RESEARCH CENTER

FIELD
Applied Mathematics, Computation and Simulation

Activity Report 2013

Section Dissemination

Edition: 2014-03-20

CAD Team

8. Dissemination

8.1. Teaching - Supervision - Juries

The permanent members teach in the computer Graphics and in the Mathematics Department. Pr. Jean-Claude Paul and Pr. Jun-Hai Young give several lectures around the world every year.

CALVI Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Invitations at conferences and schools

- S. Labrunie gave the invited talk «Singular Solutions and Large Solutions to some Nonlinear Elliptic Equations in Polygonal Domains», Journées Singulières Augmentées en l'honneur de Martin Costabel, Rennes, 2013. http://jsa2013.sciencesconf.org/
- G. Manfredi gave the invited talk «Non-relativistic limits of Maxwell's equations» at the Workshop Asymptotic and Multiscale methods, Ile de Porquerolles, 9-15 June 2013, http://www.math.univ-toulouse.fr/~cnegules/WAMs2013.html
- E. Frénod gave
  - the invited talk « Sand transport in coastal ocean waters submitted to tide » at the Workshop Asymptotic and Multiscale methods, Ile de Porquerolles, 9-15 June 2013.
  - the invited course «Two-Scale Convergence and Two-Scale Numerical Methods », at "École de mécanique des fluides numérique", Ile de Porquerolles, 3-8 June 2013, http://ecolemfn.limsi.fr/doku.php?id=programme.
  - the invited talk « The Geometrical Gyro-Kinetic Approximation » at the Institute of Natural Sciences, Shanghai Jiao Tong University, China, 8–27 May 2013.
  - the invited course « Two-Scale Convergence and Two-Scale Numerical Methods » at the Institute of Natural Sciences, Shanghai Jiao Tong University, China, 8–27 May 2013.
- M. Bostan, N. Crouseilles, P. Helluy, S. Hirstoaga and M. Mehrenberger gave invited talks at NumKin 2013, 2-6 September 2013, Garching, Germany, http://www.ipp.mpg.de/ippcms/eng/for/veranstaltungen/konferenzen/2013/numkin2013/.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence :

A. Hamiaz, Analyse numérique, 28h, L3, Université de Strasbourg, France.
P. Helluy, Analyse numérique, 50h, L3, Université de Strasbourg, France.
S. Hirstoaga, Analyse numérique, 42h, L3, Université de Strasbourg, France.
S. Labrunie, Mathématiques générales en DUT génie civil, 100h, L1, Université de Lorraine, France
S. Labrunie, Mathématiques générales en DUT génie civil, 20h, L2, Université de Lorraine, France
M. Mehrenberger, Optimisation non linéaire, 39h, L3, Université de Strasbourg, France.
M. Mehrenberger, Analyse numérique, 36h30, L2, Université de Strasbourg, France.
M. Mehrenberger, Méthodes d'Analyse Numérique, 39h, L3, ENSIIE (ecole d'ingenieur, antenne de Strasbourg), France.
Jean R. Roche, Mathématiques, 162h, L2, ESSTIN, Univ. de Lorraine, France.

Master :

A. Hamiaz, Mathématiques, 20h, Agrégation, Université de Strasbourg, France.
M. Mehrenberger, Modélisation : Option Calcul Scientifique, 20h, M2, Université de Strasbourg, France.
Jean R. Roche, Optimization, 30h, M1, ESSTIN, Univ. de Lorraine, France.
Jean R. Roche, Décomposition de domaines , Cours 15h, Univ. de Hamman Sousse, Tunisie.

9.2.2. Supervision

PhD in Progress : Pierre Glanc, Méthodes numériques pour Vlasov par remapping conservatif, Université de Strasbourg, Advisors: Philippe Helluy, Michel Mehrenberger.

PhD in Progress : Nhung Pham, Méthodes numériques pour Vlasov, Université de Strasbourg, Advisors: Philippe Helluy, Laurent Navoret.

PhD in Progress : Michel Massaro, Résolution numérique de lois de conservation sur architectures multicores, Université de Strasbourg, Advisors: Philippe Helluy, Vincent Loechner (EPI CAMUS).

PhD in progress : Mohamed Ghattassi, Analyse et Contrôle d'un Four, Université de Lorraine, Advisor: Jean R. Roche

PhD in progress : Takashi Hattori, Full wave modeling of lower hybrid current drive in tokamaks, Université de Lorraine, Advisors: Simon Labrunie and Jean R. Roche.

PhD in progress : Christophe Steiner, Résolution numérique de l'opérateur de gyromoyenne, schémas d'advection et couplage. Applications à l'équation de Vlasov. Université de Strasbourg Advisors: Michel Mehrenberger.

PhD in progress : Thomas Strub, Résolution des équations de maxwell tridimensionnelles instationnaires sur calculateur massivement multicoeur. Université de Strasbourg Advisors: Philippe Helluy.

9.2.3. Juries

N. Besse (advisor) and S. Labrunie participated in the PhD defense committee of David Coulette, Université de Lorraine, 6 December 2013.

E. Frénod participated in the following PhD defense committees :

Céline Caldini-Queiros, PhD at Université de Besançon, 15 November 2013. E. Frénod was referee.

Mathieu Lutz, PhD at Université de Strasbourg, 24 October 2013. E. Frénod was advisor.

G. Manfredi participated in the following PhD and HdR defense committees :

Philippe Coche, PhD at Université de Toulouse, 23 May 2013.

Stephen Jowan GALLAGHER, PhD at Warwick University (Royaume Uni), 2 October 2013.

Nicolas Lemoine, HdR at Université de Lorraine, 10 December 2013.

P. Helluy participated in the following PhD and HdR defense committees :

Clément Durochat, PhD at Inria Sophia Antipolis, 30 January 2013.

Jean-Baptiste Laurent, PhD at ONERA Toulouse, July 2013.

Yu Jie, PhD at EDF Chatou, 11 September 2013.

Sophie Gerald, PhD at ONERA Chatillon. November 2013.

Mathieu Lutz, PhD at Université de Strasbourg, October 2013.

9.3. Popularization

C. Caldini-Queiros wrote the popularization paper "Les schémas numériques : les mathématiques au service de la physique", publised in "Presses universitaires de Franche-Comté", rewarded with Prix A'Doc de la jeune recherche en Franche-Comté 2013.

E. Frénod wrote the following popularization papers

- Mon littoral, c'est de la dynamique. Brève pour : 2013 - Mathématiques pour la planète Terre - http://mpt2013.fr/mon-littoral-cest-de-la-dynamique/.
- Aquaculture en milieux confinés : le cas de l'étang de Thau. Brève pour : 2013 Mathématiques pour la planète Terre. - http://mpt2013.fr/aquaculture-en-milieux-confines-le-cas-de-letang-de-thau/.
- Un exemple d'application des mathématiques à l'environnement littoral : La dynamique à long terme des dunes marines dans les zones soumises à la marée. Modélisation, Analyse, Homogénéisation et Simulation. Matapli (Smai), No 100, pp 129–140.

CONCHA Project-Team

9. Dissemination

9.1. Scientific Animation

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

9.2.2. Supervision

9.2.3. Juries

9.3. Popularization

MICMAC Project-Team

8. Dissemination

8.1. Animation of the scientific community

S. Boyaval has co-organized:

- at SMAI 2013, Seignosse, 2 minisymposiums: "écoulements complexes en rivières" with E. Audusse and "Interactions Fluide-Structure" with M. Fernandez and L. Monasse.

E. Cancès

- is a member of the editorial boards of Mathematical Modelling and Numerical Analysis (2006-), of SIAM Journal of Scientific Computing (2008-), of Communications in Mathematical Sciences (2011-),
- is a member of the executive committee of the CEA-EDF-Inria schools in applied mathematics and computer science,
- is a member of the scientific committee of the GDR co-DFT.

He has organized or co-organized:

- the SIAM MS Minisymposium on "Electronic structure calculation", Philadelphia, USA, June 2013,
- the IHP mini-workshop on "The mathematics of interacting quantum systems in a random environment", Paris, June 2013,

C. Le Bris is editor-in-chief of Applied Mathematics Research Express (2003-). 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-), Networks and Heterogeneous Media (2005-), Nonlinearity (2005-), Journal de Mathématiques Pures et Appliquées (2009-).

He is a member of the editorial boards of the monograph series Mathématiques & Applications, Series, Springer (2008-), and Modeling, Simulations and Applications, Series, Springer (2009-).

C. Le Bris is a member of

- the Cabinet of the High Commissioner for Atomic Energy,
- the scientific board of ENPC, 2008- (nominated as representative of the research scholars),
- the “Comité d’experts” for the “Fondation de Recherche pour l’Aéronautique et l’Espace”,
- the “Comité d’animation du domaine thématique Mathématiques appliquées, calcul et simulation” at Inria,
- the “International Scientific Advisory Committee” of the Centre de Recherche Mathématique, Université de Montréal,
- 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 de perfectionnement du Master de Mathématiques" of the University Pierre et Marie Curie.

C. Le Bris has held a position of Visiting Professor at the University of Chicago, February-October-November 2013.

He has been a member of

- the Organizing Committee of the SIAM Materials Science meeting, 2013.
- the Scientific Committee of CANUM 2014.

He has co-organized

- with G. Bal, B. Engquist, H. Owhadi, the Oberwolfach workshop *Interplay of theory and numerics for deterministic and stochastic Homogenization*, Oberwolfach, 17-23 March 2013,
- with Ch. Lubich, the workshop *Mathematical and numerical challenges in quantum chemistry*, Institut Henri Poincaré, Paris, June 2013,
- with P.-M. Mariano, the one-week school *Multi-scale and multi-field representations of condensed matter behavior* at the Centro De Giorgi, Pisa, Italy, 25-29 November 2013,
- with S. Adams, J. Ball, Ch. Ortner, the workshop *Computational coarse graining of many-body systems*, University of Warwick, 9-13 December 2013.

F. Legoll

- is a member of the editorial board of SIAM MMS (2012-) and of ESAIM Proc (2012-),
- has co-organized with Y. Maday a mini-symposium on "Recent advances on parareal algorithms" at the SciCADE 2013 conference, Valladolid, September 16-20, 2013,
- has co-organized with R. Cottereau, L. Graham-Brady and M. Ostoja-Starzewski a mini-symposium on "Multi-scale methods for heterogeneous materials" at the 12th U.S. National Congress on Computational Mechanics (12th USNCCM), Raleigh, July 22-25, 2013,
- has co-organized with B. Kraczek, R. Jones and K. Mandadapu a mini-symposium on "The atomistic basis of non-equilibrium thermal processes in materials" at the 12th U.S. National Congress on Computational Mechanics (12th USNCCM), Raleigh, July 22-25, 2013.

T. Lelièvre

- is editor-in-chief of ESAIM: Proceedings (with D. Chafai, P. Lafitte and C. Mouhot).
- was an Ordway visiting professor at the University of Minnesota for the academic year 2012-2013 (one month-stay in April 2013).
- has co-organized the CEMRACS 2013 summer school: "Modelling and simulation of complex systems: stochastic and deterministic approaches" (with N. Champagnat and A. Nouy).
- has co-organized the workshop NASPDE (Numerical Analysis of Stochastic PDEs), 10 and 11 September 2013 (with E. Faou and J. Erhel).
- co-organizes the Journées EDP-Probas at Institut Henri Poincaré (with F. Malrieu).
- is the head of the GDR MoMaS, a French research group on the mathematical modeling and the numerical simulations for nuclear waste management problems (Main scientific themes: multiscale models for flows in porous media, molecular simulation of clays, multiphase flows).
- is in charge of the Theme 4 (Stochastic modeling, quantification and uncertainty propagation for multiscale mechanical models of materials) of the Labex MMCD.

8.2. Teaching - Supervision

The members of the team have taught the following courses:

- Licence: Calcul Scientifique, 12h, L3, Ecole des Ponts ParisTech (S. Boyaval).
- Licence: probabilités deuxième semestre, 12h, Ecole Centrale de Paris, (S. Boyaval).
- Licence: Analyse, 36h, L3, Ecole des Ponts, France (E. Cancès, F. Legoll, G. Stoltz, M. Rousset, W. Minvielle, V. Ehrlacher)
- Licence : Fonctions à plusieurs variables et équations différentielles, 60h, L2, ESIEE, France (D. Gontier)
- Licence: Projets de physique, 20h, L3, Ecole des Ponts, France (I. Dabo, G. Stoltz)
- Master: Processus Stochastiques, 18h. M1, ESIEA (C.-E. Bréhier).
- Master: Analyse spectrale, 39h, M1, Ecole des Ponts, France (G. Stoltz, V. Ehrlacher)

- Master: Méthodes déterministes en mathématiques financières, 42h, M2, Ecole des Ponts ParisTech (T. Lelièvre).
- Master: Modéliser Programmer Simuler, 28 h, M1, Cours Ecole des Ponts ParisTech (T. Lelièvre).
- Master: Méthodes numériques probabilistes, 36 h, M2 Mathématiques et Applications, Université Pierre et Marie Curie (T. Lelièvre).
- Master: Mathématiques des modèles multiéchelles, 39h, M1, Ecole des Ponts ParisTech, France (F. Legoll)
- Master: Problèmes multi-échelles, 24h, M2, Université Paris 6, France (F. Legoll)
- Master: Introduction au calcul Scientifique, 12h, M1, Ecole des Mines ParisTech, France (D. Benoit, W. Minvielle, G. Stoltz, F. Madiot)
- Master: Analyse Numérique et Optimisation, 56h, M1, Ecole Polytechnique, France (E. Cancès)
- Master: Méthodes variationnelles en mécanique quantique, 12h, M2, University Paris 6, France (E. Cancès)
- Master: Analyse spectrale, 39h, M1, Ecole des Ponts, France (V. Ehrlacher, G. Stoltz)
- Master: Spectral theory of Schrodinger operators, 30h, M2, Université de Marne-la-Vallée, France (G. Stoltz)
- Master: Outils Probabilistes pour la Finance, 24h, M1, Cours Ecole des Ponts ParisTech (M. Rousset).

The following PhD were defended by students members of the research group at the Ecole des Ponts:

- I. Acevedo Méthodes et modèles numériques appliqués aux risques du marché et à l'évaluation financière, Université Paris-Est, Université Paris Est, 10 dec. 2013, supervised by A. Alfonsi (Ecole des Ponts) et T. Lelièvre.
- F. Casenave, Méthodes de réduction de modèles appliquéesà des problèmes d'aéroacoustique résolus par équations intégrales, Université Paris-Est, Université Paris Est, 10 dec. 2013, supervised by A. Ern (Ecole des Ponts) et T. Lelièvre.
- S. Lahbabi, Etude mathématique de modèles quantiques et classiques pour les matériaux aléatoires à l'échelle atomique, Université de Cergy Pontoise, supervised by E. Cancès and M. Lewin, July 2013.

The following PhDs are in progress:

- D. Benoit, Méthodes numériques pour la simulation des fluides non-Newtoniens, Université Paris-Est, Université Paris Est, started October 1st, 2010, supervised by C. Le Bris and T. Lelièvre, to be defended on January 22nd 2014.
- F. Madiot, Multiscale finite element methods for advection diffusion problems, Université Paris-Est, Ecole des Ponts ParisTech, started october 1st, 2013, supervised by C. Le Bris and F. Legoll
- W. Minvielle, Méthodes numériques pour les matériaux, Université Paris-Est, Université Paris Est, started october 1st, 2012, supervised by C. Le Bris and F. Legoll
- D. Gontier, Université Paris-Est, started September 1st, 2012, supervised by E. Cancès
- A.-A. Homman, Multiscale methods for the simulation of shock and detonation waves, Université Paris-Est, Ecole des Ponts ParisTech and CEA/DAM, started April 1st, 2013, supervised by G. Stoltz and J.-B. Maillet

8.3. Conference participation

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

- S. Boyaval, NASCA 2013 (Calais)
- S. Boyaval, CEMRACS 2013
- S. Boyaval, seminar at the Universities of Montpellier and Toulouse
- C.-E. Bréhier, Conference NASPDE 2013, Rennes, September 2013.
- E. Cancès, workshop on Mathematical and numerical methods for electronic structure calculation, Berlin, January 2013.
- E. Cancès, workshop on Multiscale modeling, analysis, and computation of nano-optics, Michigan State University, Lansing, USA, March 2013.
- E. Cancès, IMA workshop on Mathematics and Chemistry, Chicago, April 2013.
- E. Cancès, Weekly seminar, Mathematics department, University of Chicago, USA, May 2013.
- E. Cancès, SIAM MS 2013, Philadelphia, USA, June 2013.
- E. Cancès, IHP mini-workshop on Mathematical and numerical challenges in quantum chemistry, Paris, June 2013.
- E. Cancès, plenary lecture, Enumath 2013, Lausanne, August 2013.
- E. Cancès, Enumath minisymposium on Multiscale methods for atomistic and continuum problems, Lausanne, August 2013.
- E. Cancès, IPAM workshop on Semiclassical origins of Density Functional Approximations, Los Angeles, September 2013.
- E. Cancès, plenary lecture, Q-Math 12, Berlin, September 2013.
- E. Cancès, IPAM workshop on Fuels from sunlight, Los Angeles, October 2013.
- E. Cancès, Conference in honor of Wolfgang Hackbusch's 65th birthday, Leipzig, October 2013.
- V. Ehrlacher, SIAM Conference on Computational Science and Engineering (CSE13), Boston, USA, February 2013.
- V. Ehrlacher, Seminar Zentrum Mathematik, TU München, Munich, Germany, February 2013.
- V. Ehrlacher, Applied mathematics seminar of Warwick University, Warwick, England, February 2013.
- V. Ehrlacher, Oberwolfach workshop on Interplay of Theory and Numerics for Deterministic and Stochastic Homogenization, Oberwolfach, Germany, February 2013.
- V. Ehrlacher, Congrès SMAI 2013, Seignosse, France, May 2013.
- V. Ehrlacher, CIRM workshop on Model Reduction and Approximation for Complex Systems, Luminy, France, June 2013.
- V. Ehrlacher, Seminar of Excellence cluster of Engineering of Advanced Materials, Erlangen, Germany, June 2013.
- V. Ehrlacher, Mathematik Seminar der Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany, June 2013.
- V. Ehrlacher, CEMRACS 2013, CIRM, Luminy, France, August 2013.
- V. Ehrlacher, ENUMATH, Lausanne, Switzerland, August 2013.
- V. Ehrlacher, QMATH 12, workshop on Mathematical results in quantum mechanics, Berlin, Germany, September 2013.
- V. Ehrlacher, Séminaire du laboratoire GeM, Ecole centrale Nantes, France, September 2013.

