Fawzi Nashashibi: chair of the AUTOCITS international workshop ob connected and autonomous vehicles, December 13, Paris, France.

10.1.1.2. Member of the Organizing Committees

Fawzi Nashashibi was member of the organizing committee of the IEEE/RSJ IROS 2018 Autonomous Driving Events including: PPNIV Workshop, Round table and Autonomous vehicle on-site demonstrations.

Fawzi Nashashibi was member of the Steering Committee of the IEEE Global Communications Conference, 9-13 December 2018, Abu Dhabi, UAE.

10.1.2. Scientific Events Selection

Jean-Marc Lasgouttes: co-organizer of the Symposium "Large Random Networks and Constrained Random Walks" in honor of the 75$^{\text{th}}$ birthday of Guy Fayolle, Dijon (France), August 27–28.

10.1.2.1. Chair of Conference Program Committees

Raoul de Charette: program chair of Workshop 'Real-World Challenges for Robotic Vision' CVPR 2018 (CVPRW).

10.1.2.2. Member of the Conference Program Committees

Raoul de Charette: program committee member of 'Conférence Française de Photogrammétrie et de Télédétection' (CFPT).

Fawzi Nashashibi : co-organizer of the breakout session *Artificial Intelligence and Deep Machine Learning Tools and Algorithms for Automated Vehicles: The State of the Art and Practice* at the Automated Vehicles Symposium, San Francisco (USA), 9-12 July, 2018.

10.1.2.3. Reviewer

Mohammad Abualhoul: *IEEE ITS 2018*, *IEEE IV 2018*, *IEEE ICVES 2018*, *TRA 2018*.

Raoul de Charette: *CVPR 2018*, *ACCV 2018*, *IEEE ICRA 2018*, *CVPR Workshop 2018*, *IEEE IV 2018*.

Jean-Marc Lasgouttes: *IEEE ITSC 2018*.

Fawzi Nashashibi : *IEEE ICRA 2018*, *IEEE IROS 2018*, *IEEE IV 2018*, *IEEE ITSC 2018*, *IEEE ICARCV 2018*, *IEEE VTC 2018*, *IEEE ICVES 2018*

Anne Verroust-Blondet: *IEEE IV 2018*, *IEEE ITSC 2018*, *IEEE ICARCV 2018*.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

Guy Fayolle: associate editor of the journal *Markov Processes and Related Fields*.

Fawzi Nashashibi: associate editor of the journal *IEEE Transactions on Intelligent Vehicles*, associate editor of the journal *IEEE Transactions on Intelligent Transportation Systems*.

Anne Verroust-Blondet: associate editor of the journal *The Visual Computer*.

10.1.3.2. Reviewer - Reviewing Activities

Raoul de Charette: *IEEE Transactions on Intelligent Transportation Systems*

Guy Fayolle: *AAP, MPRF, PTRF, QUESTA, European Journal of Combinatorics, JSP, Physica A, Springer Science*.

Jean-Marc Lasgouttes: *IEEE Transactions on Intelligent Transportation Systems*

Fawzi Nashashibi: *IEEE Transactions on Intelligent Transportation Systems*, *IEEE Transactions on Intelligent Vehicles*, *Transportation Research Part C*.

Anne Verroust-Blondet: *IEEE Transactions on Intelligent Vehicles*

10.1.4. Invited Talks

Mohammad Abualhoul: keynote speaker in ICVES-CA2V-2018 Worshop in Madrid, June 2018.

Raoul de Charette: public presentation at BNF Paris on Artificial Intelligence (2018-10-08).

Guy Fayolle: guest speaker at the conference *Grands réseaux aléatoires et marches contraintes*, held at the University of Bourgogne, Dijon, 27-28th August 2018, http://www.lmpt.univ-tours.fr/ConferenceGuyFayolle75/.

Guy Fayolle: four long talks on topics related to the book [2] at the working group GTMA (http://divizio.joomla.com/seminaires-et-gdt/11-groupe-de-travail-autour-des-marches-dans-le-quart-de-plan).

Gérard Le Lann: "Conduite automatisée, cyber-sécurité et enjeux de société", Espace des Sciences, Rennes, April 2018.

Gérard Le Lann: "Future Directions in Autonomic Vehicular Networks", IEEE & IFIP Med-Hoc-Net Workshop, Capri, Italy, June 2018.

Gérard Le Lann: "Future Directions in Connected Autonomous Vehicles and Autonomic Vehicular Networks", ATOS Worldwide Annual TechForum, Seclin, July 2018.

Gérard Le Lann: "Future Directions in Connected Autonomous Vehicles and Autonomic Vehicular Networks", CNIL, Paris, September 2018.

Gérard Le Lann: "Safety, Privacy and Cybersecurity in Future Vehicular Networks", AutoCITS Workshop, Inria Paris, December 2018.

Fawzi Nashashibi: keynote speaker on *Scientific and technical challenges of autonomous navigation for connected autonomous vehicles* in ICVES-CA2V-2018 Worshop in Madrid, June 2018.

Fawzi Nashashibi: keynote speaker on *Autonomous vehicles in smart cities: the next challenges* in PAMS international conference, Pangyo (S. Korea), 15-16 November 2018.

Fawzi Nashashibi: keynote and Round table speaker on *Scientific and technical challenges of autonomous navigation for connected autonomous vehicles* at the International Conference on Mobility Challenges, Gif-sur-Yvette (France), 6-7 December 2018.

Fawzi Nashashibi: keynote on *Evolution and challenges of mobility with the increased introduction of artificial intelligence*, at the TOTAL AI FOR LEADERS PROGRAM, Paris (France), March 19, 2018.

Fawzi Nashashibi: keynote on the *Challenges et opportunities of autonomous mobility in smart cities*, in the working day on Intelligent Mobility, organized by TECNALIA, Madrid (Spain), February 2018.

10.1.5. Scientific Expertise

Guy Fayolle is scientific advisor and associate researcher at the *Robotics Laboratory of Mines ParisTech*. He is also collaborating member of the research-team SPECFUN at Inria-Saclay.

Jean-Marc Lasgouttes is member of the *Conseil Académique* of Université Paris-Saclay.

Gérard Le Lann: contributions to *Report on Safer Roads with Automated Vehicles ?*, International Transportation Forum, OECD, April 2018, 45 p. [0]

Fawzi Nashashibi is an associate researcher at the *Robotics Laboratory, Mines ParisTech*. He is an evaluator/reviewer of European H2020 projects.

10.1.6. Research Administration

Jean-Marc Lasgouttes is a member of the *Comité Technique Inria*.

Guy Fayolle is a member of the working group IFIP WG 7.3.

Fawzi Nashashibi is a member of the international Automated Highway Board Committee of the TRB (AHB30). He is a member of the Board of Governors of the VEDECOM Institute representing Inria and of the Board of Governors of MOV'EO Competitiveness cluster representing Inria.

Anne Verroust-Blondet is the scientific correspondent of the European affairs and of the International Partnerships for Inria Paris, member of the COST-GTRI committee at Inria (Committee in charge of the evaluation of international projects) and member of the "emplois scientifiques" committee of Inria Paris.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence: Fawzi Nashashibi, "Programmation avancée", 84h, L1, Université Paris-8 Saint-Denis, France.

Master: Carlos Flores and Anne Verroust-Blondet, "Le véhicule autonome. Présentation des recherches de l'équipe-projet RITS",1.5 h, 2nd year, Ecole des Ponts ParisTech, France, September 2018.

Master: Jean-Marc Lasgouttes, "Analyse de données", 54h, second year of Magistère de Finance (M1), University Paris 1 Panthéon Sorbonne, France.

Master: Jean-Marc Lasgouttes, "Analyse de données", 52.5h, Master 1 SIC APP, University Paris 1 Panthéon Sorbonne, France.

Master: Fawzi Nashashibi, "Image synthesis and 3D Infographics", 12h, M2, INT Télécom Sud-Paris.

Master: Fawzi Nashashibi, "Obstacle detection and Multisensor Fusion", 4h, M2, INSA de Rouen.

Master: Fawzi Nashashibi, "Perception and Image processing for Mobile Autonomous Systems", 12h, M2, University of Evry.

Master: Renaud Poncelet, "Mécatronique fondamentale", 64h, 4rd year, Pôle Universitaire Léonard de Vinci, Paris La Défense, France.

Doctorat: Jean-Marc Lasgouttes, "Analyse de données fonctionnelles", 31.5h, Mastère Spécialisé "Expert en sciences des données", INSA-Rouen, France

10.2.2. Supervision

PhD: Zayed Alsayed,"Characterizing the Robustness and Enhancing the Accuracy of SLAM-based Localization Systems for Autonomous Driving", Télécom ParisTech, June 2018, supervisor: Anne Verroust-Blondet, co-supervisors: Fawzi Nashashibi, Guillaume Bresson.