- V. Ehrlacher, Séminaire du laboratoire Jacques-Louis Lions, Université Paris 6, France, November 2013.
- V. Ehrlacher, MATHICSE seminar, EPFL, Lausanne, Switzerland, December 2013.
- D. Gontier, Annual meeting of the GDR co-DFT, Guidel, France, May 2013.
- D. Gontier, IHP Seminar, Paris, July 2013.
- S. Lahbabi, weekly seminar of the mathematics department University of Pau, May 2013.
- S. Lahbabi, IHP workshop on Mathematical properties of large quantum systems, Paris, June 2013.
- C. Le Bris, plenary lecture, SMAI 2013, Seignosse, 27-31 May 2013
- C. Le Bris, Workshop "Numerical Methods for Uncertainty Quantification", May 13-17, 2013, Hausdorff Center for Mathematics, Bonn.
- C. Le Bris, SIAM Materials Modeling minisymposium, Philadelphia, June 9-12, 2013.
- C. Le Bris, 2nd Pacific Rim Mathematical Association Congress, Shanghai, June 24-28, 2013.
- C. Le Bris, Scientific and statistical computing seminar University of Chicago
- C. Le Bris, Argonne National Laboratory,
- C. Le Bris, Colloquium of the Max Planck Institute Leipzig,
- C. Le Bris, Colloquium Ecole Polytechnique Fédérale de Lausanne,
- C. Le Bris, Computations in Science Seminar of the university of Chicago,
- C. Le Bris, PDE Seminar of the university of Chicago,
- C. Le Bris, Inaugural lecture in Mathematics for the “Semaine de la Science”, Ecole Polytechnique
- F. Legoll, weekly seminar of the mathematics department, Université de Besançon, February 2013
- F. Legoll, weekly seminar of the Jacques-Louis Lions laboratory, March 2013
- F. Legoll, workshop on Interplay of Theory and Numerics for Deterministic and Stochastic Homogenization, Oberwolfach, March 2013
- F. Legoll, workshop on multiscale modelling and simulation in material science, Shanghai, April 2013
- F. Legoll, 11ieme Colloque National en Calcul des Structures, Giens, May 2013
- F. Legoll, workshop on slow-fast dynamics, Barcelona, June 2013
- F. Legoll, SIAM conference on mathematical aspects of material sciences, Philadelphia, June 2013
- F. Legoll, 12th US National Congress on Computational Mechanics, Raleigh, July 2013
- F. Legoll, SES 50th Annual Technical Meeting, Providence, July 2013
- F. Legoll, CEMRACS summer school, Marseille, August 2013
- F. Legoll, SciCADE conference, Valladolid, September 2013
- F. Legoll, MoMaS Multiphase Seminar Days, Orsay, October 2013
- F. Legoll, workshop "Stochastic Modeling of Multiscale Systems", Eindhoven, december 2013
- F. Legoll, Symposium on Statistical Mechanics, Warwick, december 2013
- T. Lelièvre, Kolloquim, Institut für Mathematik, Universität Mainz, January 2013.
- T. Lelièvre, Séminaire ANR BIGMC, Paris, February 2013.
- T. Lelièvre, Séminaire Institut de Mathématiques de Toulouse, March 2013.
- T. Lelièvre, Workshop “Genetic models and Quasi-stationarity”, CIRM, Marseille, March 2013.
- T. Lelièvre, Workshop "Analysis and Stochastics in Complex Physical Systems", Leipzig, March 2013.
- T. Lelièvre, Math colloquium, University of Minnesota, April 2013.
- T. Lelièvre, PDE seminar, University of Minnesota, April 2013.

- T. Lelièvre, Workshop Randomness and PDE, Labex Lebesgue semester, Nantes, April 2013.
- T. Lelièvre, IMA Chem year Summit, Chicago, May 2013.
- T. Lelièvre, SMAI 2013, May 2013.
- T. Lelièvre, Plenary speaker at the SIAM conference on Mathematical Aspects of Materials Science, Philadelphia, June 2013.
- T. Lelièvre, Workshop Scicade 2013, Valladolid, September 2013.
- T. Lelièvre, Workshop on Reduced Basis, POD and PGD model, Blois, November 2013.
- T. Lelièvre, Séminaire de la Chaire FDD, IHP, Paris, December 2013.
- T. Lelièvre, Workshop "Computational coarse-graining of many-body systems", Warwick, December 2013.
- T. Lelièvre, Workshop on Material Theories, Oberwolfach, December 2013.
- F. Nier, Collège de France, April 2013,
- F. Nier, workshop of the ANR Lodiquas à Vienne (Autriche), July 2013: Artificial gauge and adiabatic Ansatz for Bose-Einstein condensates.
- F. Nier, Berkeley, September 2013,
- F. Nier, Institute for Pure and Applied Mathematics, Workshop "Semiclassical Origins of Density Functional Theory", Los Angeles, September 2013,
- F. Nier, CIRM, Microlocal analysis and spectral theory, September 2013,
- F. Nier, Orsay, Working group "Opérateurs de Dirac", December 2013,
- M. Rousset, SIAM conference on mathematical aspects of material sciences, Philadelphia, June 2013
- M. Rousset, CEMRACS summer school, Marseille, August 2013.
- M. Rousset, Séminaire Institut de Mathématiques de Toulouse (Probabilités), December 2013
- G. Stoltz, Oberwolfach meeting "Large Scale Stochastic Dynamics" (Germany), October 2013
- G. Stoltz, QMaths12, Berlin (Germany), September 2013
- G. Stoltz, GDRE ConEDP Meeting, Grenoble (France), April 2013
- G. Stoltz, AMMP seminar, Imperial College London (United-Kingdom), October 2013
- G. Stoltz, daily seminar at CEMRACS 2013, Marseille (France), August 2013
- G. Stoltz, Mathematical Physics Seminar, Institut Poincaré, Paris (France), May 2013

In addition to the above, some members of the team have been invited for stays in institutions abroad:

- E. Cancès, University of Chicago, April-May 2013,
- E. Cancès, IPAM, UCLA, October 2013,
- T. Lelièvre, one month at the University of Minnesota as an Ordway professor.

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

- E. Cancès (15h) on numerical methods for electronic structure calculation, Summer school on the scientific trends at the interfaces mathematics - chemistry - high performance computing, Roscoff, France, July-August 2013,
- E. Cancès (6h) on the mathematics of quantum chemistry, Oberwolfach seminar, Germany, November 2013,
- C. Le Bris, Lectures on 'Numerical homogenization', The University of Chicago, 12 hours, February 2013,
- C. Le Bris, Lectures on 'Renormalized solutions to parabolic equations', The University of Chicago, 20 hours, Fall 2013,

- C. Le Bris, Lectures on 'Stochastic homogenization and related problems', Series of 4 one-hour lectures, Multi-scale and Multi-field Representations of Condensed Matter Behavior, Scuola Normale Pisa, November 2013,
- T. Lelièvre, Lectures on the adaptive biasing force method at the University of Minnesota,
- G. Stoltz, Lectures (4h) on "Molecular simulation: A mathematical introduction", School "Multi-scale and Multi-field Representations of Condensed Matter Behavior", Pisa (Italy), November 2013
- G. Stoltz, Lectures (4h) on "Molecular simulation: A mathematical introduction", School "Longtime limits of stochastic models" at CIRM, Marseille (France), February 2013
- G. Stoltz (9h) on numerical methods for statistical physics, Summer school on the scientific trends at the interfaces mathematics - chemistry - high performance computing, Roscoff, France, July-August 2013.

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

- D. Gontier, Q-Math 12, Berlin, September 2013.
- D. Gontier, Oberwolfach seminar, November 2013.
- W. Minvielle, "Ecole Thématique du GdR CHANT", January 2013
- W. Minvielle, workshop on Interplay of Theory and Numerics for Deterministic and Stochastic Homogenization, Oberwolfach, March 2013
- W. Minvielle, Summer School in Analysis and Applied Mathematics, Roma, June 2013
- W. Minvielle, CEMRACS summer school, Marseille, August 2013
- W. Minvielle, workshop on "Quasistatic and Dynamic Evolution Problems in Plasticity and Fracture", Trieste, October 2013

SCIPORT Team

8. Dissemination

8.1. Scientific Animation

- Laurent Hascoët is on the organizing commitee of the EuroAD Workshops on Automatic Differentiation. The 12th EuroAD workshop was organized and hosted by the team in Sophia-Antipolis, june 10-11.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Master : Laurent Hascoët, Optimisation avancée, 15 h, niveau M2, Université de Nice, France

8.2.2. Supervision

PhD : Alexandre Carabias, "Adaptation de maillage pour calculs d'écoulements à l'ordre 3", Université de Nice, defended december 12th, advisor A. Dervieux

PhD : Cédric Lachat, "Conception et validation d'algorithmes de remaillage parallèles à mémoire distribu'ee basés sur un remailleur séquentiel", Université de Nice, defended december 13th, co-advisor L. Hascoët.

PhD in progress : Gauthier Brethes, "Multigrilles anisotropes adaptatives", started october 2012, advisor A. Dervieux

PhD in progress : Ala Taftaf, "Adjoint Automatic Differentiation on High-performance codes", started july 2013, advisor L. Hascoët.

8.3. Popularization

- Laurent Hascoët gave a presentation on adjoint Automatic Differentiation at the AboutFlow meeting in Tinos (Greece), may 27-31.
- Laurent Hascoët made a detailed presentation of Automatic Differentiation at Microsoft Research labs in Cambridge (UK) on december 6th.

SIMPAF Project-Team

9. Dissemination

9.1. Scientific Animation

- A. Gloria organized of a mini-symposium at the SIAM Conference on Mathematical Aspects of Materials Science (Philadelphia, June 2013)

9.2. Teaching - Supervision - Juries

9.2.1. Supervision

PhD : Émilie Soret, Accélération stochastique et thermalisation, 2011-2014, under the supervision of S. de Bièvre and T. Simon (Université Lille 1)

PhD : Pierre-Louis Colin, Theoretical and numerical study of some mathematical models of corrosion, Université Lille 1, 2012/09/01-2015/09/01, under the supervision of C. Chainais-Hillairet and I. Lacroix-Violet

9.2.2. Juries

- A. Gloria, referee for the PhD thesis of F. Ouaki (Ecole polytechnique), December 2013

9.3. Popularization

C. Calgaro is in charge of the communication of "Laboratoire Paul Painlevé" and she is in charge of the relation between the University of Lille and high schools. Accordingly, she organizes various events like « Les Mathématiques itinérantes » and « Stage de seconde à contenu scientifique ». With the help of the Communication Department of Inria, C. Calgaro, E. Creusé and T. Goudon produced a documentary fiction (in French) for a general audience on how research in applied mathematics is being done. The title is "Avis de recherche" (see http://www.inria.fr/avisderecherche).

BACCHUS Team

8. Dissemination

8.1. Scientific Animation

R. Abgrall is co-chief editor of the International Journal on Numerical Methods in Fluids, associate editor of the Journal of Computational Physics, mathematics of Computation, Computers and Fluids, the Journal of Scientific Computing, and Advances in Applied Mathematics and Mechanics. He is responsible of the SMAI-GAMNI group, and Treasurer of ECCOMAS. He is member of the Scientific committee of CERFACS. He is scientific advisor at ONERA and William Penny Fellow of the AWE (Atomic Weapon Agency, UK).

Cécile Dobrzynski was one of the organizers of the seminar "Modélisation et Calcul" of the Institut de Mathématiques de Bordeaux. She is member of the board of the GAMNI group of SMAI and she is secretary.

Heloise Beaugendre, Cécile Dobrzynski, and Mario Ricchiuto have participated to the organization of the second ECCOMAS Young Investigators Conference (http://yic2013.sciencesconf.org) in Bordeaux, counting 120 participants attending talks in the domains of modeling and simulation in Mechanics. Cécile Dobrzynski has also been conference chairwoman.

R. Abgrall, C. Dobrzynski, P. Congedo, H. Beaugendre and M Ricchiuto have organized the EUROPEAN WORKSHOP on High Order Nonlinear Numerical Methods for Evolutionary PDEs (HONOM 2013) , March 18-22, 2013, with more than 70 participants and less than a third from France. There was 8 invited speakers. A proceeding is being processed. This has been mainly funded by ADDECCO, see http://honom2013.bordeaux.inria.fr/.

Pietro Congedo and Remi Abgrall have organized the International Workshop on Uncertainty Quantification in fluids Simulation, December 16-18, 2013 http://boquse2013.bordeaux.inria.fr/. This workshop was intended to be an exchange forum for scientists working on innovative and efficient techniques for uncertainty quantification and robust design in Fluid Mechanics.There was 9 invited talks in 3 sessions and more than 70 participants. This workshop has been funded by the CPU center d'excellence de l'Université de Bordeaux, Inria and ADDECCO.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence : Cécile Dobrzynski, Langages en Fortran 90, 54h, L3, ENSEIRB-MATMÉCA, FRANCE

Licence : Cécile Dobrzynski, Analyse numérique, 24h, M1, ENSEIRB-MATMÉCA, FRANCE

Licence : Cécile Dobrzynski, Outils informatiques pour le calcul scientifique, 65h, formation Structures Composites, ENSCBP, FRANCE

Licence : Mario Ricchiuto, Fundamentals of Numerical Analysis, 24h,ENSEIRB-MATMÉCA, France.

License : Héloïse Beaugendre, Responsable des projets TER de première année, 10h, L3, ENSEIRB-MATMÉCA, FRANCE

License : Héloïse Beaugendre, Encadrement TER, 16h, L3, ENSEIRB-MATMÉCA, FRANCE

Licence : Pietro Marco Congedo, Fundamentals of Numerical Analysis II, 24h, ENSEIRB-MATMÉCA, France.

Licence : Pietro Marco Congedo, Fundamentals of Fluid Mechanics II, 20h, ENSEIRB-MATMÉCA, France.

Master : Pietro Marco Congedo, Simulation Numérique des écoulements fluides, 20h, M2, ENSEIRB-MATMÉCA, France

Master : Cécile Dobrzynski, Projet fin d'études, 6h, M2, ENSEIRB-MATMÉCA, FRANCE

Master : Cécile Dobrzynski, TER, 18h, M1, ENSEIRB-MATMÉCA, FRANCE

Master : Mario Ricchiuto, Simulation Numérique des écoulements fluides, 16h, M3, ENSEIRB-MATMÉCA, France

Master : Mario Ricchiuto, Post-graduate course on introduction to CFD, 18h, M2 IAS (Master Spe´cialisé Inge´nierie Ae´ronautique et Spatiale, http://www.ensam.fr/fr/formation_initiale/masteres_specialises/ingenierie_aeronautique_et_spatiale), ENSAM, France

Master : Héloïse Beaugendre, Approximation numérique et problèmes industriels, 52h, M1, ENSEIRB-MATMÉCA, France

Master : Héloïse Beaugendre, Outils informatiques pour l'insertion professionnelle, 9h, M2, Université de Bordeaux, France

Master : Héloïse Beaugendre, Calcul Parallèle (OpenMP-MPI), 40h, M1, ENSEIRB-MATMÉCAi et Université de Bordeaux, France

Master : Héloïse Beaugendre, Calcul Haute Performance (MPI), 36h, M2, ENSEIRB-MATMÉCA, France

Master : Héloïse Beaugendre, Calcul Haute Performance et décomposition de domaine, 36h, M2, ENSEIRB-MATMÉCA et Université Bordeaux, France

8.2.2. Supervision

HDR: Pietro Congedo, Contributions to the reliability of numerical simulations in fluid mechanics. Application to the flow simulation of thermodynamically complex gases [1], HDR Defense, December 6 2013, Université de Bordeaux I

PhD: Dante De Santis, High order residual distribution methods for turbulent steady flows [2], PhD defense December 3 2013, Université de Bordeaux I (supervisors : Rémi Abgrall and Mario Ricchiuto)

PhD: Gianluca Geraci, Multi-resolution inspired methods for uncertainty quantification, PhD defense December 5 2013, Université de Bordeaux I (supervisors : Rémi Abgrall and Pietro Marco Congedo)

PhD : Sébastien Fourestier, Redistribution dynamique parallèle efficace de la charge pour les problèmes numériques de très grandes tailles [3], PhD defense June 2013, Université de Bordeaux I (supervisor : F. Pellegrini)

PhD: Cédric Lachat, Partitionnement et adaptation parallèles de maillages pour des simulations dans les tokamaks [4], PhD defense December 2013, Université de Nice (supervisors : F. Pellegrini and C. Dobrzynski)

PhD in progress : Damien Genêt, Design of a parallele object oriented platform for computational fluid dynamics (supervisors : F. Pellegrini and M. Ricchiuto)

PhD in progress : Léo Nouveau, Adaptation de maillage non structurés anisotropes pour les méthodes de pénalisation en mécanique des fluides compressibles (supervisors : R. Abgrall, H. Beaugendre and C. Dobrzynski)

PhD in progress : Quentin Viville, Etude sur les méthodes de pénalisation adaptées aux maillages non-structurés fortement anisotropiques et utilisation de l'adaptation de maillx'age (supervisors : R. Abgrall, H. Beaugendre and C. Dobrzynski)

PhD in progress : Stevan Bellec, Discrete asymptotic PDEs for non-hydtrostatic wave propagation (supervisors : M. Colin and M. Ricchiuto)

PhD in progress : Andrea Filippini, Adaptive finite element discretizations of nonlinear non-hydrostatic depth averaged wave models (supervisors : M. Ricchiuto and P. Bonneton)

PhD in progress : Gregory Perrot, Two-dimensional image-based modeling of self-healing ceramic matrix composite materials (supervisors : G. Vignoles and M. Ricchiuto)

PhD in progress : Francesca Fusi, Development of efficient numerical techniques for the optimization under uncertainty of morphing helicopter rotor blade (supervisors : A. Guardone, P.M. Congedo)

8.2.3. Juries

PhD : Emilie Sauvage, Patient-specific blood flow modelling, université catholique de Louvain, Belgique, Cécile Dobrzynski : jury

PhD : Mario Falese, A study of the effects of bifurcations in swirling flows using LES and mesh adaptation, Cerfacs, Cécile Dobrzynski : jury

PhD: Koen Hillewaert, DG methods for industrial CFD, Université Catholique de Louvain, Belgium, R. Abgrall: referee

PhD: H. Lundt, Relaxation models for two-phase flow with applications to CO2 transport, NTNU, Trondheim, Norway, R. Abgrall: referee

PhD: Steven Diot, High order WENO like methods for CFD, Université de Toulouse, R. Abgrall: referee.

HDR: R. Duvigneau, Optimisation methods, Université de Nice, R. Abgrall: referee

PhD: Gauthier Folzan, Modélisation multi-matériaux multi-vitesse en dynamique rapide, Ecole Polytechnique, R. Abgrall: referee.

PhD: Karim Grimish, Méthodes de résidu d<ordre élevé, ENSAM Paris, R. Abgrall: referee.

PhD: Jonathan Jung, Méthodes numériques d'écoulements multiphasiques tridimensionnels sur GPU, Université de Strasbourg, R. Abgrall: referee.

CAGIRE Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Review activity

The team members have been invited to review for the following journals:

- Advances in Mechanical Engineering (RM)
- Combustion and Flame [PB]
- Computational Thermal Science [PB]
- Computer and Fluids [RM][VP]
- Experiments in Fluids [RM]
- Fluid Dynamics Research [RM]
- Flow, Turbulence and Combustion [RM]
- Int J Heat and Fluid Flow [RM]
- International Journal of Computational Methods [YM]
- Journal of Computational and Applied Mathematics [YM]
- Journal of Computational Physics [VP]
- Mathematical Modelling and Numerical Analysis (M2AN) [VP]
- Physics of Fluids [RM]

8.1.2. Participation in Congress organising committees

- Turbulent shear flow phenomena (TSFP-8) held in Poitiers (France) [RM].
- European Workshop on High Order Nonlinear Numerical -Methods for Evolutionary PDE: Theory and Applications (HONOM 2013) held in Bordeaux (France) [VP]
- European Community on Computational Methods in Applied Sciences (ECCOMAS) for Young Investigators Conference (ECCOMAS YIC 2013) held in Bordeaux (France) [VP]

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

- Master : [PB], An introduction to the numerical simulation of reacting flows, 15h, ISAE-Supaéro and University of Toulouse, France.
- Master : [RM], Turbulence Modelling, 40h, École centrale de Lille/ENSI Poitiers/ISAE-ENSMA, Poitiers, France.
- Master : [EF], Simulations industrielles, Fluides compressibles, Combustion industrielle, 100h, ENSGTI, Pau, France.
- Master: [TK], Condensation/Ebullition, 40h, ENSGTI, Pau, France.
- Master: [TK], Exergoéconomie, 20, ENSGTI, Pau, France.
- Master: [TK], Réseaux Fluides, 16h, ENSGTI, Pau, France.