---

[0] https://www.itf-oecd.org/sites/default/files/docs/safer-roads-automated-vehicles.pdf

PhD: Carlos Flores, "Control Architecture for Adaptive and Cooperative Car-Following", Mines ParisTech, PSL Research University, December 2018, supervisor: Fawzi Nashashibi, co-supervisor: Vicente Milanés.

PhD: Fernando Garrido, "Two-staged local trajectory planning based on optimal pre-planned curves interpolation for human-like driving in urban areas" , Mines ParisTech, PSL Research University, December 2018, supervisor: Fawzi Nashashibi, co-supervisors: Vicente Milanés, Joshué Pérez.

PhD: Francisco Navas, "Stability analysis for controller switching in autonomous vehicles", Mines ParisTech, , PSL Research University, November 2018, supervisor: Fawzi Nashashibi, co-supervisor: Vicente Milanés.

PhD: Dinh-Van Nguyen, "Wireless Sensors Networks for Indoor Mapping and Accurate Localization for Low Speed Navigation in Smart Cities", Mines ParisTech, , PSL Research University, December 2018, supervisor: Fawzi Nashashibi, co-supervisor: Eric Castelli.

PhD in progress: Pierre de Beaucorps, "Autonomous vehicle: behavior prediction and Interaction with road users", UPMC Sorbonne University, January 2016, supervisor: Anne Verroust-Blondet, co-supervisor: Fawzi Nashashibi.

PhD in progress: Farouk Ghallabi, "Environment modeling and simultaneous localization of a mobile vehicle on motorways: a multi-sensor approach", Mines ParisTech, PSL Research University, October 2016, supervisor: Fawzi Nashashibi.

PhD in progress: Maximilian Jaritz, "Perception multi-capteur pour la conduite autonome grâce à l'apprentissage profond", Mines ParisTech, PSL Research University, January 2017, supervisor: Fawzi Nashashibi, co-supervisor: Raoul de Charette.

PhD in progress: Danut-Ovidiu Pop, "Deep learning techniques for intelligent vehicles", INSA Rouen, May 2016, supervisor: Abdelaziz Bensrhair, co-supervisor: Fawzi Nashashibi.

PhD in progress: Imane Matout, "Estimation de l'intention des véhicules pour la prise de décision et le contrôle sans faille en navigation autonome", Mines ParisTech, PSL Research University, December 2017, supervisor: Fawzi Nashashibi, co-supervisor: Vicente Milanés.

PhD in progress: Kaouther Messaoud, "Détermination des manoeuvres et des intentions des véhicules avoisinant un véhicule autonome", UPMC Sorbonne University, October 2017, supervisor: Anne Verroust-Blondet, co-supervisors: Fawzi Nashashibi, Itheri Yahiaoui.

PhD in progress: Luis Roldao, "Modélisation 3D de l'environnement et de la manoeuvrabilité d'un véhicule", UPMC Sorbonne University, October 2017, supervisor: Anne Verroust-Blondet, co-supervisor: Raoul de Charette.

Starting PhD: Renaud Poncelet, "Navigation autonome en présence d'obstacles fortement dynamiques au mouvement incertain", UPMC Sorbonne University, September 2018, supervisor: Anne Verroust-Blondet, co-supervisor: Fawzi Nashashibi.

10.2.3. Juries

Fawzi Nashashibi was a jury member of the PhD thesis of Mr. Laurent Delobel - *Agrégation d'Information Pour la Localisation d'un Robot Mobile sur une Carte Imparfaite* -, Université Clermont-Auvergne, Clermont-Ferrand, 16 February 2018.

Fawzi Nashashibi was a reviewer of the PhD thesis of Mr. Yrvann Emzivat *Safety System Architecture for the Design of Dependable and Adaptable Autonomous Vehicles* -, Université Bretagne Loire, Nantes (France), 30 May 2018.

Fawzi Nashashibi was a jury member of the PhD thesis of Mr. Aymeric Dujardin - *Détection d'obstacles par stéréovision en environnement non structuré* -, Normandie Université, Saint-Etienne-du-Rouvray (France), 03 July 2018.

Fawzi Nashashibi participated, as examiner and president, to the HdR committee of Oyunchimeg Shagdar *Optimizing Wireless Communications in Dense Mobile Environments*, Université de Versailles Saint-Quentin-en-Yvelines, 6 September 2018.

Anne Verroust-Blondet was a reviewer of the PhD thesis of Sarah Bertrand - *Analyse d'images pour l'identification multi-organes d'espèces végétales*, Université Lyon 2, 10 December 2018.

Anne Verroust-Blondet was a jury member of the PhD thesis of Dai-Duong Nguyen - *A vision system based real-time SLAM application*, Université Paris-Saclay, 7 December 2018.

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Fawzi Nashashibi was the coordinator of the Inria Livre Blanc "Véhicules autonomes et connectés, les défis actuels et les voies de recherche" [0].

10.3.2. Articles and contents

A few press interviews and popular science was done in 2018.

- In books/journals/radios for the general public:

Raoul de Charette was interviewed by A. Devillard for:

- *Pour la voiture autonome, l'algorithme d'apprentissage qui ne s'entraîne pas*[0], Science et Avenir, 2018-03-18;

- *Les failles de la voiture autonome*[0], Sciences et Avenir, 2018-04-26;

Raoul de Charette and Fawzi Nashashibi were interviewed by M. Moragues for *[Infographie] L'intelligence artificielle n'est pas un as du volant*[0], L'Usine Nouvelle, 2018-09-23;

Raoul de Charette was interviewed for Sciences et Avenir, *La voiture autonome en quête de la "vision" parfaite*, 2018-09-27;

Raoul de Charette and Fawzi Nashashibi were interviewed for Challenges, *L'intelligence artificielle bute sur la sécurité routière*, 2018-10-04;

Raoul de Charette was interviewed for Radio France Internationale, 2018-03-30;

Fawzi Nashashibi was interviewed for La Tribune, *Ce que l'IA change dans l'auto : l'ère de la voiture autonome*[0], 2018-05-02;

Fawzi Nashashibi was interviewed by Dominique Filippone for *Voitures autonomes : Pas avant 2040 en France selon l'Inria*[0], Le Monde Informatique, 2018-05-15;

Fawzi Nashashibi was interviewed by Loup Besmond de Senneville for *Les recommandations des chercheurs pour l'éthique des voitures autonomes*[0], La Croix, 2018-05-18;

Fawzi Nashashibi was interviewed by Frank Niedercorn for *Fawzi Nashashibi : "Il y a encore bien des obstacles pour le véhicule autonome"*[0], Les Echos, 2018-06-29;

Fawzi Nashashibi was interviewed for L'Usine Nouvelle, no 3577, *Automobile le graal de l'autonomie*, 2018-09-20;

Fawzi Nashashibi was interviewed by Laurène Le Fourner for Radio Village Innovation, July 2018.

---

[0] https://www.inria.fr/institut/strategie/vehicules-autonomes-et-connectes
[0] https://www.sciencesetavenir.fr/high-tech/pour-la-voiture-autonome-un-algorithme-d-apprentissage-qui-ne-s-entraine-pas_122033
[0] https://www.sciencesetavenir.fr/high-tech/transports/les-failles-de-la-voiture-autonome_123502
[0] https://www.usinenouvelle.com/editorial/infographie-l-intelligence-artificielle-n-est-pas-un-as-du-volant.N742309
[0] https://www.latribune.fr/entreprises-finance/industrie/automobile/ce-que-l-ia-change-dans-l-auto-l-ere-de-la-voiture-autonome-776767.html
[0] https://www.lemondeinformatique.fr/actualites/lire-voitures-autonomes-pas-avant-2040-en-france-selon-l-inria-71733.html
[0] https://www.la-croix.com/Sciences-et-ethique/Ethique/recommandations-chercheurs-lethique-voitures-autonomes-2018-05-18-1200940092
[0] https://www.lesechos.fr/29/06/2018/LesEchos/22727-506-ECH_fawzi-nashashibi-–-il-y-a-encore-bien-des-obstacles-pour-le-vehicule-autonome–.htm

Fawzi Nashashibi was interviewed for France Info, 2018-09-07.

- For online publications: (Interstices, Images des Maths, Binaire, Wikipedia), and more widely blog articles:

Raoul de Charette was interviewed by K. Haske for MyScienceWork *Where are they now ? Raoul de Charette*[0], 2018-09-04, and by J. Jongwane for Interstices *Les algorithmes de vision pour les véhicules autonomes*[0] [36];

Fawzi Nashashibi was interviewed by Mrs. Barbara Vignaux to prepare an exhibition on the autonomous car for the *Science Actualités* area of the City of Science and Industry (*Cité des Sciences et des Industries*), Paris. It was followed by the development of an article entitled *"Voiture autonome: révolution en route ?"* (Autonomous Car: revolution on the way?);

In January 2018, Gérard Le Lann has been invited to contribute to Blog Binaire Le Monde on: *Sécurité routière et cybersécurité*[0];

In May 18th, an on-line article titled *Inria dévoile son Livre blanc sur les Véhicules Autonomes et Connectés* and relaying the contents of Inria white paper on connected autonomous vehicles was published at http://www.auto-innovations.com/communique/1374.html.