8.2.2. Supervision

- PhD : Simon Delmas, Simulation d'écoulements pariétaux génériques à bas nombre de Mach pour l'amélioration du refroidissement des chambres de combustion : développement et mise en œuvre de schémas de type Galerkine discontinu adaptés, University of Pau, started January 2013, Dir.:[PB] and Co-dir.: [VP].
- PhD : Juan-Luis Florenciano Merino, Étude de la réponse d'un écoulement avec transfert pariétal de masse à un forçage acoustique, University of Pau, defended on July 12, 2013, Dir.:[PB] and Co-dir.:[TK]
- PhD : Jean-François Wald, Modélisation de la turbulence avec traitement adaptatif des parois prenant en compte la thermique active ou passive, started October 2013, Dir.: [RM]
- PhD : Nurtoleu Shakhan, Modelling and simulation of coal combustion, University of Almaty (Kazakhstan), started October 2013, Dir.:Altyn Naïmanova and Co-dir.:[PB]
- PhD : Tran Thanh Tinh, Développement d'une méthode hybride RANS-LES temporelle pour la simulation de sillages d'obstacles cylindriques, University of Poitiers, 28 March 2013, Dir.: [RM]

8.2.3. Juries

Several team members participated in the following thesis or HdR juries ("referee" in a French doctoral thesis jury is more or less equivalent to an external opponent in an Anglo-Saxon like PhD jury):

+ PhD : Julien Apeloig, Étude expérimentale de la phase liquide dans les instabilités thermo-acoustiques agissant au sein des turbomachines diphasiques, University of Toulouse, 13 September 2013, [PB, referee]
+ PhD : Guillaume Cottin, Contribution à la modélisation thermique d'une paroi multiperforée, University of Toulouse, 18 October 2013,[PB, referee]
+ PhD : Mario Falese, A study of the effects of bifurcations in swirling flows using large-eddy simulations and mesh adaptation, University of Toulouse, October 7, 2013, [PB]
+ PhD : David Vanpouille, Développement de modèles de turbulence adaptés à la simulation des écoulements de convection naturelle à haut nombre de Rayleigh, University of Toulouse, December 6, 2013 [RM, referee]
+ HdR : Mathieu Fénot, Refroidissement aérothermique, University of Poitiers, 29 November 2013 [PB]

8.3. Popularization

One presentation in Unithé ou Café and presence to the "Inria-Industrie" days [VP]. Participation in the "Visage des Sciences 2013" [PB].

DEFI Project-Team

9. Dissemination

9.1. Scientific Animation

- Grègoire Allaire is the President of SMAI (Société de Mathématiques Appliquées et Industrielles). Until November 2013 he was also the director of the Gaspard Monge program on optimization (PGMO) at the Jacques Hadamard Mathematical Foundation. He is a board member of Institut Henri Poincaré (IHP). He is a member of the following editorial boards: book series "Mathématiques et Applications" of SMAI and Springer, ESAIM/COCV, Structural and Multidisciplinary Optimization, Discrete and Continuous Dynamical Systems Series B, Computational and Applied Mathematics, Mathematical Models and Methods in Applied Sciences (M3AS), Annali dell'Universita di Ferrara, OGST (Oil and Gas Science and Technology).
- Houssem Haddar is a guest editor (jointly with Fioralba Cakoni) of a special issue of Inverse problems on transmission eigenvalues.
- Jing-Rebecca Li is an Associate Editor of the SIAM Journal on Scientific Computing.

9.1.1. Conference / school organization

- H. Haddar was co-organizing chair of the Waves 2013 conference, June 3-7, Gammath, Tunisia http://www.lamsin.tn/waves13/
- H. Haddar is co-organizer of the conference "International Conference on Novel Directions in Inverse Scattering", Honoring David Colton, July 29 - August 2, 2013 University of Delaware, Newark DE, USA http://www.cmap.polytechnique.fr/~colton/.
- H. Haddar is co-organizer of the Franco-German Summer School "Inverse Problems and Partial Differential Equations" University of Bremen, October 7-11, 2013 http://www.math.uni-bremen.de/zetem/ip-school2013
- J.-R. Li is a co-organizer of the mini-symposium "Simulation and modeling applied to diffusion magnetic resonance imaging" at the SIAM Computational Science and Engineering Conference Feb 2013.

9.1.2. Conference attendance

- H. Haddar
  - Oberwolfach Conference on "Computational Electromagnetics and Acoustics", Oberwolfach, Jan 20 - 26, 2013
  - Conference "Inverse Problems: Scattering, Tomography and Identification Problems" on the occasion of Andreas Kirsch's 60th birthday, Karlsruhe, Apr 6 - 11, 2013.
  - IFIP TC7.2 Workshop: "Electromagnetics — Modelling, Simulation, Control and Industrial Applications", Berlin, May 13 – 17, 2013.
  - International Conference on" Mathematical and Numerical Aspects of Waves" (Waves 2013), Gammarth, Tunisia, June 3 - 7, 2013.
  - International Conference on "Novel Directions in Inverse Scattering", Honoring David Colton, July 29 - August 2, 2013 University of Delaware, Newark DE.
  - Workshop "Journées d'Analyse Numérique et d'Optimisation" (JANO10), Essaouira, Oct 31 - Nov 02, 2013.
- G. Allaire

- Workshop on Numerical Methods for Optimal Control and Inverse Problems, Münich, (march 2013).
- Interpore conference, Prague (may 2013).
- Conference in the honor of M. Vogelius, Luminy (may 2013)
- SMAI conference, Seignosse (june 2013).
- Conference Waves, Tunis (june 2013).
- Workshop "New trends in Shape Optimization", Erlangen (september 2013).
- 1st French-Mexican Meeting on Industrial and Applied Mathematics, Villahermosa, Mexique (novembre 2013).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: O. Pantz, Tutorial Classes in "Numerical analysis et Optimization", 64h, L3, École Polytechnique.

Licence: H. Haddar, Tutorial Classes in "Numerical analysis et Optimization", 64h, L3, École Polytechnique.

Licence: Grègoire Allaire teaches a semester course on numerical analysis and optimization in the second year (senior undegraduate level). See the web page: http://www.cmap.polytechnique.fr/~allaire/cours_X_annee2.html

Master: Grègoire Allaire teaches a course on optimal design of structures in the third year (first year of a Master program). See the web page: http://www.cmap.polytechnique.fr/~allaire/cours_X_majeure.html

Master: Grègoire Allaire teaches together with François Golse a course on transport and diffusion in the third year (first year of a Master program). See the web page: http://www.cmap.polytechnique.fr/~allaire/cours_map567.html

Master: Grègoire Allaire teaches together with François Alouges a course on homogenization in the fourth year (second year of a Master program). See the web page: http://www.cmap.polytechnique.fr/~allaire/homogenization.html

Master: Houssem Haddar teaches together with Laurent Bourgeois a course on "Inverse problems: mathematical analysis and numerical algorithms" (M2, AN&EDP, Paris 6 and Ecole Polytechnique).

9.2.2. Supervision

PhD in progress: L. Azem, Fracture and damage: Modeling and Simulation, Olivier Pantz (with Zorgati).

PhD in progress: H. T. Nguyen, Simplified models and inverse problems for diffusion MRI, 2011, Jing-rebecca Li (with Denis Grebenkov and Cyril Poupon).

PhD in progress: D. V. Nguyen, Efficient finite-element method to solve PDE problems in diffusion MRI, 2011, Jing-Rebecca Li (with Denis Grebenkov).

PhD in progress: G. Michailidis, On topology optimization with feasibility constraints, 2010, Grégoire Allaire (with F. Jouve)

PhD in progress: Z. Jiang, Eddy current probing of axisymmetric tubes, 2010, Houssem Haddar.

PhD in progress: M. Chamaillard, Effective boundary conditions for thin periodic coatings, Ecole Polytechnique, 2011, Houssem Haddar (with P. Joly).

PhD in progress : L. Audibert, Non-destructive testing of concrete like materials, 2012, Houssem Haddar.

PhD in progress : T. Mercier, data assimilation for temprature estimates of nuclear fuel powerplant, 2012, Houssem Haddar.

Ph.D. in progress: Gabrielle Fournet, Inclusion of blood flow in micro-vessels in a new dMRI signal model, 2013, Jing-Rebecca Li (with Luisa Ciobanu).

Ph.D. in progress: Simona Schiavi, Homogenized models for Diffusion MRI, 2013, Houssem Haddar and Jing-Rebecca Li.

Ph.D. in progress: Thi-Phong Nguyen, Inverse scattering for perturbed periodic media, 2013, Houssem Haddar.

Ph.D. in progress: Mohamed Lakhal, Radar Imaging of buried mines, 2013, Houssem Haddar.

PhD: G. Migliorati, Electrostatic Imaging with uncertain backgrounds, April 2013, H. Haddar and F. Nobile.

PhD: F. Ouaki, On multi-scale numerical methods for multiphasic transport in porous media, 2013, Grègoire Allaire.

PhD: G. Delgado, Optimal design of the draping of composite materials, 2013, Grégoire Allaire.

HdR: Jing-Rebecca Li, “Modelisation et simulation de la diffusion”, Universite Paris Sud, 16 dec, 2013.

GAMMA3 Project-Team

7. Dissemination

7.1. Teaching - Supervision - Juries

7.1.1. Teaching

- T. Grosges:
  - *Responsable du Master Science, Technologie et Santé (STS)*, Université de Technologie de Troyes, Troyes.
  - *Responsable de la filière Technologie et Commerce des Matériaux et Composants (TCMC)*, Département Matériaux, Economie et Technologie (MTE), Université de Technologie de Troyes, Troyes.
  - *Responsable du cours: Mesure Physique et Instrumentation (MS11)*, Université de Technologie de Troyes, Troyes.
  - *Responsable du cours: Méthodes mathématiques et numériques en optique (MO23)*, Université de Technologie de Troyes, Troyes.
  - *Responsable du cours: Technique d'achat et de réduction des coûts (TN19)*, Université de Technologie de Troyes, Troyes.
- D. Barchiesi:
  - *Responsable du cours: Design et sensorique (DS01)*, Université de Technologie de Troyes.
  - *Responsable du cours: Management de l'innovation (GE41)*, Université de Technologie de Troyes & Groupe École Supérieure de Commerce Troyes.

7.1.2. Supervision

PhD in progress : N. Barral, Adaptive ALE scheme for CFD, October 2012, F. Alauzet

PhD in progress : V. Menier, Adaptive Mesh Adaptation for Navier-Stokes Equations, October 2012, F. Alauzet and A. Loseille

7.1.3. Juries

P. Laug, participation au jury de thèse de Jie Zhang, *Procédure de remaillage adaptatif 3D avec modèle d'endommagement multi-axial pour la simulation numérique des procédés de mise en forme*, UTT, 21/03/2013.

IPSO Project-Team

7. Dissemination

7.1. Scientific Animation

7.1.1. Editorial activities

- P. Chartier is member of the editorial board of “M2AN"
- P. Chartier is member of the editorial board of “ESAIM Proceedings"
- P. Chartier is member of the editorial board of “Mathematical Analysis"
- N. Crouseilles is member of the editorial board of "International Journal of Analysis" http://www.hindawi.com/journals/analysis/
- A. Debussche is editor in Chief of “Stochastic Partial Differential Equations: analysis and computations".
- A. Debussche is member of the editorial board of “Potential Analysis", Differential and Integral Equations.
- A. Debussche is member of the editorial board of “Differential and Integral Equations".
- A. Debussche is member of the editorial board of “ESAIM: Proceedings".
- A. Debussche is member of the editorial board of the collection: “Mathématiques & Applications", SMAI, Springer.
- M. Lemou is associate editor of “Annales de la faculté de Toulouse"

7.1.2. Conference and workshop organization

- P. Chartier was a member of the scientific committees of SciCADE 2013 and ENUMATH 2013.
- A. Debussche was the main organizer of the thematic semester *Perspectives in Analysis and Probability* organized by the Lebesgue Center in Nantes and Rennes from april to september (see: http://www.lebesgue.fr/content/sem2013-perspectives-analysis-and-probability).
- A. Debussche was in the scientific committee of the conference *Probability and PDEs*, Centro de Giorgi, Pisa, may 20-24, 2013.
- E. Faou organized with J. Erhel (Rennes) and T. Lelièvre (CERMICS) the conference NASDPE13, *Numerical analysis of stochastic Partial Differential equations*, September 10-11, Rennes, France.
- N. Crouseilles co-organized the workshop on AP scheme (with C. Negulescu, F. Deluzet, C. Besse), Porquerolles, France (9-15 june, 2013).
- P. Chartier and M. Lemou organized a minisymposium on "Numerical schemes for highly oscillatory problems". ENUMATH, Lausanne, 25-30 august.
- M. Lemou organized a minisymposium on "Asymptotic preserving schemes for kinetic and related models". Hong-Kong, 07-11 January 2013.
- M. Lemou and F. Méhats were scientific advisors in the IHP semester *Gravasco* "N-body gravitational dynamical systems from N=2 to infinity" and were co-organizers of the workshop "Dynamics & Kinetic theory of self-gravitating systems" in this semester.
- F. Méhats was co-organizer of the workshop "Confined Quantum Systems: Modeling, Analysis and Computation" in Vienna.

7.1.3. Administrative activities

- P. Chartier is member of the bureau of the Comité des Projets at Inria-Rennes.
- A. Debussche leads the Lebesgue Center with San Vu Ngoc (coordinator) and L. Guillopé.

- A. Debussche is a member of the administrative board of the ENS Cachan.
- M. Lemou is partly in charge of the Master 2
- M. Lemou is member of the scientific committee of the Lebesgue Center (Labex)
- F. Méhats is member of the CNU, Section 26.
- F. Méhats is the head of the numerical analysis department of IRMAR.
- G. Vilmart was partly in charge of the weekly numerical analysis seminar at ENS Rennes “Groupe de travail: application des mathématiques”.
- N. Crouseilles was partly in charge of the weekly numerical analysis seminar at ENS Rennes “Groupe de travail : application des mathématiques”.

7.1.4. Talks in seminars and conferences, mini-courses

- E. Faou was invited at the Séminaire de Mathématiques Appliquées du Collège de France.
- A. Debussche gave a mini-course on *Stochastic equations and control theory*, in the conference *Mathematical Control in Trieste*, SISSA, Trieste, Dec. 2nd-6th, 2013.
- A. Debussche gave a mini-course on *Introduction aux EDPS* in the school *École Interdisciplinaire à Rennes*, Rennes, oct. 8-10, 2013.
- A. Debussche was gave a plenary talk in the conference Theory and Applications of Stochastic PDEs, IMA, Minneapolis, Jan. 14-18, 2013.
- F. Méhats and M. Lemou were invited to give a course on stability problems in gravitational models in the IHP Gravasco semester.
- G. Vilmart was keynote speaker in NASPDE workshop (Numerical Analysis of Stochastic PDEs), Rennes, 10-11 Sept., 2013.
- G. Vilmart was keynote speaker in the workshop on Multiscale methods and Asymptotic-Preserving schemes, Porquerolles island, June 09-15, 2013.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

Licence 3: P. Chartier, “Equations différentielles", 36, L3, ENS Cachan-Bruz

Master 2 : P. Chartier, “Intégration numérique géométrique" , 12H, M2, University of Rennes 1

Master 2: N. Crouseilles, “Numerical methods for kinetic equations", 18H, M2, University of Rennes 1

Master 2: E. Faou, “Modélisation et analyse numérique des EDPs", ENS Paris, in collaboration with D. Lannes

Master 2: M. Lemou, “Equations hyperboliques et lois de conservation", and “Méthodes numériques pour les modèles cinétiques".

Master 1: M. Lemou, “Theory of distributions" and “Equations elliptiques".

7.2.2. Supervision

- N. Crouseilles: co-advising (with M. Mehrenberger) of Christophe Steiner PhD (second year in Strasbourg University), ministry grant.
- N. Crouseilles: co-advising (with S. Genaud) of Matthieu Kuhn PhD (second year in Strasbourg University), ANR "E2T2" grant.
- N. Crouseilles: co-advising (with M. Mehrenberger) of Pierre Glanc PhD (third year in Strasbourg University), Inria-Cordi grant.
- N. Crouseilles: co-advising (with M. Lemou) of H. Hivert PhD (first year in Rennes university), ENS grant.

- N. Crouseilles: co-advising (with R. Raghurama and M. Lemou) of A. Ruhi PhD (second year in IISc), Indian grant.
- F. Méhats is co-supervisor of the PhD thesis of G. Leboucher (with P. Chartier).
- F. Méhats is co-supervisor of the PhD thesis of M. Tusseau (with A. Debussche).
- A. Debussche supervizes the Phd theses of: M. Hofmanova (defended in july 2013), M. Kopec (defense scheduled on june 2014), S. De Moor (defense scheduled on june 2014).

7.2.3. Juries

- P. Chartier was referee of the thesis of C. Zbinden (Geneva, supervised by E. Hairer), november.
- P. Chartier was referee of the thesis of H. Xue (Bergen, Supervised by A. Zanna), november.
- P. Chartier was member of the HDR jury of G. Vilmart, july.
- N. Crouseilles: member of the PHD jury of C. Caldini-Queiros, 15 november 2013.
- F. Méhats was referee of the thesis of M. Lutz (Strasbourg, supervised by E. Frenod and E. Sonnendrücker).
- F. Méhats was referee of the thesis of J. Sabin (Cergy, supervised by M. Lewin).
- M. Lemou was referee of the PhD thesis of F. Doisneau: Ecole Centrale de Paris, april 2013.
- M. Lemou was member of the Jury for the PhD thesis of E. Franck: Univesity Paris 6, october 2013.

7.3. Popularization

- Web interview of E. Faou: A l'occasion de la remise de la médaille Blaise Pascal (2013), Inria website.
- In http://interstices.info/planetes (2013), popularization article on the field of geometric numerical integration, published in "Interstices". Theme "Mathématiques de la planète Terre 2013" and Theme 2012-2013 "Invariants et similitudes" of TIPE in preparatory classes.
- Interview (June 2012) of M. Lemou for the journal "Science de l'Ouest" on the stability of galactic models. and publication of a popularized article: "Les mathématiciens déchiffrent l'univers" in the the journal "Espace des sciences", Nov 2012.
- M. Lemou and F. Méhats wrote a popularized scientific text in a CNRS letter "Lettre de l'INSMI", june 25th, 2012.

MC2 Project-Team

9. Dissemination

9.1. Scientific Animation

Thierry Colin is elected as a member of the national committee of the French Universities (CNU). It is a national structure that has in charge a peer review of the carriers of mathematicians in France.

Charles-Henri Bruneau is member of the executive board of the international conferences on CFD. Selection of the 270 abstracts received for the next conference in China july 2014.

Angelo Iollo has managed the national ANR research project Carpeinter.

C. Poignard gave a talk at Lycée Montaigne in december 2013 on the modeling of electroporation.

Lisl Weynans has participated to organize the YIC (2nd ECCOMAS Young Investigators Conference), Bordeaux 2-6 September 2013.

Olivier Saut is the head of the GDR Metice (Mathématiques appliquées aux espéces, tissus et cellules).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

All Professors and Associate Professors teach 192 hours per year.