10.3.3. Interventions

- Raoul de Charette and Renaud Poncelet made a demonstration at Inria RII meeting ("Mobilité & environnements", 2018-11-20, Station F, Paris);
- RITS was involved in welcoming schoolchildren in Paris center on December 21st.

---

[0]https://www.mysciencework.com/omniscience/now-raoul-charette
[0]https://interstices.info/les-algorithmes-de-vision-pour-les-vehicules-autonomes/
[0]http://binaire.blog.lemonde.fr/2018/01/19/securite-routiere-et-cybersecurite/

VALDA Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. General Chair, Scientific Chair

- Luc Segoufin, chair of the steering committee of the conference series *Highlights of Logic, Games and Automata*

8.1.1.2. Member of the Organizing Committees

- Luc Segoufin and Pierre Senellart, co-organizers of École de Printemps en Informatique Théorique (EPIT) 2019
- Pierre Senellart, co-organizer of ACM-ICPC Southwestern Europe 2018 competition

8.1.2. Scientific Events Selection

8.1.2.1. Chair of Conference Program Committees

- Pierre Senellart, RoD (Reasoning on Data) workshop at The Web Conference 2018 (co-chair)

8.1.2.2. Member of the Conference Program Committees

- Camille Bourgaux, AAAI 2019
- Olivier Cappé, COLT 2018, ALT 2019
- Pierre Senellart, BDA 2018, PODS 2019
- Michaël Thomazo, IJCAI 2018, AAAI 2019

8.1.3. Journal

8.1.3.1. Member of the Editorial Boards

- Olivier Cappé, associate editor, *Annals of the Institute of Statistical Mathematics*

8.1.3.2. Reviewer - Reviewing Activities

- Pierre Senellart, *Transactions on Database Systems*, *VLDB Journal*

8.1.4. Invited Talks

- Pierre Senellart, keynote at Theory and Practice of Provenance (TaPP), London, United Kingdom
- Pierre Senellart, keynote at TempWeb workshop, The Web Conference, Lyon, France
- Pierre Senellart, LORIA Colloquium, Nancy, France

8.1.5. Leadership within the Scientific Community

- Serge Abiteboul is a member of the French Academy of Sciences, of the Academia Europa, and of the scientific council of the Société Informatique de France.
- Pierre Senellart is a member of the steering committee of BDA, the French scientific community on data management.

8.1.6. Scientific Expertise

- Pierre Senellart, FWO

8.1.7. Research Administration

- Olivier Cappé is a scientific deputy director of CNRS division of Information Sciences and Technologies (INS2I).
- Luc Segoufin is a member of the CNHSCT of Inria.
- Pierre Senellart is a member of the board of section 6 of the National Committee for Scientific Research.
- Pierre Senellart is deputy director of the DI ENS laboratory, joint between ENS, CNRS, and Inria.
- Pierre Senellart is a member of the board of the DIM RFSI (Réseau Francilien en Sciences Informatiques).
- Pierre Senellart is a member of the scientific council of PGMO (Programme Gaspard Monge).

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence: Pierre Senellart, *Databases*, 32 heqTD, L3, École normale supérieure

Licence: Pierre Senellart, *Algorithms*, 18 heqTD, L3, École normale supérieure

Licence: Michaël Thomazo, *Formal languages*, 22 heqTD, L3, Télécom ParisTech

Master: Serge Abiteboul & Pierre Senellart, *Web data management*, 36 heqTD, M2, MPRI

Pierre Senellart has various teaching responsibilities (L3 internships, M2 administration, tutoring, entrance competition) at ENS.

8.2.2. Supervision

PhD: Miyoung Han, *Reinforcement learning approaches in dynamic environments*, Télécom ParisTech, 19 July 2018, Pierre Senellart

PhD: Alexandre Vigny, *Query enumeration and nowhere dense graphs*, Université Paris-Diderot, 27 September 2018, Arnaud Durand & Luc Segoufin

PhD: Mikaël Monet, *Combined complexity of probabilistic query evaluation*, Université Paris-Saclay, 12 October 2018, Antoine Amarilli & Pierre Senellart

PhD: Quentin Lobbé, *Archives, fragments Web et diasporas. Pour une exploration désagrégée de corpus d'archives Web liées aux représentations en ligne des diasporas.* Université Paris-Saclay, 9 November 2018, Dana Diminescu & Pierre Senellart

PhD in progress: Julien Grange, *Graph properties: order and arithmetic in predicate logics*, started in September 2017, Luc Segoufin

PhD in progress: Karima Rafes, *Le Linked Data à l'université : la plateforme LinkedWiki*, defense planned in January 2019, Serge Abiteboul & Sarah Cohen-Boulakia

PhD in progress: Yann Ramusat, *Provenance-based routing in probabilistic graphs*, started in September 2018, Silviu Maniu & Pierre Senellart

PhD in progess: Yoan Russac, *Sequential methods for robust decision making*, started in December 2018, Olivier Cappé

8.2.3. Juries

- PhD Frederik Harwarth, June 2018, Humbold University, Luc Segoufin (reviewer)
- PhD Debabrota Basu, October 2018, National University of Singapore, Olivier Cappé (reviewer)
- PhD Govind, December 2018, Université Caen–Normandie, Pierre Senellart (president)
- PhD Ngurah Agus Sanjaya Er, December 2018, Télécom ParisTech, Pierre Senellart (president)

8.3. Popularization

8.3.1. Internal or external Inria responsibilities

Serge Abiteboul is the president of the strategic committee of the Blaise Pascal foundation for scientific mediation.

8.3.2. Articles and contents

Serge Abiteboul published *Le bot qui murmurait à l'oreille de la vieille dame* at the *Le Pommier* éditions, a collection of short stories on the digital world, accompanied with scientific and technical discussions.

Serge Abiteboul writes regular columns on popularization of computer science in La Recherche and Le Monde (Économie).

8.3.3. Education

Pierre Senellart participated to a week-long meeting of teachers in *classes préparatoires* in Lumini in May 2018 to discuss the future of computer science education and to give an introduction to database research.

WILLOW Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- I. Laptev was program co-chair of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.

10.1.1.2. Member of the Organizing Committees

- G. Varol and Y. Hasson are co-organizers of "Women in Computer Vision Workshop" at European Conference on Computer Vision (ECCV), 2018.
- I. Laptev and J. Sivic were co-organizers of "Fine-grained instructional video understanding workshop" at IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.

10.1.2. Scientific Events Selection

10.1.2.1. Area chairs

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (J. Sivic).
- European Conference on Computer Vision (ECCV), 2018 (I. Laptev, J. Sivic).

10.1.2.2. Member of the Conference Program Committees / reviewer

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (J.-B. Alayrac, M. Oquab, R. Rezende, I. Rocco, G. Varol).
- European Conference on Computer Vision (ECCV), 2018 (A. Miech, G. Varol, I. Rocco, S. Zagaryuko).
- Neural Information Processing Systems (NIPS), 2018 (J. Sivic).
- Asian Conference on Computer Vision (ACCV), 2018 (G. Varol).

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- International Journal of Computer Vision (I. Laptev, J. Ponce, J. Sivic).
- IEEE Transactions on Pattern Analysis and Machine Intelligence (I. Laptev, J. Sivic).
- Foundations and Trends in Computer Graphics and Vision (J. Ponce).

10.1.3.2. Reviewer - Reviewing Activities

- International Journal of Computer Vision (G. Cheron, M. Trager, G. Varol).
- IEEE Transactions on Pattern Analysis and Machine Intelligence (J.-B. Alayrac, G. Cheron, M. Trager, G. Varol).
- IEEE Transactions on Circuits and Systems for Video Technology (G. Varol).

10.1.4. Other

- J. Sivic is senior fellow of the Neural Computation and Adaptive Perception program of the Canadian Institute of Advanced Research.

10.1.5. Invited Talks

- I. Laptev, Keynote, ICCVG, Warsaw, September, 2018.