Licence : Modélisation et calcul scientifique, 32H, L2, Université Bordeaux 1, France (Michel Bergmann)

Licence : Initiation au langage de programmation Fortran 90, 28H, ENSEEIRB-MATMECA, France (Michel Bergmann)

Master : approximation des EDP 2, 28h, M1, Université Bordeaux 1, France (Michel Bergmann)

Master : electrical modelling of biological cells, 32H, M2, Université Bordeaux 1, France (Clair Poignard)

9.2.2. Supervision

PhD & HdR (Les thèses soutenues doivent figurer dans la bibliographie) :

HdR: O. Saut, Contributions en optique non-linéaire et en modélisation de la croissance tumorale en vue des applications cliniques, Université Sciences et Technologies - Bordeaux I, September 2012

M. Cisternino, A parallel second order Cartesian method for elliptic interface problems and its application to tumor growth model, Université Sciences et Technologies - Bordeaux I and Politecnico di Torino, April 2012

PhD: Y. Gorsse, Méthode cartésienne pour les fluides compressibles et l'élasticité non-linéaire autour d'obstacles, November 2012

J. Hovnanian, Modélisation, Simulation et contrôle d'écoulement autour d'obstacle déformables, December 2012

PhD: V. Huber, Numerical modelling of complex bifluid flows, September 2012

PhD in progress : F. Cornelis is a medical doctor of the Institut Bergonié. He is a radiologist practicing CT-Scans, MRI but also local mini-invasive treatments (interventional radiology). He spends one day a week to prepare a PhD on the modelling aspects of his work. started 2010

PhD in progress : X. Jin, Etude et conception d'une éolienne, started 1st May 2011, supervisors : Angelo Iollo and Michel Bergmann

PhD in progress : M. Leguebe, Electroporation modelling at the cell scale, started 1st october 2011, supervisors : Thierry Colin and Clair Poignard

PhD in progress, started October 2011: Chloe Mimeau advised by I. Mortazavi and GH Cottet.

PhD in progress, started February 2011: Yoann Eulalie, Advised by I. Mortazavi in a CIFRE partnership Plastic Omnium.

PhD in progress : M. Lattige, (co-director G. Gallice, CEA CESTA). Numerical modeling of ablation. started october 2010

PhD in progress, started October 2011: F. Bernard, V. Pianet

PhD in progress, started October 2012: A. De Bauer, J. Jouganous, G. Lefevre, H. Ung.

PhD in progress : O. Gallinato started October 2013 on the modeling of invadopodia, in joint supervision with T. Colin, C.Poignard from MC2 and T. Suzuki from Osaka University.

PhD in progress: T. Michel started his PhD in september 2013, cosupervised by T. Colin and C.Poignard on the modeling of the growth of cancer cells spheroids.

PhD in progress: M. Jedouaa started her PhD in October 2013 under supervision of CH Bruneau and O. Maitre.

PhD in progress: Perrine Berment advised by O. Saut and T. Colin since Oct. 2013.

MOKAPLAN Exploratory Action

8. Dissemination

8.1. Teaching - Supervision - Juries

8.1.1. Teaching

- Licence : Guillaume Carlier, Analyse complexe, 30hETD, Dauphine, L3,
- Master 2: Guillaume Carlier, Mean-Field-Games, 18hETD, Dauphine, M2,
- Doctorat : Guillaume Carlier, cours Optimization with divergence constraints and applications, Pise, Italie, 12h.

8.1.2. Supervision

PhD in progress : Luca Nenna, , 01/10/2013, J.D. Benamou & G. Carlier

PhD in progress : Maxime Laborde (01/09/2013) and Romeo Hatchi (01/09/2012), G. Carlier

8.1.3. Juries

Jean-David Benamou reviewer of PhD : Nicolas Bonnote, Unidimensional and Evolution Method for Optimal Transportation, Université Paris Sud, dec. 16 2013,Advisors : L. Ambrosio and F. Santambrogio

Guillaume Carlier jury member for the PhD of Vincent Nolot (Dijon), Miryana Grogorova (Paris 7) and Beatrice Acciaio (Vienna, reviewer), HDR committes: Pierre Bousquet (Marseille) and Naila Hayek (Paris 1).

8.2. Popularization

Jean-David Benamou run a Ipython Notebook web site https://mathmarx.rocq.inria.fr:9999 on which simple Optimal Mass Transportation algorithm are coded in pythion and can be tested and modified.

NACHOS Project-Team

9. Dissemination

9.1. Teaching - Supervision - Juries

9.1.1. Teaching

Victorita Dolean, *Scilab*, MAM3, 24 h, Polytech Nice.

Victorita Dolean, *Partial differential equations*, MAM4, 66 h, Polytech Nice.

Victorita Dolean, *Computational electromagnetics*, MAM5, 40 h, Polytech Nice.

Victorita Dolean, *Numerical analysis*, L2, 30 h, University of Nice-Sophia Antipolis.

Victorita Dolean, *Mathematics and statistics*, M1 Erasmus Mundus EuroAquae, 34 h, University of Nice-Sophia Antipolis.

Claire Scheid and Stéphane Lanteri, *Introduction to scientific computing*, M2 Erasmus Mundus MathMods, 30 h, University of Nice-Sophia Antipolis.

Claire Scheid, *Practical works on differential calculus*, 26 h, L2, University of Nice-Sophia Antipolis.

Claire Scheid, *Practical works on differential equations*, 36 h, L3, University of Nice-Sophia Antipolis.

Stéphane Descombes, *Analyse numérique et applications en finances*, M2, 30 h, University of Nice-Sophia Antipolis.

9.1.2. Supervision

PhD in progress : Caroline Girard, *Numerical modeling of the electromagnetic susceptibility of innovative planar circuits*, October 2011, Stéphane Lanteri, Ronan Perrussel and Nathalie Raveu (Laplace Laboratory, INP/ENSEEIHT/UPS, Toulouse).

PhD in progress : Fabien Peyrusse, *Numerical simulation of strong earthquakes by a discontinuous Galerkin method*, University of Nice-Sophia Antipolis, October 2010, Nathalie Glinsky and Stéphane Lanteri.

PhD in progress : Marie Bonnasse, *Numerical simulation of frequency domain elastic and viscoelastic wave propagation using discontinuous Galerkin methods*, University of Nice-Sophia Antipolis, October 2012, Julien Diaz (MAGIQUE3D project-team, Inria Bordeaux - Sud-Ouest) and Stéphane Lanteri.

PhD in progress : Jonathan Viquerat, *Discontinuous Galerkin time domain methods for nanophotonics*, October 2012, Stéphane Lanteri and Claire Scheid.

NANO-D Team

7. Dissemination

7.1. Teaching - Supervision - Juries

7.1.1. Teaching

Licence : Stephane Redon, “Introduction to computer science”, INF311, 80h, Ecole Polytechnique, Paris, France

7.1.2. Supervision

PhD in progress : Petr Popov, Computational methods for protein structure prediction, November 2011, Sergei Grudinin

PhD in progress : Krishna Kant Singh, Adaptive parallel algorithms for molecular simulation, Grenoble University, September 2013, Jean-François Méhaut and Stéphane Redon

PhD : Zofia Trstanova, Adaptive Hamiltonians, Grenoble University, May 30, 2012, Stephane Redon

7.2. Participation to conferences, seminars

- S. Grudinin gave a talk "Efficient Boundary Element Method with curved elements" at the workshop "Computational Electrostatics for Biological Applications, CEBA 2013", Jul 1-3, Genova, Italy, 2013.
- S. Grudinin gave a talk "Predicting Multi Protein Assemblies" at the Second workshop on Computational Structural Biology: Integrative Approaches for Modeling Biomolecular Complexes, IAMB 2013, May 29-31, Nice, France, 2013.
- M. Piuzzi participated in ISMB/ECCB in Berlin, 2013.
- M. Piuzzi and S. Grudinin participated in XVIIIe congrès du Groupe de Graphisme et Modélisation Molèculaire, GGMM 2013, May 21-23, St Pierre d‘Oléron, France, 2013.
- S. Grudinin and P. Popov participated at the Fifth CAPRI Evaluation Meeting, Apr 17-19, Utrecht, Netherlands, 2013.
- P. Popov gave a talk "Docktrina : Docking Protein Trimers" at the Fifth CAPRI Evaluation Meeting, Apr 17-19, Utrecht, Netherlands, 2013.
- S. Grudinin attended a school on Analysis of Diffraction Data in Real Space, ADD2013, Mar 18-22, Grenoble, France, 2013.

7.3. Popularization

NANO-D presented SAMSON to high school students during the 2103 “Fete de la Science” (Science Fair). The students were using SAMSON to interactively simulate chemical reactions, interact with models of nanotubes, build molecules, etc.

OPALE Project-Team

9. Dissemination

9.1. Scientific Animation

- R. Duvigneau is member of the "Conseil National des Universités" (CNU) for the 26th section (applied mathematics and application of mathematics)
- P. Goatin was member of the Organizing Committee of the Workshop *"Traffic Modeling and Management: Trends and Perspectives - TRAM2"*, Sophia Antipolis (France). March 2013. https://team.inria.fr/opale/workshop-tram2/

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: Introduction to Numerical Analysis, 19.5 hrs, L3 (“Water Resources Engg.” Section), Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (J.-A. Désidéri)

Licence: Numerical Methods, 19.5 hrs, L3 (“Applied Mathematics and Modelling” Section), Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (J.-A. Désidéri)

Licence: Partial Differential Equations, 36 hrs, L3, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (R. Duvigneau).

Master: Advanced Optimization, 40.5 hrs, M2, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (J.-A. Désidéri, R. Duvigneau).

Master: Multidisciplinary Optimization, 22.5 hrs, joint ISAE ("Complex Systems") and M2 (Mathematics), Toulouse (J.-A. Désidéri, R. Duvigneau).

Licence: Numerical Methods I, 56 hrs tutorials, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (A. Habbal).

Licence: Summer Project in Mathematical Modeling, 36 hrs, L3, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (A. Habbal).

Master: Numerical Methods for Partial Differential Equations, 66 hrs, M1, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (A. Habbal).

Master: Reconstructing lost GPS signals using accelerometrics, 10 hrs, M1, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (A. Habbal).

9.2.2. Supervision

HdR : Régis Duvigneau, *Conception optimale en mécanique des fluides numérique : approches hiérarchiques, robustes et isogéométriques*, University of Nice Sophia Antipolis, october 2013

PhD : Andrea Minelli, *Aero-acoustic shape optimization of a supersonic business jet*, University of Nice Sophia Antipolis, November 2013, supervisor: Jean-Antoine Désidéri

PhD : Adrien Zerbinati, *Optimisation multidisciplinaire robuste pour application à l’automobile*, University of Nice Sophia Antipolis, April 2013, supervisors: Jean-Antoine Désidéri and Régis Duvigneau.

PhD in progress : Maria Laura Delle Monache, *Traffic flow modeling by conservation laws*, October 2011, supervisor: P. Goatin.

PhD in progress : Maxime Nguyen Dinh (Cifre ONERA/Aibus), *Qualification of numerical simulations by anisotropic mesh adaptation*, October 2011, supervisor : Jean-Antoine Désidéri.

PhD in progress : Sébastien Bourasseau (Cifre ONERA/Snecma), *Goal-oriented hybrid mesh adaptation for turbomachineray*, April 2011, supervisor : Jean-Antoine Désidéri.

PhD in progress : Enric Roca León (Cifre ONERA/Eurocopter), *Helicopter rotor blade multi-objective optimization*, October 2011, supervisor : Jean-Antoine Désidéri.

PhD in progress : Asma Gdhami, *Analyse isogéométrique pour les problèmes hyperboliques*, November 2013, supervisor: Régis Duvigneau.

PhD in progress : Maroua Mokni, *Numerical analysis and computational assessment of variants of the multiple-gradient of descent algorithm*, November 2013, supervisor: Jean-Antoine Désidéri.

PhD in progress : Bouthaina Yahyaoui, *Cell-dynamics modelling : from the Fisher-KPP equations to mechanical-biological-chemical systems*, January 2013, supervisor: Abderrahmane Habbal.

PhD in progress : Jérémie Labroquère, *Optimization of Flow Control Devices*, October 2010, Supervisors: Jean-Antoine Désidéri and Régis Duvigneau.

PhD in progress : Matthias Mimault, *Crowd motion modeling by conservation laws*, October 2012, Supervisor: P. Goatin.

PhD in progress : Aalae Benki, *Méthodes efficaces de capture de front de Pareto en conception mécanique multicritère. Applications industrielles.*, October 2010, supervisor: A. Habbal.

PhD in progress : Fatima Zahra Oujebbour, *Méthodes et applications industrielles en optimisation multicritère de paramètres de processus et de forme en emboutissage*, October 2010, Supervisors: A. Habbal.

PhD in progress : Boutheina Yahyaoui, *Modélisation de la dynamique des cellules : Des équations de Fisher-KPP aux systèmes mécano-bio-chimiques*, January 2013, Supervisors: A. Habbal and M. Ayadi (Tunis).

PhD in progress : Mohamed Kaicer, *Group lending : analysis of asymmetric information using game theory. Analysis design and implementation of a simulator adapted to micro-finance market*, October 2009, Supervisors: R. Aboulaich (Rabat) and A. Habbal.

9.3. Popularization

Jean-Antoine Désidéri gave the lecture *"Modelling and simulating, when engineering becomes numerical"* to the Valbonne International High School (CIV) on October 11, 2013.

Paola Goatin was interviewed twice :

- TV interview on evening news, France 3 Côte d'Azur, January 30, 2013 http://www.youtube.com/watch?v=VlW4VgoTjEI&feature=youtu.be.
- Journal interview : *"Une chercheuse au chevet des embouteillages"*, Nice Matin, January 2013 http://www-sop.inria.fr/members/Paola.Goatin/NiceMatin.pdf.

POEMS Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Membership

- A. S. Bonnet-Ben Dhia is the Head of the Electromagnetism Group at CERFACS (Toulouse)
- A. S. Bonnet-Ben Dhia is in charge of the relations between l'ENSTA and the Master "Dynamique des Structures et des Systèmes Couplés (Responsible : Etienne Balmes)".
- A. S. Bonnet-Ben Dhia chairs the scientific council of the CNRS Institure for Engineering and Systems Sciences (INSIS)
- A. S. Bonnet-Ben Dhia is associate editor of SINUM (SIAM Journal of Numerical Analysis).
- M. Bonnet is associate editor of European Journal of Mechanics A/Solids
- M. Bonnet is associate editor of Engineering Analyses with Boundary Elements
- M. Bonnet is on the editorial board of *Inverse Problems*.
- M. Bonnet is on the editorial board of *Computational Mechanics*.
- P. Ciarlet is an editor of DEA (Differential Equations and Applications)
- P. Ciarlet is an editor of CAMWA (Computers & Mathematics with Applications)
- P. Ciarlet is an editor of ESAIM:M2AN (Mathematical Modeling and Numerical Analysis)
- G. Cohen is a scientific expert of ONERA.
- P. Joly is a member of the scientific committee of CEA-DAM.
- P. Joly is a member of the Scientific Committee of the Seminar in Applied Mathematics of College de France (P. L. Lions).
- P. Joly is an editor of the journal Mathematical Modeling and Numerical Analysis.
- P. Joly is a member of the Book Series Scientific Computing of Springer Verlag.
- M. Lenoir is a member of the Commission de Spécialistes of CNAM.
- M. Lenoir is in charge of Master of Modelling and Simulation at INSTN.
- E. Lunéville is the Head of UMA (Unité de Mathématiques Appliquées) at ENSTA.
- The Project organizes the monthly Seminar Poems (Coordinators: S. Chaillat, S. Marmorat)

9.1.2. Organisation of conferences

- POEMS has co-organized the international conference WAVES 2013 (Tunis june 2013).
- Patrick Joly was co-organizer of the Oberwolfach seminar (Computational Acoustics and Electromagnetism) in February 2013.
- Sonia Fliss organized the CEA-EDF-Inria summer school (Waves in periodic media : mathematical and numerical aspects), ENSTA-Paristech in april 2013.
- Anne-Sophie Bonnet-Ben Dhia co-organized a worshop (Mathematical methods for spectral problems : applications to waveguides, periodic media and metamaterials), Helsinki in Mars 2013.
- Anne-Sophie Bonnet-Ben Dhia organized a worshop on waveguides, ENSTA-Paristech in october 2013.
- Stéphanie Chaillat organized a worshop (Error Estimates and Adaptive Mesh Refinement Strategies for Boundary Elements Methods), ENSTA-Paristech in may 2013.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Éliane Bécache

- *Compléments sur la méthode des éléments finis*, ENSTA Paristech, (2nd year).

Marc Bonnet:

- *Problèmes inverses*, Master TACS (ENS Cachan) and DSMSC (Centrale Paris)
- *Méthodes intégrales*, Master TACS (ENS Cachan)
- *Equations intégrales et multipôles rapides*, Ecole doctorale MODES (Univ. Paris Est, Marne la Vallée)
- *Outils élémentaires d'analyse pour les équations aux dérivées partielles*, ENSTA Paristech (1st year)

Anne-Sophie Bonnet-Ben Dhia

- *Outils élémentaires d'analyse pour les EDP*, ENSTA Paristech (1st year).
- *Propagation dans les guides d'ondes*, ENSTA Paristech (3rd year).
- *Théorie spectrale des opérateurs autoadjoints et applications aux guides optiques*, ENSTA Paristech (2nd year).
- *Propagation des ondes*, Ecole Centrale de Paris (M2).

Laurent Bourgeois

- *Outils élémentaires pour l'analyse des EDP*, ENSTA Paristech (1st year)
- *Fonction de la variable complexe*, ENSTA Paristech (2nd year)
- *Inverse problems: mathematical analysis and numerical algorithms*, Université Pierre et Marie Curie (Master 2)

Aliénor Burel

- *Calculus, L1 PCST*, Université Paris-Sud XI (1st year)
- *Systèmes Linéaires, L3 MAP, Matlab*, Université Paris-Sud XI (3rd year)
- *Probabilités*, IUT d'informatique, Université Paris-Sud XI (2nd year)
- *Analyse*, IUT d'informatique, Université Paris-Sud XI (1st year)

Camille Carvalho

- *Optimisation Quadratique*, ENSTA Paristech (1st year)
- *Fonction d'une variable complexe*, ENSTA Paristech (2nd year)
- *Tutorat pour les élèves en difficulté en mathématiques appliquées*, ENSTA Paristech (1st year)

Maxence Cassier

- *Système dynamique: Stabilité et Commande*, ENSTA Paristech (1st year)
- *Introduction à MATLAB*, ENSTA Paristech (1st year)
- *Fonctions d'une variable complexe*, ENSTA-Paristech, (2nd year)
- *Tutorat pour élèves en difficulté en mathématiques appliquées*, ENSTA Paristech (1st year)

Stéphanie Chaillat

- *Introduction à la discrétisation des équations aux dérivées partielles*, ENSTA Paristech (1st year)
- *Fonctions d'une variable complexe*, ENSTA,ENSTA Paristech (2nd year)

Patrick Ciarlet

- *The finite element method*, ENSTA Paristech (2nd year)
- *The finite element method – extensions*, ENSTA Paristech (2nd year)
- *Theory and algorithms for distributed computing*, ENSTA Paristech (3rd year), and Master "Modeling and Simulation" (M2)
- *Maxwell's equations and their discretization*, ENSTA Paristech (3rd year), and Master "Modeling and Simulation" (M2)

Rémi Cornaggia:

- *Mécanique* , Polytech' Paris Sud, Orsay (PeiP, 1st year)
- *Physique des solides* , Université Paris 11, Orsay (L3 "Physique et mécanique")
- *Méthodes numériques pour la physique* , Université Paris 11, Orsay (M1 "Mécanique physique")

Sonia Fliss

- *Méthode des éléments finis*, ENSTA Paristech (2nd year)
- *Programmation scientifique et simulation numérique*, ENSTA Paristech (2nd year)
- *Introduction à la discrétisation des équations aux dérivées partielles*, ENSTA Paristech (1st year).
- *Local perturbations of periodic media*, International Summer School in Mathematics on the topic "Periodic structures in Applied Mathematics", Georg-August Universität, Gottingen.

Christophe Hazard

- *Outils élémentaires d'analyse pour les EDP*, ENSTA Paristech (1st year)
- *Théorie spectrale des opérateurs autoadjoints et applications aux guides optiques*, ENSTA Paristech (2nd year).

Patrick Joly

- *Introduction à la discrétisation des équations aux dérivées partielles*, ENSTA Paristech (1st year).
- *Outils élémentaires d'analyse pour les EDP*, ENSTA Paristech (1st year).

Nicolas Kielbasiewicz

- *Programmation scientifique et simulation numérique*, ENSTA-Paristech (2nd year)
- *Parallélisme et calcul réparti*, ENSTA-Paristech (Master 2)

Marc Lenoir

- *Fonctions d'une variable complexe*, ENSTA Paristech (2nd year)
- *Equations intégrales* ENSTA Paristech (Master 2)

Simon Marmorat

- *Introduction à la discrétisation des équations aux dérivées partielles et à leur discrétisation*, ENSTA Paristech (1st year)
- *La méthode des éléments finis*, ENSTA Paristech (2nd year)

Jean-François Mercier

- *Outils élémentaires d'analyse pour les équations aux dérivées partielles*, ENSTA Paristech (1st year)
- *Fonctions d'une variable complexe*, ENSTA-Paristech, ENSTA Paristech (2nd year)
- *Théorie spectrale des opérateurs autoadjoints et application aux guides optiques*, ENSTA Paristech (Master 2)

Nicolas Salles

- *Analyse et séries de Fourier*, Université Paris-Sud XI (L2)
- *Systèmes Linéaires (Matlab)*, Université Paris-Sud XI (L3)
- *Calcul scientifique*, Université Paris-Sud XI (L3)
- *Géométrie et Analyse de Fourier*, Université Paris-Sud XI (L2)

Elizaveta Vasilevskaya

- *Algèbre linéaire*, Institut Galigée (L1)
- *Mathématiques générales*, Univ. Paris XIII (L1)
- *Mathématiques générales*, Univ. Paris XIII (L2)

Valentin Vinoles

- *La méthode des éléments finis*, ENSTA Paristech (2nd year)
- *Introduction à MATLAB*, ENSTA-Paristech, ENSTA Paristech (1st year)

9.2.2. Supervision

PhD : Nicolas Salles, "Stabilisation du calcul des singularités dans les méthodes d'équations intégrales variationnelles", September 2013, Marc Lenoir and Eliane Bécache

PhD in progress : Aliénor Burel, "Méthodes numériques pour les ondes élastiques en présence d'interfaces minces et de milieux mous", October 2010, Patrick Joly and Marc Bonnet

PhD in progress : Maxence Cassier, "Focalisation par retournement temporel sur des obstacles diffractants.", October 2010, Christophe Hazard and Patrick Joly

PhD in progress : Matthieu Chamaillard, "Conditions aux limites effectives pour des revêtements minces périodiques", October 2011, Patrick Joly

PhD in progress : Simon Marmorat, "Etude d'un modèle asymptotique et de son couplage avec une approche par éléments finis pour simuler la propagation d'ondes ultrasonores dans un milieu complexe perturbé par de petites inclusions", Mars 2012, Patrick Joly

PhD in progress : Antoine Tonnoir, "Simulation numérique de la diffraction d'ondes ultrasonores par un défaut localisé dans une plaque élastique anisotrope", October 2011, Anne-Sophie Bonnet-Ben Dhia and Sonia Fliss

PhD in progress : Audrey Vigneron, "Formulations intégrales pour la simulation du contrôle non destructif par courants de Foucault", November 2011, Marc Bonnet

PhD in progress : Rémi Cornaggia, "Asymptotique petit-défaut de fonctions-coût et son application en identification: justifications théorique et expérimentale, extensions", October 2012, Marc Bonnet

PhD in progress : Geoffrey Beck, "Modélisation de la propagation d'ondes électromagnétiques dans des câbles co-axiaux", October 2012, Patrick Joly

PhD in progress : Elizaveta Vasilevskaia, "Modes localisés dans les guides d'onde quantiques", November 2012, Patrick Joly

PhD in progress : Camille Carvalho, "Étude théorique et numérique de guides d'ondes plasmoniques", October 2012, Anne-Sophie Bonnet-Ben Dhia and Patrick Ciarlet

PhD in progress : Valentin Vinoles, "Analyse asymptotique des équations de Maxwell en présence de métamatériaux", October 2012, Sonia Fliss and Patrick Joly

PhD in progress : Mathieu Lecouvez, "Méthodes de décomposition de domaine optimisées pour la propagation d'ondes en régime harmonique", March 2012, Patrick Joly

PhD in progress : Luca Desiderio, "Efficient visco-eleastic wave propagation in 3D for high contrast media", October 2013, Stéphanie Chaillat and Patrick Ciarlet

9.3. Popularization

Marc Bonnet:

- Opening workshop of UCL Centre for Inverse Problems (London, UK, March 2013),
- Conference honoring Andreas Kirsch for his 60th birthday (Bad Herrenalb, Germany, April 2013),
- International Conference on Novel Directions in Inverse Scattering (Newark DE, USA, July 2013),
- Singular Days (Rennes, France, August 2013)

Laurent Bourgeois

- *On sampling methods to identify defects in a periodic waveguide from far field data*, Inverse Problems: Scattering, Tomography and Parameter Identification, Conference honoring Andreas Kirsch for his 60th birthday, Bad Herrenalb - Germany, 8-11/4/2013
- *On Lipschitz stability for a class of inverse problems*, Inverse Problems and Nonlinear equations, Ecole Polytechnique, Palaiseau, 22-24/05/2013
- *On the far field of scattering solutions in a periodic waveguide. Part II : The inverse problem*, Waves conference, Gammarth, Tunisie, 3-7/6/2013

Aliénor Burel

- *Using potentials in elastodynamics : a challenge for FEM*, WONAPDE, Concepciòn (Chile), January 14-18th
- *Utilisation des potentiels en élastodynamique : un challenge pour les méthodes éléments finis ?*, GTN Orsay, Université Paris-Sud, February, 19th
- *Effective Transmission Conditions for Thin-Layer Transmission Problems in Elastodynamics*, WAVES '13, Gammarth (Tunisia), June 3-7th
- *Utilisation des potentiels en élastodynamique : un challenge pour les méthodes éléments finis ?*, Poems Seminar, Palaiseau, June 27th

Camille Carvalho

- *Plasmonic cavity modes with sign-changing permittivity*, WAVES, Tunis, June
- *Plasmonic cavity modes: black-hole phenomena captured by Perfectly Matched Layers*, PIERS, Stockholm, August

Maxence Cassier

- *Space-time focusing on unknown obstacles*, *International conference in applied mathematics, Heraklion, Greece, September 2013*.
- *Space-time focusing for acoustic waves* (poster session), *International conference on novel directions in inverse scattering, honoring David Colton, Newark, United states, July 2013*.
- *Selective focusing on unknown scatterers*, *Maxence Cassier, Christophe Hazard and Patrick Joly, Waves conference, Tunis, Tunisia, June 2013*.
- *Selective focusing for time-dependent waves*, *Maxence Cassier, Christophe Hazard and Patrick Joly, Workshop: Inverse problems and imaging, institut Henri Poincarré, Paris, France, February 2013*.
- *Selective focusing for time-dependent waves*, *Maxence Cassier, Christophe Hazard and Patrick Joly, Workshop: Computational electromagnetism and acoustics, Oberwolfach, Germany, January 2013.*

Stéphanie Chaillat

- *Fast multipole accelerated boundary integral equation method for 3-D elastodynamic problems in a half-space*, Séminaire EDP LJK, Grenoble, France, November 2013.
- *Fast multipole accelerated boundary integral equation method for 3-D elastodynamic problems in a half-space*, Séminaire Equipe ENI MSSMAT, Chatenay-Malabry, France, November 2013.

- *A fast and adaptive algorithm for the inverse medium problem based on Singular Value Decomposition*. 3rd European Conference on Computational Optimization, Chemnitz, Germany, July 2013.
- *An Adapted Fast Multipole Accelerated Boundary Element Method for 3D Elastodynamics*, SIAM in the Geosciences, Padua, Italy, June 2013.
- *Fast Multipole Accelerated Boundary Element Method for problems in an elastic Half-Space*, WAVES 2013, Tunis, Tunisia, June 2013.
- *Fast multipole accelerated boundary integral equation method for 3-D elastodynamic problems in a half-space*, Séminaire ISTERRE, Grenoble, France, February 2013.
- *Fast multipole accelerated boundary integral equation method for 3-D elastodynamic problems in a half-space*, Séminaire du LMA, Marseille, France, January 2013.
- *Comparison of two Fast Multipole Accelerated BEMs for 3D elastodynamic problems in semi-infinite media*, IABEM 2013, Santiago, Chile, January 2013.

Patrick Ciarlet

- *Strong convergence for Gauss' law with edge elements*, Mafelap'13, Uxbridge (G.-B.), 10-14/06/2013
- *Numerical approximation of transmission problems with sign changing coefficients*, Journées Singulières Augmentées, Rennes, 26-30/08/2013

Sonia Fliss

- *DtN approach for the exact computation of guided modes in a photonic crystal waveguides*, Séminaire EDP de Metz, Metz, January 18th.
- *Sufficient conditions for existence of guided modes in photonic crystal waveguide or how useful can be a numerical method*, Mathematical Methods for spectral problems, University of Helsinki, March 5th-7th
- *Transparent boundary conditions in periodic media*, HF 2013, Nancy, March 19th-21th
- *Scattering in locally perturbed periodic waveguides : forward and inverse problems*, Applied Analysis for the Material Sciences with a special hommage to Michael Vogelius, CIRM Marseille, May 27th-31st
- *On the far field of scattering solutions in a periodic waveguide. Part 1: the forward problem*, Waves 2013, Tunis, June 3rd-7th

Patrick Joly

- *Numerical simulation of a grand piano*, Conference WONAPDE, Concepcion, Chile, January 2013
- *A rigorous approach to the propagation of electromagnetic waves in co-axial cables*, Workshop EMSCA,Weierstrass Institute, Berlin, Germany, May 2013
- *Simulation numérique d'un piano de concert*, Journées EDPs, Contrôle et Musique, Université Pierre et Marie Curie, Paris, May 2013
- *A rigorous approach to the propagation of electromagnetic waves in co-axial cables* , Conference WAVES2013, Gammarth, Tunisia, June 2013
- *Quasi-localtransmission conditions and iterative domain decomposition methods for time harmonic wave propagation*, International Conference on Novel Directions in Inverse Scattering, Newark (Delaware), USA, Juillet 2013
- *Riesz potentials and quasi-local transmission condition for iterative non overlapping domain decomposition methods for the Helmholtz equation*, Conference JSA 2013, Rennes, France, August 2013
- *Perfectly Matched Layers for time domain wave propagation : overview and recent progress*, Conference CEDYA 2013, Castellon, Spain, September 2013

- *Conditions de transmission quasi-locales et méthodes de décomposition de domaine pour la propagation d'ondes en régime harmonique*, CMAP Seminar, Ecole Polytechnique, Palaiseau, France, December 2013

Simon Marmorat

- *An improved linear sampling method in the time domain*, WONAPDE 2013, Concepción, Chile, January.
- *Time domain computation of the scattering of waves by small heterogeneities*, Waves 2013, Tunis, Tunisia, June.
- *An asymptotic model for the scattering of waves by small heterogeneities*, Inria Junior Seminar, Rocquencourt, France, November.
- *Méthodes d'échantillonnage pour la diffraction inverse en fréquence et en temps*, POems Seminar, ENSTA, France, December.

Jean-François Mercier

- *Aeroacoustics in a waveguide with a shear flow*, Anne-Sophie Bonnet-BenDhia, Jean-François Mercier et Florence Millot, 11^{th} International Conference on Mathematical and Numerical Aspects of Wave Propagation (WAVES'13), Tunisia (june 2013)
- *Numerical modeling of nonlinear acoustic waves with fractional derivatives*, B. Lombard et J.-F. Mercier, 11^{th} International Conference on Mathematical and Numerical Aspects of Wave Propagation (WAVES'13), Tunisia (june 2013)

Nicolas Salles

- *Explicit evaluation of integrals arising in Galerkin BEM*, XIV International Conference on Boundary Element & Meshless Techniques, Palaiseau (France), July 2013

Antoine Tonnoir

- *New transparent boundary conditions for time harmonic acoustic diffraction in anisotropic media*, Waves International conference on Mathematical and numerical aspects of waves, Tunis, June 2013

Elizaveta Vasilevskaya

- *Localized modes in perturbed ladder-like periodic waveguides*, Workshop on waveguides, ENSTA ParisTech, Palaiseau, France, October 2013

APICS Project-Team

9. Dissemination

9.1. Scientific Animation

- F. Seyfert was invited to give a talk at the department "Optimization and System Theory" of KTH University (Stockholm, Sweden), on "Generalized Nevanlinna-Pick interpolation on the boundary"
- J. Leblond and D. Ponomarev gave communications at the *11th International Conference on Mathematical and Numerical Aspects of Wave Propagation (WAVES 2013)*, Tunis, June (http://www.lamsin.tn/waves13/). J. Leblond was invited to give a communication at the *Workshop on Control and Observation of Nonlinear Control Systems with Application to Medicine (CONCSAM)*, Honolulu, Hawaii, Sept. (http://math.hawaii.edu/control2013/).
- M. Olivi gave a talk at the SSSC 2013 conference in Grenoble (France) [25] and presented a poster at the ERNSI 2013 conference in Nancy (France).
- E. Pozzi gave communications at the *Spring School in Functional and Harmonic analysis and Operator theory*, Lens (may), at the *Workshop in Operator Theory, Harmonic and Complex Analysis*, Lille (may), and at the seminar of the Lab. J.-A. Dieudonné, Université Nice-Sophia Antipolis.
- L. Baratchart was an invited speaker at the workshop "Inverse Problems and Nonlinear Equations", May, Palaiseau. He was an invited speaker at the workshop "Frames and Bases in Banach Spaces of Holomorphic Functions", October, Bordeaux. He was an invited speaker at the conference in honor of A.A. Gonchar, November, Steklov Institute, Moscow. He was a speaker at CMFT 2013 (Shantou, China). He was an invited speaker at the seminar in Guangzhou University (China), the University of Bordeaux (LMB)and of Grenoble (Laboratoire J. Kuntzmann). He was a visitor at the University of Macao, MIT, and the University of Cyprus.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master, PhD: J. Leblond, Inverse source problems, 3h, Franco-German summer school for inverse problems and PDE, Univ. Brême, All.

9.2.2. Supervision

PhD: S. Chaabi, Analyse complexe et problèmes de Dirichlet dans le plan : équation de Weinstein et autres conductivités non-bornées, defended Dec.2d, 2013 (advisors: L. Baratchart, A. Borichev).

PhD in progress: D. Ponomarev, Inverse problems for planar conductivity and Schrödinger PDEs, since Nov. 2012 (advisors: J. Leblond, L. Baratchart).

PhD in progress: M. Caenepeel, A hierarchical framework for design oriented modeling, since Feb. 2013 (advisors: Y. Rolain, M. Olivi, F. Seyfert).

9.2.3. Juries

- L. Baratchart was a referee of the PhD. manuscript of J. Vayssettes (Univ. Poitiers).
- J. Leblond was a member of the hiring committee for a professor in applied mathematics, Univ. Lorraine, and of the PhD jury of A. Blandinières (Univ. Lyon), R. Tytgat (Aix-Marseille University), and A. Abdelmoula (Univ. Rennes, reviewer).
- M. Olivi was a member (reviewer) of the HdR jury of Sylvie Icart (Université de Nice-Sophia Antipolis, March).

9.3. Popularization

- J. Leblond is a member of the Committee MASTIC. She gave a communication within the "Café-in" of the Research Center (Sept.).
- M. Olivi is co-president with I. Castellani of the Committee MASTIC (Commission d'Animation et de Médiation Scientifique) https://project.inria.fr/mastic/. She is responsible for Scientific Mediation. She held a booth at the APMEP conference 2013 in Marseille (France).
- E. Pozzi was a member of the Committee MASTIC.
- S. Chevillard published a popularization blog post on the website "Mathémαtiques de la planète Terre 2013" (http://mpt2013.fr/) about the problem of inverse magnetization of rocks (cf. Section 4.3)

9.4. Community services

- L. Baratchart is a member of the Editorial Boards of *Constructive Methods and Function Theory* and *Complex Analysis and Operator Theory*. He is Inria's representative at the "conseil scientifique" of the Aix-Marseille University.
- S. Chevillard is representative at the "comité de centre" and at the "comité des projets" (Research Center Inria-Sophia). He was a member of the work-group "Books" whose assignment was to propose different scenarios regarding the future of the books currently stored at the library of the research center.
- J. Leblond is an elected member of the "Conseil Scientifique" of Inria. She is one of the two researchers in charge of the mission "Conseil et soutien aux chercheurs" within the Research Center. She is a member of the "Comité de Suivi National PRPS - QVT" (Prévention des Risques Psycho-Sociaux et la Qualité de Vie au Travail).
- M. Olivi is responsible for scientific mediation and co-president of the committee MASTIC.
- F. Seyfert is a member of CUMIR at Inria Sophia-Antipolis-Méditerrannée.