- I. Laptev, Invited talk, EPIC Workshop in conjunction with ECCV'18, Munich, September 2018.
- I. Laptev, Tutorial, BMVC'18, Newcastle, September 2018.
- I. Laptev, Invited talk, Workshop on Brave New Ideas for Video Understanding, in conjunction with CVPR'18, Salt Lake City, June 2018.
- I. Laptev, Invited talk, Journee AI, SAFRAN, Paris, June 2018.
- I. Laptev, Invited talk, Integrating Vision and Language, Tartu, March 2018.
- I. Laptev, Keynote, 36th Annual Swedish Symposium on Image Analysis, Stockholm, March 2018.
- A. Miech, Invited talk, LSCP-ENS seminar, Paris, March 2018.
- A. Miech, Invited talk, Google, Paris, July 2018.
- A. Miech, Invited talk, Google, Mountain View, July 2018.
- A. Miech, Invited talk, Paris ML Meetup, University of Bristol Computer Vision Seminar, Bristol, UK, November 2018.
- J. Ponce, Artificial Intelligence, French-American Joint Committee Meeting on Science and Technology, College de France, March 9, 2018.
- J. Ponce, Weakly supervised structure discovery in images and videos, Intelligent robots: autonomy and vision, NYU Abu Dhabi, March 13, 2018.
- J. Ponce, From vision and robotics to artificial intelligence, Robotics AI: Data science vs motion intelligence symposium co-organized by the French and German Academies of Sciences, Sep. 5, 2018.
- J. Ponce, Shape, contours, cameras and eyes, Workshop in honor of Jan Koenderink, UC Berkeley, UC berkeley, Oct. 24.
- J. Ponce, Weakly supervised structure discovery in images and videos, NYU Tandon School of Engineering, New York, Nov. 2, 2018.
- J. Ponce, Computer vision and visual recognition: historical perspective, new results and challenges, University of Zagreb, Zagreb, Croatia, Nov. 9, 2018.
- J. Sivic, Invited talk, Paris Sciences et Data, PSL, 02/2018.
- J. Sivic, Invited talk, AIME@CZ - Czech workshop on applied mathematics in engineering, Czech Technical University, 02/2018.
- J. Sivic, Invited talk, Deep Learning Workshop, CVPR 2018, Salt Lake City, June 2018.
- J. Sivic, Invited talk, Landmark Recognition Workshop, CVPR 2018, Salt Lake City, June 2018.
- J. Sivic, Seminar, UC Berkeley, June 2018.
- J. Sivic, Invited talk, Workshop on YouTube-8M Large-Scale Video Understanding, ECCV 2018, Munich, September 2018.
- J. Sivic, Invited talk, Prague Informatics Seminar, Charles University, Prague, April 2018.
- G. Varol, Invited talk, MPI for Informatics, Saarbrucken, Germany 11/2018.
- G. Varol, Invited talk, Istanbul Technical University, Istanbul, Turkey 10/2018.
- G. Varol, Invited talk, Deep Learning Meetup at Station F, Paris, France 09/2018.
- G. Varol, Invited talk, BNP Paribas - Prairie Summer School, Paris, France 08/2018.
- G. Varol, Invited talk, CTU Center for Machine Perception, Prague, Czech Republic 06/2018.
- G. Varol, Invited talk, MPI for Intelligent Systems, Tubingen, Germany 04/2018.

10.1.6. Leadership within the Scientific Community

- Member of the advisory board for the IBM Watson AI Xprize (J. Ponce).
- Member of the steering committee of France AI (J. Ponce).
- Member, advisory board, Computer Vision Foundation (J. Sivic).

10.1.7. Scientific Expertise

- J. Ponce, coordinator of the AI theme for the joint French-American Committee on Science and Technology, 2018-.

10.1.8. Research Administration

- Member, Bureau du comité des projets, Inria, Paris (J. Ponce)
- Member, Scientific academic council, PSL Research University (J. Ponce)
- Member, Research representative committee, PSL Research University (J. Ponce).
- Member of Inria Commission de developpement technologique (CDT), 2012-2018 (J. Sivic).
- Member of the Hiring Committe for the tenure track position at CentraleSupelec (I. Laptev).
- Member of the Hiring Committee for Professor of Computer Vision at CentraleSupelec (I. Laptev).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

- Master : M. Aubry, K. Alahari, I. Laptev and J. Sivic "Introduction to computer vision", M1, Ecole normale superieure, 36h.
- Master : I. Laptev, J. Ponce and J. Sivic (together with C. Schmid, Inria Grenoble), "Object recognition and computer vision", M2, Ecole normale superieure, and MVA, Ecole normale superieure de Cachan, 36h.
- J. Ponce co-organized the PRAIRIE AI Summer School, Grenoble, 2018, which brought together 200 participants representing 44 different nationalities, and selected from 700 applications, with 60% students, 15% academics , and 25% industrials. 25% of these participants were women.

10.2.2. Supervision

PhD : Jean-Baptiste Alayrac, "Structured Learning from Videos and Language", graduated in September 2018, I. Laptev, J. Sivic and S. Lacoste-Julien (Inria SIERRA / U. Montreal).