BIPOP Project-Team

9. Dissemination

9.1. Scientific Animation

- B. Brogliato member of IPC of the IFAC Nonlinear Systems Conference NOLCOS 2013, Toulouse, September 2013. Reviewer for IEEE Trans. Automatic Control, SIAM J. Control Optimization, Multibody System Dynamics, European J. of Mechanics A/Solids, Automatica, IMA J. Applied Mathematics, etc.
- F. Bertails-Descoubes was a member of the international technical Program Committee of ACM SIGGRAPH 2013, and a member of the international technical Program Committee of Eurographics 2014. She has been a reviewer in 2013 for ACM Transactions on Graphics and Computer Aided Geometric Design.
- V. Acary is co-animator (with R. Leine ETH Zurich) of the European network for nonsooth dynamics. Member of the ENOC (EUROMECH Nonlinear Oscillations Conference) comittee. Reviewer in 2013 for Math reviews, Computer Methods in Applied Mechanics and Engineering, International Journal for Numerical Methods in Engineering, ASME Journal of Computational and Nonlinear Dynamics, Applied numerical Mathematics, American Control Conference, 52st IEEE Conference on Decision and Control (CDC 2013)

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: Bernard Brogliato, Nonsmooth Dynamical Systems, 15 h. TD, M2, université de Limoges, France

Master: F. Bertails-Descoubes, Optimisation numérique, 30h equiv. TD, niveau M1, ENSIMAG, Grenoble INP

Master: J. Malick, Optimisation numérique, 60h equiv. TD, niveau M1, ENSIMAG, Grenoble INP

Master: Vincent Acary, Simulation of Nonsmooth Dynamical Systems, 9 h. TD, M2, université de Limoges, France

9.2.2. Supervision

PhD : Alexandre Derouet-Jourdan, *Inversion statique de fibres : de la géométrie de courbes 3d à l'équilibre d'une assemblée de tiges mécaniques en contact frottant*, Grenoble University, 7 novembre 2013, Florence Bertails-Descoubes et Joëlle Thollot

PhD in progress : Mounia Haddouni, 01 mai 2012, Vincent Acary et Bernard Brogliato

PhD in progress : Olivier Huber, 01 octobre 2011, Vincent Acary et Bernard Brogliato

PhD in progress : Narendra Akahdkar, 01 décembre 2012, Vincent Acary et Bernard Brogliato

PhD in progress : Sofia Zaourar, 01 octobre 2011, Jérôme Malick et Bernard Brogliato

PhD in progress : Romain Casati, 01 octobre 2011, Florence Bertails-Descoubes et Bernard Brogliato

PhD in progress : Alejandro Blumentals, 01 octobre 2013, Florence Bertails-Descoubes et Bernard Brogliato

PhD in progress : Gilles Daviet, 01 octobre 2013, Florence Bertails-Descoubes, Bruno Raffin (LIG) et Pierre Saramito (LJK)

PhD in progress : Federico Pierucci, 01 octobre 2012, Jérôme Malick et Zaid Harchaoui et Anatoli Ioudilski

PhD in progress : Saed al Homsi, 01 octobre 2012, Pierre-Brice Wieber et Bernard Brogliato

PhD in progress : Jory Lafaye, 01 octobre 2012, Pierre-Brice Wieber et Bernard Brogliato

PhD in progress : Jose Eduardo Morales Morales, *Travelling pulses in spatially discrete excitable media*, 15 november, 2013, Arnaud Tonnelier and Guillaume James

9.2.3. Juries

- B. Brogliato, jury HdR de J. Bastien, Université Lyon 1, rapporteur
- B. Brogliato, jury de thèse de A. Thorin, LMSX, rapporteur
- B. Brogliato, jury HdR de A. Girard, Grenoble Université, président
- V. Acary, jury de thèse de H. Rammal, Université de Limoges, examinateur

COMMANDS Project-Team

8. Dissemination

8.1. Scientific Animation

- F. Bonnans is Corresponding Editor of "ESAIM:COCV" (Control, Optimization and Calculus of Variations), and Associate Editor of "Applied Mathematics and Optimization", "Optimization, Methods and Software", and "Series on Mathematics and its Applications, Annals of The Academy of Romanian Scientists".
- F. Bonnans is chairman of the SMAI-MODE group (the optimization group of the French Applied Mathematics Society) until June 2013.

8.2. Teaching - Supervision - Juries

- F. Bonnans: Optimal control, 7h, M2, Ensta, France.
- F. Bonnans: Continuous Optimization, 18h, M2, Ecole Polytechnique and U. Paris 6, France.
- F. Bonnans: Numerical analysis of partial differential equations arising in finance and stochastic control, 24h, M2, Ecole Polytechnique and U. Paris 6, France.
- H. Zidani: Optimal control, 14h, M2, Ensta, France.
- H. Zidani: Numerical methods for front propagation, 21h, M2, Ensta France

  PhD: Xavier Dupuis, Optimal control with or witout memories. ended Nov. 2013, F. Bonnans.

  PhD : Laurent Pfeiffer, Sensitivity analysis for optimal control problems; Stochastic optimal control with probability constraints. ended Nov. 2013, F. Bonnans.

  PhD: Zhiping Rao, Hamilton-Jacobi equations with discontinuous coefficients. Ended Dec. 2013, H. Zidani and N. Forcadel.

  PhD in progress : Imène Ben-Latifa, Optimal multiple stopping and valuation of swing options in jump models. Oct. 2010, F. Bonnans and M. Mnif (ENIT, Tunis).

  PhD in progress: Athena Picarelli, First and Second Order Hamilton-Jacobi equations for State-Constrained Control Problems. Nov. 2011, O. Bokanowski and H. Zidani

  PhD in progress: Cristopher Hermosilla, Feedback controls and optimal trajectories. Nov. 2011, H. Zidani.

  PhD in progress: Mohamed Assellaou, Reachability analysis for stochastic controlled systems. Oct. 2011, O. Bokanowski and H.Zidani.

  PhD in progress: Benjamin Heymann, Dynamic optimization with uncertainty; application to energy production. Oct. 2013, F. Bonnans.

8.3. Popularization

Pierre Martinon presented an "Unithé ou Café" talk about optimal control on November 8th, entitled "Quand le mieux n'est pas l'ennemi du bien".

CORIDA Project-Team

7. Dissemination

7.1. Scientific Animation

Most of the members of our team have regular editorial activities in the leading journals and conferences of the field.

For instance, Marius Tucnsak is a member of the editorial boards of ESAIM COCV, Journal of Mathematical Fluid Mechanics, Mathematical Reports and Revue Roumaine de Mathématiques Pures et Appliqués.

The notable changes with respect to 2012 are

- Xavier Antoine joined the editorial board of ISRN Applied Mathematics in 2013. He also became "délégué scientifique" in charge of the department "Mathematical sciences and Interactions" of the national funding agency ANR and was nominated head of the program "Accueil de Chercheuses et Chercheurs de Haut Niveau" in 2013.
- Thomas Chambrion joined the IFAC Technical Chair for control of PDE's in 2013.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

Most of the members of the team have a teaching position (192 hours a year) in Université de Lorraine.

- Fatiha Alabau has a full time full professor position (Metz site);
- Xavier Antoine has a full time full professor position at École des Mines and ENSEM;
- Thomas Chambrion has a full time associate professor position at ESSTIN;
- Antoine Henrot has a full time full professor position at École des Mines;
- Bruno Pinçon has a full time associate professor position at Telecom Nancy;
- Lionel Rosier has a full time full professor position at ESSTIN;
- Jean-François Scheid has a full time associate professor position at Telecom NancyL;
- Marius Tucsnak has a full time full professor position at (Nancy site);
- Julie Valein has a full time associate professor position at ESSTIN.

7.2.2. Supervision

PhD in progress : Chi Ting Wu, "Approximations des problèmes de contrôle optimal", from 2012, Supervisor: Marius Tucsnak, co-supervisor: Julie Valein.

PhD in progress : Tatiana Manrique, "commande robuste de systèmes à commutations", from 2011, Supervisor: Gilles Millerioux (Université de Lorraine), co-supervisor: Thomas Chambrion.

PhD in progress : Ibrahim Zambre, "méthodes numériques hybrides en diffraction haute-fréquence", Supervisors: Xavier Antoine and Cristophe Guezaine (University of Liege).

7.2.3. Juries

Jean-François Scheid has been a PhD examiner for the thesis of S. Flotron - EPFL (Switzerland), april 2013.

Karim Ramdani has been member of the PhD juries Giovanni Migliorati (Ecole Polytechnique and Politecnico di Milano, april 2013) and of Alexandre Impériale (Paris 6 University, december 2013).

Marius Tucnsak was president of the PhD jury of Sarah MECHHOUD (Grenoble), referee for the PhD jury of Morgan MORANCEY (Ecole Polytechnique) and a member of the PhD jury of Pierre Lissy (Paris 6).

7.3. Popularization

In December 2013, Karim Ramdani organized with Estelle Carciofi a workshop dealing with issues related to scientific edition.

DISCO Project-Team

9. Dissemination

9.1. Scientific Animation

- Catherine Bonnet is a member of the IFAC Technical Committee 2.5 on Robust Control and of the IFAC Technical Committee 2.6 on Distributed Parameter Systems. She is also in the boards of the association *Femmes et Mathématiques* and of the consortium Cap'Maths. She has been the co-chair of the NOC and a member of IPC of the first IFAC Workshop on Control of Systems Modeled by Partial Differential Equations, Paris September 2013 and has co-organized the workshop Modeling and Analysis of Cancer Cells Dynamics, Paris June 2013 (ISSSMA 2013). She is a member of the organizing committee of the *Colloque en l'honneur d'Abdelhad El Jai* to be held 29-30 May 2014 in Ifrane, Marocco. She is a co-Editor of the book "Low Complexity Controllers for Time-Delay Systems" of the Springer Series *Advances in Dynamics and Delays*. She is co-organizer of the "Séminaire du Plateau de Saclay". She has co-organized with K. Morris (Univ of Waterloo) the session *Analysis and Control of Infinite-Dimensional Systems* at the SIAM CT13 Conference.
- Frédéric Mazenc was Associate Editor for the conferences 2014 American Control Conference, Portland, USA. and 52th IEEE Conference on Decision and Control, Florence, Italy, (2013). He is member of the Mathematical Control and Related Fields editorial board, member of the European Journal of Control editorial board and Associate Editor for the Asian Journal of control. He was member of the national organizing committee of 1st IFAC Worshop on Control of Systems Modeled by Partial Differential Equation, Paris 2013. He was member of the international program committee of the 2014 European Control Conference, Strasbourg, France, the 2013 IFAC Nolcos, Toulouse, France and the 5th IFAC International Workshop on Periodic Control Systems, Caen, France, 2013. He is evaluator for the National Agency for the Italian Evaluation of Universities and Research Institutes (ANVUR). He is evaluator for Partnershio Programme - Joint Applied Research Projects - PCCA of the Roumanian National Council for Development and Innovation. He was invited to the seminar of the Laboratoire d'Automatique, Ecole polytechnique Fédérale de Lausanne, Lausanne, Switzerland (13/03/2013 - 21/03/2013). He was invited to the seminar of the LAGEP, Université Claude Bernard, Lyon 1 in December 2013 (17/12/2013 - 20/12/2013).
- Alban Quadrat is an Associate Editor of the journal "Multidimensional Systems and Signal Processing", Springer. With Eva Zerz, he organized a special issue "Symbolic Methods in Multidimensional Systems Theory" for this journal (to appear in 2014). With Georg Regensburger, he organized an invited session "Algebraic and symbolic methods in mathematical systems theory" at the 5th Symposium on System Structure and Control (Grenoble, 4-6/02/2013). With Eva Zerz, he organized an invited session "Algebraic and behavioural approaches to multidimensional system theory" at the 8th International Workshop on Multidimensional Systems (nDS13), Erlangen, Germany (9-11/09/13). Moreover, they have also proposed two invited sessions "Algebraic methods and symbolic-numeric computation in systems theory" at the forthcoming 21st International Symposium on Mathematical Theory of Networks and Systems (MTNS), Groningen, the Netherlands (7-11/07/14). With Mohamed Barakat and Thierry Coquand, he organized a mini-workshop "Constructive homological algebra with applications to coherent sheaves and control theory" at Oberwolfach (12-18/5/2013). He was an International Programm Commitee member of the 8th International Workshop on Multidimensional (nD) Systems (nDS13), Erlangen (Germany) (9-11/09/13), and a National Organizing Commitee member of the 1st IFAC Workshop on Control Systems Modeled by Partial Differential Equations, IHP, Paris (France) (25-27/09/13). Finally, with Hugues Mounier (University of Orsay, L2S) and Sette Diop (CNRS, L2S), he organizes a seminar on algebraic systems theory at L2S (http://pages.saclay.inria.fr/alban.quadrat/Seminar.html).

- Alban Quadrat was a plenary speaker at the 5th International Workshop on Differential Algebra and Related Topics (DART V), Lille, France (24-26/06/13) and a semi-plenary speaker at the Colombian Congress of Mathematics, Barranquilla, Colombia (15-19/07/13). He was invited to give a talk at the University of Versailles (23/04/13), at the Centre Automatique et Systèmes (CAS), Mines ParisTech (20/06/13), at the Institute of Cybernetics of the University of Tallinn, Estonia (01/10/13), and at the Tampere University of Technology, Finland (24/10/13). Finally, he participated to the workshop Geometry and algebra of linear matrix inequalities, CIRM, Luminy (12-16/11/13).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : Le Ha Vy Nguyen, Applied Informatics in Physics, 16h, L2, Paris-Sud University

Licence : Le Ha Vy Nguyen, Signals and Systems, 28h, L3, Paris-Sud University

Licence : Sorin Olaru, Numerical Methods and Optimization, 24h, L2, SUPELEC, France

Licence : Sorin Olaru, Hybrid Dynamical Systems, 18h, L3, SUPELEC, France

Licence : Guillaume Sandou, Signals and Systems, 87h, L3, Supélec

Licence : Guillaume Sandou, Mathematics and programming, 18h, L3, Supélec

Master : Le Ha Vy Nguyen, Information Processing and Source Coding, 12h, M1, Paris-Sud University

Master : Guillaume Sandou, Automatic Control, 8h, M1, Supélec

Master : Guillaume Sandou, Numerical methods and optimization, 28h, M1 and M2, Supélec

Master : Guillaume Sandou, Modelling and system stability analysis, 21h, M2, Suplec

Master : Guillaume Sandou, Control of energy systems, 22h, M2, Suplec

Master : Guillaume Sandou, Robust control and mu-analysis, 9h, M2, Suplec

Master : Guillaume Sandou, Systems identification, 32h, M2, ENSTA

Master : Guillaume Sandou, Embedded Systems, 18h, M2, Ecole Centrale Paris

Master : Guillaume Sandou, Automatic control, 23h, M2, Ecole Centrale Paris

Master : Guillaume Sandou, System Analysis, 22h, M2, Ecole des Mines de Nantes

Master : Guillaume Sandou, Multivariable control, 12h, M2, Evry University

9.2.2. Supervision

- PhD in progress José Luis Avila Alonso, Mathematical Analysis of Acute Myeloid Leukemia, December 31st 2011. University Paris-Sud, STITS. Supervisor : Catherine Bonnet. Co-supervisors : Jean Clairambault and Silviu Iulian Niculescu.
- PhD in progress: Thach Ngoc Dinh, Interval Observers and Delay Systems, December 2011. University Paris-Sud STITS. Supervisor: Frédéric Mazenc. Co-Supervisor: Silviu Iulian Niculescu, Silvère Bonnabel.
- PhD in progress Le Ha Vy Nguyen, H_∞ Stability and control of fractional delay systems, September 15th 2011. University Paris-Sud, STITS. Supervisor: Catherine Bonnet.
- PhD in progress Nikola Stankovic, Set-based control methods for systems affected by time-varying delay, September 30th 2010, University Paris-Sud, STITS. Defense: 20 November 2013. Supervisor: Sorin Olaru Co-Supervisor: Silviu Iulian Niculescu

9.2.3. Juries

Catherine Bonnet was an examiner member and President of the jury of the PhD Thesis of Hao Lu entitled "Approximation and Applications of Distributed Delays", INSA Lyon, 1st October 2013; and an examiner member of the jury of the PhD Thesis of Julien Chaudenson entitled "Analyse de robustesse par contraintes intégrales quadratiques, application aux lanceurs spatiaux", Supélec, 4 December 2013.

She was a member of the Recruiting Committee of the *Chargé de Recherche de 2ème classe* competition of Inria Saclay-Ile-de-France and in the Recruiting Committee of the *Maître de Conférences* competition at University Paris-Sud.

Alban Quadrat was the opponent of the PhD thesis “Robust Regulation for Infinite-Dimensional Systems and Signals in Frequency Domain” by Petteri Laakkonen, Tampere University of Technology, Finland (25/11/13), and the reviewer of the PhD thesis “Ring and Module Theoretic Properties of σ- PBW Extensions” by Milton Reyes Armando Villamil, Universidad Nacional de Colombia, Colombia (23/07/13).

9.3. Popularization

Catherine Bonnet spoke at the ”Cérémonie de remise des prix des Olympiades de Mathématiques, Ministère de l’éducation nationale, juin 2013. She gave a talk and met high school students groups at the event ”Sciences au Carrée” in the context of Fête de la Sciences, CNES, October 2013.

Alban Quadrat was invited to give a popularization talk on the development of ideas in mathematics and physics at the conference “Lieux de passage en Science-Fiction”, University of La Rochelle (France), Lettres, Langues, Arts et Sciences Humaines (FLASH), 11-13/04/13.

GECO Project-Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Conference organization

- Y. Chitour, P. Mason and M. Sigalotti organized a double session named “Stability of switched systems: theoretical and computational aspects” for the 52nd IEEE Conference on Decision and Control, Firenze, Italy, December 10-13, 2013.
- Y. Chitour, P. Mason and M. Sigalotti organized a session named “Control issues for switched systems” for the 52nd IEEE Conference on Decision and Control, Firenze, Italy, December 10-13, 2013.

8.1.2. Editorial activity

- U. Boscain is Associate Editor of Journal of Dynamical and Control Systems, ESAIM Control, Optimisation and Calculus of Variations, Mathematical Control and Related Fields. He is also referee for Journal of Differential equations, AIMS Book series: Applied mathematics, SIAM J. Control Optim., Automatica, Rendiconti dei Lincei, Matematica ed Applicazioni, Physica A...and for the conferences ACC, CDC, MTNS...
- M. Sigalotti is Associate Editor of Journal of Dynamical and Control Systems. He is also referee for IEEE TAC, SIAM J. Control Optim., Automatica, MathSciNet, Journal of Functional Analysis...and for the conferences CDC, ACC, IFAC...

8.2. Teaching - Supervision - Juries

8.2.1. Supervision

PhD: Dario Prandi, “Geometric control and PDEs", supervisors: Ugo Boscain, Mario Sigalotti, defended in september 2013.

PhD in progress: Moussa Gaye, “Some problems of geometric analysis in almost-Riemannian geometry and of stability of switching systems", 1/9/2011, supervisors: Ugo Boscain, Paolo Mason.

PhD in progress: Guiherme Mazanti, “Stabilité et taux de convergence pour les systèmes à excitation persistante", 1/9/2013, supervisors: Yacine Chitour, Mario Sigalotti.

I4S Project-Team

8. Dissemination

8.1. Scientific Animation

L. Mevel is part of the IOMAC organisation committee. He is also reviewer for numerous journals and conference boards. He is associate editor of Journal of Modelling and Simulation in Engineering. He is co-head of the local organizing committee of EWSHM 2014.

V. LeCam is head of the local organizing committee of EWSHM 2014 (http://www.ewshm2014.com).

8.2. Teaching - Supervision - Juries

8.2.1. Supervision

PhD : Luciano Gallegos, Algorithms for monitoring and localization of damage. Luciano Gallegos, Université de Rennes 1, 08/10/13, L. Mevel and D. Bernal.

PhD in progress : Ambient diagnosis and early instability monitoring for helicopter rotor : Ahmed Jhinaoui, since June 2010, L.Mevel and J. Morlier (ISAE)

PhD in progress : Aeroelastic instability early detection methods in frequency domain : Philippe Mellinger, since June 2011, L. Mevel and C. Meyer (Dassault Aviation)

8.2.2. Juries

Laurent Mevel was examinator in the jury of Jérémy Vayssettes at University of Poitiers in November 2013.

Maxplus Project-Team

9. Dissemination

9.1. Animation de la communauté scientifique/Scientific Animation

- M. Akian :
  - Membre élue du conseil du laboratoire du CMAP.
- S. Gaubert :
  - Vice-président du comité des projets du Centre de Recherche Inria de Saclay – Île-de-France depuis Janvier 2008, et membre nommé de la commission d'évaluation de l'Inria.
  - Membre du comité éditorial de la collection Mathématiques et Applications, SMAI et Springer.
  - Membre du comité éditorial du journal RAIRO Operations research.
  - Membre du conseil scientifique du CMAP.
  - Membre du CNU en 26ième section.
  - Membre du comité de pilotage du PGMO (programme Gaspard Monge d'optimisation, FMJH et EDF), nommé directeur de ce programme depuis le 1er Novembre.
  - Coorganisateur du Séminaire Parisien d'Optimisation.

9.2. Enseignement - Encadrement - Jurys /Teaching - Supervision - Juries

9.2.1. Enseignement/Teaching

- X. Allamigeon
  - Master: Petites classes et encadrement d'enseignements d'approfondissement de Recherche Opérationnelle en troisième année à l'École Polytechnique (majeure de Mathématiques Appliquées) (niveau M1).
- P. Benchimol
  - Monitorat en L1 à l'Univ. Paris VI, 72h.
- S. Gaubert
  - Cours "Systèmes à Événements Discrets", option MAREVA, ENSMP.
  - Cours "Algèbre max-plus pour le contrôle optimal et les jeux" du Parcours Optimisation et Théorie des Jeux - Modélisation en Économie (OJME) du M2 Mathématiques et Applications de l'Université de Paris 6 et de l'École Polytechnique.
  - Cours magistral, petites classes et organisation des enseignements d'approfondissement de Recherche Opérationnelle en troisième année à l'École Polytechnique (majeure de Mathématiques Appliquées), avec polycopié [75].
- Z. Qu
  - Petites classes d'Automatique (AO102) en première année à l'ENSTA (14h).

9.2.2. Encadrement/Supervision

- PhD: Zheng Qu, inscrite à l'École Polytechnique, depuis septembre 2010, directeur de thèse: S. Gaubert, coencadrement: S. Tang (Université Fudan, Shanghai, Chine), soutenue le 21 Octobre 2013.

- PhD in progress : Pascal Benchimol, inscrit à l'École Polytechnique à partir de septembre 2011, directeur de thèse: S. Gaubert, coencadrement: X. Allamigeon, avec une participation à l'encadrement de M. Joswig (TU-Darmstadt) dans le cadre du programme bourse Monge (bourses données pour des doctorants avec un partenaire étranger).
- PhD : Victor Magron, inscrit à l'École Polytechnique, depuis septembre 2010, directeur de thèse: Benjamin Werner (Inria et LIX), coencadrement: S. Gaubert et X. Allamigeon, soutenue le 9 décembre 2013.
- PhD in progress : Andrea Marchesini, inscrit à l'École Polytechnique, depuis septembre 2012, directeur de thèse: Marianne Akian, codirection: S. Gaubert, avec une participation à l'encadrement de Françoise Tisseur (U. Manchester).
- PhD in progress : Antoine Hochart, inscrit à l'École Polytechnique, depuis octobre 2013, directeur de thèse: Stéphane Gaubert, codirection: Marianne Akian.
- PhD in progress : Eric Fodjo, inscrit à l'École Polytechnique, depuis octobre 2013, directeur de thèse: Marianne Akian.

9.2.3. Jurys/Committees

- M. Akian
  - Jury (rapporteur) de thèse de Jean-Christophe Alais (16 décembre 2013).
- X. Allamigeon
  - Membre du jury du prix de thèse Gilles Kahn de la Société Informatique de France (septembre-décembre 2013).
  - Examinateur dans le jury de soutenance de thèse de Victor Magron (Décembre 2013).
- S. Gaubert
  - Membre de la commission de recrutement en informatique à l'École Polytechnique.
  - Membre du jury de concours Inria CR2 Grenoble.
  - Jury de thèse de Richard Combes (rapporteur), Université Pierre et Marie Curie, Février 2013.
  - Jury de thèse de Jean-Robin Medori (rapporteur), Université Pierre et Marie Curie, Juin 2013.
  - Jury de thèse de Rabah Boukra (rapporteur), Université d'Angers, Novembre 2013.
  - Jury de thèse de Matthew Bourque, University of Illinois at Chicago, Juillet 2013.
  - Jury de thèse de Daniel Hoehener, Université Pierre et Marie Curie, 17 Septembre 2013.
  - Jury de thèse de Zheng Qu, École Polytechnique, 21 Octobre 2013.
  - Jury de thèse de Dario Prandi, École Polytechnique, 23 Octobre 2013.
  - Jury de thèse de Victor Magron, École Polytechnique, 9 Décembre 2013.

9.3. Popularization

- J.P. Quadrat :
  - Administre le site d'intérêt général http://www.maxplus.org, dédié à l'algèbre max-plus.

9.4. Participation à des colloques, séminaires/Conférences, Seminars

- M. Akian
  - Tropical Mathematics Seminar and Reading Group, Univ. Manchester, 30 avril 2013. Titre de l'exposé: "Majorisation inequalities for valuations of eigenvalues"

  - Tropical Mathematics and its Applications Meeting (Workshop) of the LMS Joint Research Group, Univ. Birmingham, 16 mai 2013. Titre de l'exposé: "Majorisation inequalities for valuations of eigenvalues"
  - 18th Conference of the International Linear Algebra Society (ILAS), Providence, June 3-7, 2013. Minisymposium "Linear and Nonlinear Perron-Frobenius Theory". Titre de l'exposé: "Policy iteration algorithm for zero-sum two player stochastic games: complexity bounds involving nonlinear spectral radii"
  - Seminario di Modellistica Differenziale Numerica, Mathematics Dept., Univ. La Sapienza, Rome, 10 décembre 2013. Titre de l'exposé: "Policy iteration for stochastic games"
  - 52nd IEEE Conference on Decision and Control, Florence, 10 décembre 2013. Titre de l'exposé: "Solving multichain stochastic games with mean payoff by policy iteration"
- X. Allamigeon
  - SIAM Conference on Control and its Applications, San Diego (Etats-Unis), du 8 au 10 juillet 2013, dans le cadre du mini-symposium "Max-Plus/Tropical Analysis in Control and Systems Theory". Titre de l'exposé: "Tropicalizing the simplex algorithm".
- P. Benchimol
  - Séminaire des thésards, CMAP, Ecole Polytechnique, Mars 2013. Titre de l'exposé: "Petite visite sous les tropiques".
  - SMAI 2013 - 6ème biennale des mathématiques appliquées et industrielles (2013), Seignosse (Landes), 27-31 mai 2013. Titre du Poster: "Tropicalizing the Simplex Algorithm"
  - 18th Conference of the International Linear Algebra Society (ILAS), Providence, June 3-7, 2013. Minisymposium "Applications of Tropical Mathematics". Titre de l'exposé: "Tropicalizing the simplex algorithm".
  - Journée des doctorants, CMAP, Ecole Polytechnique, Juin 2013
  - Institut für Mathematik, TU Berlin, Décembre 2013
  - Séminaire parisien de théorie des jeux, IHP, Décembre 2013
- S. Gaubert
  - Séminaire de calcul formel, Université de Limoges, 7 Février 2013.
  - Séminaire pluridisciplinaire d'optimisation de Toulouse, May 6, 2013.
  - Control and Games Workshop May 7-10, 2013, Warwick.
  - Conférence plénière à SMAI 2013, Seignosse (Landes), 27-31 mai 2013.
  - Conférence SIAM CT'2013, Juillet, San Diego.
  - Conférence ECC'2013, Juillet, Zurich.
  - Minicours (3h00) aux Journées de Géométrie Algorithmique, Marseille, Décembre 2013.
- A. Marchesini
  - 18th Conference of the International Linear Algebra Society (ILAS), Providence, June 3-7, 2013. Minisymposium "Applications of Tropical Mathematics". Titre de l'exposé: "Tropical bounds for eigenvalues of matrices"
- Z. Qu
  - Séminaire PGMO, le 19/02/2013. Titre de l'exposé: "Maxplus basis methods for high dimensional optimal control problem: introduction and perspectives"
  - SMAI 2013, Seignosse (Landes), 27-31 mai 2013. Titre de l'exposé: "Taux de contraction de flots croissants sur un cône et application au contrôle stochastique"

  - 18th Conference of the International Linear Algebra Society (ILAS), Providence, June 3-7, 2013. Titre de l'exposé: "Dobrushin ergodicity coefficient for Markov operators on cones, and beyond"
  - SIAM conference on control and its applications (SIAM CT 13), San Diego, du 8 au 10 juillet 2013. Titre de l'exposé: "Contraction of Riccati flows applied to the convergence analysis of a max-plus curse of dimensionality free method"
  - European control conference 2013 (ECC 13), Zurich, du 17 au 19 juillet 2013. Titre des 2 exposés: "Markov Operators on Cones and Non-Commutative Consensus", "Contraction of Riccati Flows Applied to the Convergence Analysis of the Max-Plus Curse of Dimensionality Free Method"
  - Journée PGMO, le 04/10/2013. Titre de l'exposé: "Max-plus numerical methods for Hamilton-Jacobi equations: attenuation of the curse of dimensionality"
- C. Walsh
  - Séminaire de téorie ergodique á l'Université de Rennes 1, le 8 april 2013. Titre de l'exposé: "The horofunction boundary of Teichmuller space".
  - Series de trois exposés au "Special Program on Teichmüller Theory" á l'institut Erwin Schrödinger, Vienne, Autriche, du 10 au 12 avril 2013. Titre des exposés: "The horofunction boundary of Teichmüller space".
  - Séminaire de géométrie différentielle á l'Université de Nancy 1, le 21 mai 2013. Titre de l'exposé: "Horofunctions and isometries of Hilbert geometries".
  - Workshop "Journée dynamique et géométrie de Hilbert" á Jussieu (Université Paris VI), le 3 mai 2013. Titre de l'exposé: "Horofunctions and isometries of Hibert geometries".

MCTAO Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Editorial service

Ludovic Rifford belongs to the editorial board of *Journal of Dynamical and Control Systems* and *Discrete and Continuous Dynamical Systems-A*.

All members of the team are active reviewers in journals of the field.

9.1.2. Seminars

The team organized two one-day seminars http://nolot.perso.math.cnrs.fr/JourneesControleTransport.html on optimal control and optimal transport:

- February 13 in Dijon. Speakers: F. Chazal, B. Bonnard, G. Carlier, E. Trélat.
- June 4 in Nice. Speakers: S. Rigot, Q. Mérigot, M. Mirrahimi, A. Farres.

9.1.3. Conference organization

A two days conference was organized September 6 to 7 (co-organisers: Monique Chyba and Bernard Bonnard), on "Control and Observation of Nonlinear Control Systems with Application to Medicine" at the University of Hawaii. It was supported by supported by a NSF grant and by the Engineering Department (P.E. Crouch); it followed J. Marriott's PhD defense.

Jean-Baptiste Caillau organized a mini-symposium on Optimization in aeronautics and space machanics in the SMAI annual congress in Seignosse, France.

9.2. Community service within Inria

J.-B. Pomet is the president of the "Comité de Suivi Doctoral", and in charge of "formation par la recherche". This includes organising local visits for students, organising PhD candidates selection, managing PhD students working at Inria Sophia (that are from two different "écoles doctorales" from Université de Nice, not counting these in Montpellier).

9.3. Teaching - Supervision - Juries

9.3.1. Teaching

Jean-Baptiste Caillau, *Contrôle optimal : introduction au cas déterministe en dimension finie*, 15 hours, 7ème école d'été de Peyresq en traitement du signal et des images (http://www.gretsi.fr/peyresq13/cours.php).

Jean-Baptiste Caillau, *Introduction to optimal control and application to space mechanics*, 15 hours, Gravasco trimester, Institut Henri Poincaré, France (http://uma.ensta-paristech.fr/conf/gravasco/P1a.html).

9.3.2. Supervision

PhD: John Marriott, *Geometric Optimal Control with an Application to Imaging in Nuclear Magnetic Resonance*, University of Hawaii, defended september 5, 2013, advisors: Monique Chyba and Bernard Bonnard.

PhD in progress: Alice Erlinger, subject: *Economics and Optimal Transport*, Université de Nice Sophia Antipolis, started october, 2012, advisor: Ludovic Rifford. She unfortunately decided to stop in 2013, within her first year.

PhD in progress: Helen Heninger, subject: *Étude des solutions du transfert orbital avec poussée faible dans le probleme des deux ou trois corps*, Université de Nice Sophia Antipolis, started october, 2012, advisors: Bernard Bonnard and Jean-Baptiste Pomet.

PhD in progress: Ayadi Lazrag, subject: *Control methods in dynamical systems*, Université de Nice Sophia Antipolis, started october, 2011, advisor: Ludovic Rifford.

PhD in progress: Lionel Jassionnesse, subject: *Lieu conjugés et de coupure pour des métriques de Liouville et applications*, Université de Bourgogne, started october, 2010, advisor: Bernard Bonnard.

PhD in progress: Jérémy Rouot, subject: *Moyennisation en contrôle et en contrôle optimal, effet des perturbations non périodiques*, Université de Nice Sophia Antipolis, started october, 2013, advisors: Bernard Bonnard and Jean-Baptiste Pomet.

MSc: Jasseur Abidi, *Optimisation d'une commande appliquée à un satellite*, Ensta ParisTech, supervisors: Jean-Baptiste Caillau and Jean-Baptiste Pomet.

9.3.3. Juries

Jean-Baptiste Caillau was in the jury of X. Dupuis (Ecole Polytechnique, PhD) as President and in the jury of T. Bayen (university of Montpellier, HDR) as a referee.

9.4. Popularization

Jean-Baptiste Caillau: "Mathematics for planet Earth 2013": http://mpt2013.fr/tout-autour-de-la-terre/, http://mpt2013.fr/de-la-terre-a-la-lune/, http://mpt2013.fr/tout-autour-de-la-terre-2nde-partie/.

NECS Project-Team

9. Dissemination

9.1. Scientific Animation

- C. Canudas de Wit is President Elect of the European Control Association (EUCA) 2013-2015, and member of the Board of Governors of IEEE Control Systems Society. He is General Chair of the forthcoming European Control Conference, Strasbourg, July 2014 (http://www.ecc14.eu/). He is Associate Editor of IEEE Transactions on Control System Technology (since January 2013), Associate Editor of IEEE Transactions on Control of Network Systems (since June 2013), and Editor of the Asian Journal on Control.
- H. Fourati has been a peer-reviewer for international journals (IEEE Sensors Journal, IEEE/ASME Transactions on Mechatronics, Journal of Mechanics Engineering and Automation).
- F. Garin has been a peer-reviewer for international journals (IEEE Trans. Automatic Control, Automatica) and conferences (CDC 2013, ACC 2014, ECC 2014, ICCPS 2014) and for a chapter in a book in Springer LNCS. She is chair for student activities of the forthcoming European Control Conference ECC 2014.
- A. Kibangou has been a peer-reviewer for international journals (Automatica, IEEE Trans. on Control Systems and Technology, IEEE Trans. on Control of Network Systems, Elsevier Signal Processing, IEEE Trans. on Signal Processing, IET Communications, Int. J. of Adaptive Control and Signal Processing, and System & Control Letters) and conferences (CDC 2013, ACC 2014, ECC 2014). Locally, he is the organizer of seminars for the Control Department of GIPSA-LAB.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: H. Fourati, Informatique Industrielle, 100h, L1, IUT 1 (GEII2), University Joseph Fourier, France;

Licence: H. Fourati, Automatique, 24h, L2, IUT 1 (GEII2), University Joseph Fourier, France;

Licence: H. Fourati, Automatismes industriels et réseaux, 90h, L1 et L2, IUT1 (GEII2), University Joseph Fourier, France.

Licence: H. Fourati, Automatique, 45h, L3, UFR physique, University Joseph Fourier, France

Licence: F. Garin, Automatique, 26h, L2, IUT1 (GEII1), University Joseph Fourier, France.

Licence: A. Kibangou, Automatique,62h, L2, IUT1(GEII1), University Joseph Fourier, France.

Licence: A.Kibangou, Mathématiques, 14h, L2, IUT1 (GEII1) , University Joseph Fourier, France.

9.2.2. Supervision

PhD: Valentina Ciarla, Commande d'un système de puissance électrique pour personne âgée et/ou handicapée, Grenoble University, Oct. 10th, 2013, co-advised by C. Canudas de Wit, F. Quaine, and V. Cahouet.

PhD in progress: Abir Ben Khaled, Distributed real time simulation of numerical models: application to powertrain, Grenoble INP, Jan. 2011 - Apr. 2014, co-advised by D. Simon and M. Ben Gaid (IFPEN).

PhD in progress: Luis R. Leon Ojeda, Modélisation macroscopique, estimation de la demande et prédiction du flux pour les systèmes de transport intelligents, Grenoble University, April 2011-March 2014, Co-advised by C. Canudas de Wit and A. Kibangou.

PhD in progress: Dominik Pisarski, Contrôle d'accès collaboratif : application à la Rocade Sud de Grenoble, Grenoble University, June 2011 - May 2014, Advised by C. Canudas de Wit.

PhD in progress: Ruggero Fabbiano, Distributed source seeking control, Grenoble University, Dec. 2011 - Nov. 2014, co-advised by C. Canudas de Wit and F. Garin.

PhD in progress: Thi-Minh Dung Tran, Consensus en temps fini et ses applications en estimation distribuée pour les systèmes de transport intelligents, Grenoble University, co-advised by A. Kibangou and C. Canudas de Wit, Jan. 2012 - Apr. 2015.

PhD in progress: Giovanni de Nunzio, Control of communicating vehicles in urban environnement, Grenoble University, co-advised by C. Canudas de Wit and P. Moulin (IFPEN), Sep. 2012 - Aug. 2015

PhD in progress: Aida Makni, Estimation multi-capteurs et commande temps-réel tolérante aux fautes d'un drone aérien, Grenoble INP, Oct. 2012 - Sep. 2015, co-advised by H. Fourati, A. Kibangou and C. Canudas de Wit.

9.2.3. Juries

- C. Canudas de Wit was member of the AERES Evaluation committee for the RTRA STAE, May 2013.
- F. Garin was a member of the Ph.D. defense committee of Weiguo Xia, Univ. of Groningen (The Netherlands), June 28th, 2013. Thesis: Distributed algorithms for interacting autonomous agents.