PhD : Guilhem Cheron, "Structured modeling and recognition of human actions in video", graduated in Dec 2018, I. Laptev and C. Schmid.

PhD : Maxime Oquab, "Convolutional neural networks: towards less supervision for visual recognition", defended on 26 January 2018, L. Bottou (Facebook AI Research), I. Laptev and J. Sivic.

PhD : Matthew Trager, "Cameras, Shapes, and Contours: Geometric Models in Computer Vision", graduated in 2018, J. Ponce and M. Hebert (CMU).

PhD : Tuang Hung VU, "Learning visual models for person detection and action prediction", graduated in 2018 , I. Laptev.

PhD in progress : Vo Van Huy, started in Dec 2018, J. Ponce.

PhD in progress : Robin Strudel, "Learning and transferring complex robot skills from human demonstrations", started in Oct 2018, I. Laptev, C. Schmid and J. Sivic.

PhD in progress : Yann Labbe, "Generalizing robotic sensorimotor skills to new tasks and environments", started in Oct 2018, J. Sivic and I. Laptev.

PhD in progress : Thomas Eboli, started in Oct 2017, J. Ponce.

PhD in progress : Zongmian Li, "Learning to manipulate objects from instructional videos", started in Oct 2017, I. Laptev, J. Sivic and N. Mansard (LAAS/CNRS, Toulouse).

PhD in progress : Yana Hasson, started in Nov 2017, I. Laptev and C. Schmid.

PhD in progress : Dmitry Zhukov, "Learning from instruction videos for personal assistants", started in Oct 2017, I. Laptev and J. Sivic.

PhD in progress : Ignacio Rocco, "Estimating correspondence between images via convolutional neural networks", started in Jan 2017, J. Sivic, R. Arandjelovic (Google DeepMind).

PhD in progress : Antoine Miech, "Understanding long-term temporal structure of videos", started in Oct 2016, I. Laptev, J. Sivic, P. Bojanowski (Facebook AI Research).

PhD in progress : Gul Varol, "Deep learning methods for video interpretation", started in Oct 2015, I. Laptev, C. Schmid.

PhD in progress : Julia Peyre, "Learning to reason about scenes from images and language", started in Oct 2015, C. Schmid, I. Laptev, J. Sivic.

PhD in progress : Theophile Dalens, "Learning to analyze and reconstruct architectural scenes", starting in Jan 2015, M. Aubry and J. Sivic.

10.2.3. Juries

PhD thesis committee:

- Taylor MORDAN, Sorbonne Universite, France, 2018, (J. Sivic, rapporteur).
- Stephane LATHUILIERE, Universite Grenoble Alpes, France, 2018, (J. Sivic, rapporteur).
- Tuan-Hung VU, PSL University, France, 2018, (J. Sivic, examinateur).
- Siddhartha Chandra, CentraleSupelec, France, 2018, (I. Laptev examinateur).
- Sergey Zagoruyko, l?Universite Paris-Est, France, 2018, (I. Laptev examinateur).
- Joris Guerin, Arts et Metiers ParisTech, France, 2018, (I. Laptev examinateur).
- Guilhem Cheron, PSL, France, 2018, (J. Ponce examinateur).
- Pavel Tokmakov, Universite Grenoble Alpes, France, 2018, (J. Ponce examinateur).

10.3. Popularization

10.3.1. Articles and contents

- J. Ponce was the subject of an article in the photography magazine Polka. He was also interviewed by France Culture, Le Monde, Paris-Match, Québec Science, and Science et Vie.
- J. Ponce was interviewed by the Académie des Sciences working group on Artificial Intelligence on Oct. 2, 2018.

10.3.2. Interventions

- J. Ponce participated in round tables about AI at the France Culture Forum in Paris, March 1, 2018, at the BNP Parisbas summer school Aug. 23, 2018, at the French embassy in Berlin on Nov. 6, 2018, at the Erasme-Descartes conference in Paris on Nov. 15, 2018, and at the AI summit in New York City on Dec. 6, 2018.
- J. Ponce gave general audience lectures at the X-IA meeting in Palaiseau, Oct. 8, 2018 and at the Institut français de Croatie in Zagreb, Croatia, Nov. 9, 2018.

10.3.3. Creation of media or tools for science outreach

- I. Laptev, Y. Hasson, S. Allayen, T. Eboli, I. Kalyevath, Y. Labbe, R. Strudel, G. Varol, D. Zhukov, Presentation of computer vision for high-school students, Inria, December 2018.