9.3. Popularization

Carlos Canudas has given a plenary talk on 'Forecasting and control of traffic systems: a network perspective' at the International Workshop on Smart City, organized by IEEE Control Systems Society in Hangzhou, China, in August 2013, http://smartcity.hdu.edu.cn

NON-A Project-Team

8. Dissemination

8.1. Scientific Animation

- Organization of conferences
  - J.P. Richard, a memeber of NOC of 20th IFAC World Congress, Toulouse, France, 10-14 July 2017
  - D. Efimov, Invited Session at IEEE CDC 2013, "Interval estimation of uncertain systems"
- Participation at International Programming Committees (IPCs) of conferences
  - J.P. Richard, AE at EUCA-IEEE ECC'13, Zürich, Suisse (12th European Control Conference) July 17-19, 2013
  - J.P. Richard, AE at IFAC 2013 Joint conference SSC-TDS-FDIA, Grenoble, France ("Symposium System Structure and Control", "Workshop Time-Delay Systems" and "Workshop Fractional Differentiation and Its Applications"), February4-6, 2013
  - J.P. Richard, IEEE ICCVE 2013, Las Vegas, Nevada, USA (2nd Int. Conference on Connected Vehicles & Expo), December 2-6, 2013
  - J.P. Richard, IEEE GLOBECOM 2013, Atlanta, Georgia, USA (11th Global Communications Conference), Dec.2013
  - J.P. Richard, IEEE VTC2013, Dresden, Germany (77th IEEE Vehicular Technology Conference), Track 'Mobile Networks, Applications and Services', 3-5 June 2013
  - J.P. Richard, IEEE SaCoNet 2013, Paris, France (4th IEEE Int. Conference on SmArt COmmunications in NEtwork Technologies), 17-19 June 2013
  - W. Perruquetti, IFAC 2013 Joint conference SSC-TDS-FDIA ("Symposium System Structure and Control", "Workshop Time-Delay Systems" and "Workshop Fractional Differentiation and Its Applications"), Grenoble, France, 4-6 February 2013
  - W. Perruquetti, 5th IFAC International Workshop on Periodic Control Systems (PSYCO'2013), Caen, France, 3-5 July 2013
  - W. Perruquetti, National Projects Vice-Chair at ECC 2014, Strasbourg, France, 24-25 June 2014
  - W. Perruquetti and D. Efimov, IFAC World Congress 2014, Cape Town, South Africa
  - A. Polyakov, VSS 2014, Nantes, France
- Plenary talks
  - J.P. Richard, Keynote paper GDRi DelSys CNRS, LAAS, Toulouse, November 2013
  - J.P. Richard and W. Perruquetti, HYCON2-BALCON joint workshop, FP7, Belgrade, Serbie, July 2013
  - D. Efimov, CinvesRob 2013, Cinvestav Guadaljara, Mexico, November 2013
  - O. Gibaru, International Conference on New Trends in Splines and Approximation Theory, June 19-21, 2013
  - R. Ushirobira, Colloquium São Paulo-Lyon "Algebra, Groups and Logic", Lyon, April 2013
- Invited seminars
  - J.P. Richard, GREYC CNRS, EnsiCaen, Caen, "Networked Control Systems: to buff, or not to buff", Novembre 2013

  - J.P. Richard, GT SàR du GDR MACS, Lille, Juin 2013
  - D. Efimov, UNAM, Mexico, November 2013
- National scientific animation
  - T. Floquet is a member of Conseil National des Universités, 61ème Section
  - G. Zheng is a member of Conseil National des Universités, 61ème Section
  - R. Ushirobira is a member of Conseil National des Universités, 25ème Section, a member of the bureau of the "Comission Permanente du CNU"
  - R. Ushirobira is a member of the "Commission de Développement Technologique" of the research center Inria Lille and a member of the "Comité de centre" of the research center Inria Lille
  - J.P. Richard, Scientific Committee of the GdR MACS, CNRS, Group of Research in "Modelling, Analysis and Control of dynamic Systems"
  - J.P. Richard, Scientific Committee of the group "Control and communication networks", created Jan. 2010 within the GdR MACS
  - R. Ushirobira is a member of the GDR CNRS 3395 "Algebraic and geometric Lie theory"
  - W. Perruquetti is a head of ANR Piloting Committee
- International scientific animation
  - J.P. Richard is a member of GDRi DelSys CNRS
  - J.P. Richard is a member of IFAC Technical Committee "Networked Systems" (International Federation of Automatic Control, TC1.5)
  - J.P. Richard is a member of IFAC Technical Committee "Linear Control Systems" (International Federation of Automatic Control, TC2.2)
  - D. Efimov is a member of IFAC Technical Committee "Adaptive and Learning Systems" (International Federation of Automatic Control, TC1.2)
  - W. Perruquetti is a member of IFAC Technical Committee "Non-linear Control Systems" (International Federation of Automatic Control, TC2.3) and a member of IFAC Technical Committee "Discrete and Hybrid Systems" (International Federation of Automatic Control, TC1.3)
  - A. Polyakov is a member of IFAC Technical Committee "Non-linear Control Systems" (International Federation of Automatic Control, TC2.3)
  - W. Perruquetti is the Chair of IFAC Technical Committee "Social impact of automation" (International Federation of Automatic Control, TC9.2)
  - G. Zheng, T. Floquet and D. Efimov are members of IFAC Technical Committee "Social impact of automation" (International Federation of Automatic Control, TC9.2)

The members of Non-A are reviewers for most of the journal of the control and signal communities: IEEE Transactions on Automatic Control, IEEE Transactions on Systems and Control Technologies, IEEE Transactions on Industrial Electronics, IEEE Transactions on Signal Processing, Automatica, SIAM Journal on Control and Optimization, Journal of Computation and Applied Mathematics, Systems & Control Letters, International Journal of Control, International Journal of Robust and Nonlinear Control, International Journal of Systems Science, Journal Européen des Systèmes Automatisés, IET Control Theory & Applications, Fuzzy Sets and Systems, Mathematics and Computers in Simulation, International Journal of Modeling and Simulation, Journal of the Franklin Institute, ...

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

- Licence : Jean-Pierre Richard; Automatique et Intelligence ambiante (12h); L2; EC-Lille; France
- Licence : Lotfi Belkoura; Automatique (systèmes linéaires monovariables)(75h), Introduction à la Robotique (25h); L3; Lille 1; France
- Licence : Denis Efimov; TP Automatic control (16h), L2; EC Lille; France
- Licence : Gang Zheng; TP Automatic control (16h), L2; EC Lille; France
- Licence : Samer Raichy; Systèmes linéaires, Asservissements, Conversion d'énergie, Echantillonnages et systèmes discrets (192h), L3; ENSEA; France
- Licence : Rosane Ushirobira; TP Automatic control (16h); L2; EC-Lille; France
- Licence : Rosane Ushirobira; TP Numerical Analysis (20h); L1; Polytech Lille; France
- Master : Jean-Pierre Richard; Systèmes dynamiques (30h), Métiers de la recherche (4h), Modélisation des systèmes complexes(12h), Commande et observation (12h), Séminaire episteme (24h); L3; EC-Lille; France
- Master : Jean-Pierre Richard; Systèmes dynamiques non linéaires et à retards (30h); M2; Lille 1 – EC-Lille, France
- Master : Lotfi Belkoura; Représentation d'état (55h); M1; Lille 1; France
- Master : Lotfi Belkoura; Projets (10h); M1; Lille 1; France
- Master : Lotfi Belkoura; Introduction aux distributions (10h); M2; Lille 1; France
- Master : Rosane Ushirobira; Probability and Statistics (20h); M2; EC-Lille; France

8.2.2. Supervision

PhD : Emmanuel Bernuau, "Homogeneity theory for analysis and control", EC Lille, 04 October 2013, supervisors are W. Perruquetti and D. Efimov

PhD : Diego Mincarelli, "State estimation for hybrid systems", Lille 1, 19 December 2013, supervisors are L. Belkoura and T. Floquet

PhD : Yingchong Ma, "Path planning and control of non-holonomic mobile robots", EC Lille, 19 December 2013, supervisors are W. Perruquetti and G. Zheng

PhD : Marouene Oueslati, "Contribution à la modélisation dynamique, l'identification et la synthèse de lois de commande adaptées aux axes flexibles d'un robot industriel", Arts et Métiers ParisTech, 18 December 2013, supervisor is O. Gibaru

PhD : Sert H., "Intelligent module decision for autonomous indoor navigation of wheelchair robot", EC Lille, 15 January 2013, supervisors are W. Perruquetti and A.M. Kökösy

PhD in progress : Matteo Guerra, "Supervisory control of collective motion of mobile robots", 2012–..., supervisors are W. Perruquetti, D. Efimov and G. Zheng

PhD in progress : Zilong Shao, "Oscilatory control of robot manipulator", 2013–..., supervisors are W. Perruquetti, D. Efimov and G. Zheng

PhD in progress : Hafiz Ahmed, "Identification and modeling of circadian rhythms for oysters", 2013–..., supervisors are D. Efimov, R. Ushirobira and D. Tran

PhD in progress : Omran Hassan, "Commande et observation des systèmes de contrôle en réseau", 2011–2014, supervisors are J.P. Richard, F. Lamnabhi-Lagarrigue and L. Hetel

PhD in progress : Maalej Sonia, "Algebraic estimation for robust control", 2011–..., supervisors are A. Kruszewski and L. Belkoura

PhD in progress : Essaid Edjekouane, "Cyber-physical systems", 2012–..., supervisors are J.P. Barbot, S. Riachy and Malek Ghanes

8.2.3. Juries

The team members are also involved in numerous examination committees of Theses and Habilitations, recruitment committees, in France and abroad (more than 15).

CLASSIC Project-Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Conference organization

Gérard Biau co-organized a one-day workshop on "High-dimensional clustering" at Ecole normale supérieure (September 2013).

8.1.2. Organization of seminars

We (co-)organized the following seminars:

- Statistical machine learning in Paris – SMILE (Gérard Biau, Gilles Stoltz; see http://sites.google.com/site/smileinparis/);
- Parisian seminar of statistics at IHP (Vincent Rivoirard; see https://sites.google.com/site/semstats).

8.1.3. Editorial activities, reports written on articles

Gérard Biau is (co-)Editor-in-Chief of *ESAIM: Probability and Statistics* and serves as an Associate Editor for the journals *Annales de l'ISUP* and *International Statistical Review*.

Vincent Rivoirard serves as an Associate Editor for *ESAIM: Probability and Statistics*.

All permanent members of the team reviewed several journal papers during the year.

8.1.4. Participation to national or local evaluation or recruitment committees, to scientific societies

Vincent Rivoirard is the General Secretary of SFdS and Gérard Biau is the Vice-President of this society.

Gérard Biau is a member of the national board of French universities (CNU) within the applied mathematics section (number 26).

Olivier Catoni is a member of the doctoral commission in mathematics of University Pierre et Marie Curie.

All permanent members of the team participated in several recruitment committees for assistants or full professors in universities.

8.1.5. Honors and distinctions

Gérard Biau is a member of the Institut Universitaire de France (IUF).

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence : Vincent Rivoirard, Statistiques, 39h, niveau L2, Université Paris-Dauphine, France

Licence : Olivier Catoni, Apprentissage, 10h, niveau L3, Ecole normale supérieure, France

Licence : Gilles Stoltz, Statistiques pour citoyens d'aujourd'hui et managers de demain, 60h, niveau L3, HEC Paris, France

Master : Gérard Biau and Olivier Catoni, Groupe de travail Statistique, 20h, niveau M1, Ecole normale supérieure, France

Master : Gérard Biau, Statistique mathématique, 30h, niveau M1, Ecole normale supérieure, France

Master : Vincent Rivoirard, Leçons de mathématiques, niveau M1, 10h, Ecole normale supérieure, France

Master : Vincent Rivoirard, Statistique non-paramétrique, 8h, niveau M1, Ecole normale supérieure, France

Master : Vincent Rivoirard, Statistique non-paramétrique, 35h, niveau M1, Université Paris-Dauphine, France

Master : Vincent Rivoirard, Classification et statistique en grandes dimensions, 18h, niveau M2, Université Paris-Sud, France

Master : Vincent Rivoirard, Méthodes pour les modèles de régression, 21h, niveau M2, Université Paris-Dauphine, France

Master : Vincent Rivoirard, Statistique bayésienne non-paramétrique, 21h, niveau M2, Université Paris-Dauphine, France

Master : Gilles Stoltz, Examinateur à l'oral de probabilités et statistiques de l'agrégation de mathématiques, France

8.2.2. Supervision

We only indicate the on-going PhD theses of members of our team.

PhD in progress : Thomas Mainguy, Statistical learning in computational linguistics, since September 2010, supervised by Olivier Catoni

PhD in progress : Emilien Joly, Phase transition of optimal risk and detection of contamination, since September 2011, supervised by Gábor Lugosi and co-supervised by Gilles Stoltz

PhD in progress : Pierre Gaillard, Aggregation of specialized predictors for the forecasting of electricity consumption, since September 2011, supervised by Gilles Stoltz

PhD in progress : Ilaria Giulini, Dimension free PAC-Bayes bounds for the Gram matrix and unsupervised clustering on the sphere of a Reproducing Kernel Hilbert space, since September 2012, supervised by Olivier Catoni

PhD in progress : Paul Baudin, Robust aggregation of predictors for the forecasting of air quality, with measures of uncertainties, since October 2012, supervised by Gilles Stoltz and co-supervised by Vivien Mallet

8.2.3. Juries

Gérard Biau, Olivier Catoni and Vincent Rivoirard participated in different PhD/HdR defense juries, sometimes as external reviewers.

8.3. Popularization

Gilles Stoltz

- wrote a blog post for MPT2013 and an article for The Huffigton Post, in the researchers' blog;
- gave a conference for high school teachers in Orléans;
- gave a mini-course on statistics to "classes préparatoires" professors at ENS Paris and a mini-course of game theory at ENS Rennes, targeted to inspectors of high-school-teachers.

DOLPHIN Project-Team

9. Dissemination

9.1. Scientific Animation

Organization:

- NIDISC'2013, Nature Inspired Distributed Computing, in IEEE IPDPS, Boston, USA, May 2013.
- GreenDaysLille, Lille, Nov 2013.
- Special issue on New advances in metaheuristics, Journal of Mathematical Modelling and Applications, co-edited by L. Jourdan and E-G. Talbi
- Special issue on Emergent nature inspired algorithms for multi-objective optimization, Computers and Operations Research (COR), co-edited by J. Figueira and E-G. Talbi
- Special issue on Scalable optimization in grid, cloud and intelligent network computing, Concurrency and Computation : Practice and Experience, co-edited by J. Kolodziej, S. U. Khan and E-G. Talbi
- Special issue on Metaheuristics on GPUs, Journal of Parallel and Distributed Computing (JPDC), co-edited by E-G. Talbi and G. Hasle
- International conference EA 2013 Artificial Evolution (Oct 2013 Bordeaux, France)
- Intelligent optimization in Bioinformatics session in LION 7 (Catania, Italy, January 2013) organized by Clarisse Dhaenens and Laetitia Jourdan
- Problem structure vs. algorithm performance in multiobjective combinatorial optimization session at LION 2013, co-organized by Hernan Aguirre, Arnaud Liefooghe, Kiyoshi Tanaka and Sébastien Verel (Catania, Italy, January 2013)
- Special issue on Evolutionary Multiobjective Optimization, European Journal of Operational Research, co-edited by Dimo Brockhoff, Bilel Derbel, Arnaud Liefooghe and Sébastien Verel
- Evolutionary Multiobjective Optimization session at the MCDM 2013 conference, co-organized by Dimo Brockhoff, Bilel Derbel, Arnaud Liefooghe and Sébastien Verel (Malaga, Spain, June 2013)
- Artificial Evolution Summer School (AESS 2013, Quiberon, France, June 2013), co-organized by Dimo Brockhoff, Bilel Derbel, Arnaud Liefooghe and Sébastien Verel (Malaga, Spain, June 2013)
- Special issue on Evolutionary Multiobjective Optimization, Journal of Multi-Criteria Decision Analysis, co-edited by Dimo Brockhoff and Kalyanmoy Deb, published as Volume 20, Issue 5-6, in November 2013
- Lorentz Center workshop "SIMCO - Set-Oriented and Indicator-Based Multi-Criteria Optimization" in Leiden, Netherlands in September 2013, co-organized by Dimo Brockhoff together with Michael Emmerich, André Deutz, and Boris Naujoks, about 40 participants, see http://www.lorentzcenter.nl/lc/web/2013/583/info.php3?wsid=583 and http://simco.gforge.inria.fr/
- GECCO 2013 workshop entitled "Blackbox Optimization Benchmarking" in Amsterdam, Netherlands in July 2013, co-organized by Dimo Brockhoff together with Anne Auger, Bernd Bischl, Nikolaus Hansen, Olaf Mersmann, Petr Pošík, and Heike Trautmann, see http://coco.gforge.inria.fr/doku.php?id=bbob-2013
- Special session on uncertainty handling at the 22nd International Conference on Multiple Criteria Decision Making (MCDM'2013) in Malaga, Spain in June 2013, co-organized by Dimo Brockhoff and El-Ghazali Talbi together with Jürgen Branke
- invited track chair for the EMO track at the GECCO'2013 conference in Amsterdam, Netherlands, Dimo Brockhoff together with Frank Neumann, see http://www.sigevo.org/gecco-2013/organizers-tracks.html#emo

Research management:

- Manager (Chargé de mission) of supercomputing for Université Lille 1.
- Scientific leader for Lille of the Grid'5000 nation-wide and EGI european-wide grid infrastructures.
- Scientific leader of the challenge "Large scale combinatorial optimization" of the HEMERA nation-wide grid and cloud computing research action (AEN) of Inria.
- Member of the steering committee of the Aladdin-Grid5000 nation-wide technological developement action of Inria.
- Co-leader of the PPF "Supercomputing" at Université Lille 1.
- Chair of the "Parallel Evolutionary Systems" track of GECCO'2013, Amsterdam, Netherlands, July 2013.

Reviewing:

- Computers and Operations Research
- European Journal of Operational Research
- Journal of Multi-Criteria Decision Analysis
- IEEE Transactions on Evolutionary Computation
- Applied soft computing (ASOC)
- Soft Computing (SOCO)
- KAI (Knowledge and Information Systems)
- Journal of Mechanical Engineering Science
- Computer Languages, Systems and Structures
- 4OR - A Quarterly Journal of Operations Research
- Journal of Supercomputing
- International Transactions in Operational Research
- Computers and Industrial Engineering
- MEME (Memetic Computing Journal)
- Evolutionary Computation
- Theoretical Computer Science
- Artificial Intelligence Journal
- IEEE Transactions on Systems, Man and Cybernetics - Part B
- Journal of Multi-Criteria Decision Analysis

Program committees:

- MICAI 2013, track Evolutionary and Nature-inspired Metaheuristics (November 2013, Mexico City, Mexico)
- ECAL 2013, European Conference on Artificial Life, (September 2013, Taormina, Italy)
- IEEE Congress on Evolutionary Computation (IEEE CEC 2013) (Cancun, Mexico, June 2013)
- International conference MIC - Metaheuristics International Conference 2013 (Singapor)
- Genetic and Evolutionary Computation Conference (GECCO 2013), (Amsterdam The Netherlands, 2013)
- 7th International Conference on Evolutionary Multi-criterion Optimization (EMO 2013, Sheffield, UK, 2013)
- 7th Learning and Intelligent OptimizatioN Conference (LION 7, Catania, Italy, January 2013)
- EA 2013 Artificial Evolution, 21-23 October 2013, Bordeaux, France

- 6th Workshop on Artificial Life and Evolutionary Algorithms (ALEA 2013), as a part of EPIA 2013 (AÃ§ores, Portugal, 2013)
- Genetic and Evolutionary Computation Conference (GECCO 2013), Evolutionary Combinatorial Optimization and Metaheuristics (ECOM) track (Amsterdam The Netherlands, 2013)
- IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2013, Singapour, 2013)
- 13th European Conference on Evolutionary Computation in Combinatorial Optimisation (EvoCOP 2013, Vienna, Austria, 2013)
- 7th International Conference on Evolutionary Multi-criterion Optimization (EMO 2013, Sheffield, UK, 2013)
- 7th Learning and Intelligent OptimizatioN Conference (LION 7, Catania, Italy, January 2013)
- ICANNGA'2013 Int. Conf. on Adaptive and Natural Computing Algorithms, Lausanne, Switzerland, Apr 2013.
- HAIS'2013 8th Int. Conf. on Hybrid Artificial Intelligence Systems, Salamanca, Spain, Sept 2013.
- ECAL'2013 8th European Conf. on Artificial Life, Taormina, Italy, Sept 2013.
- IC3'2013 Int. Conf. On Contemporary Computing, Noida, India, Aug 2013.
- GPC'2013 Int. Conf. On Grid and Pervasive Computing, Daegu, Korea, May 2013.

Commission:

- President of the recruiting committee for associate professorship in computer science (COS McF 27 - Univ. Lille 1 - 2013) - 3 positions.
- External member of the recruiting committee for associate professorship in computer science (COS McF 27 - Univ. Littoral Cote d'Opale - 2013), (COS McF 26 - Univ Bordeaux - 2013).
- External member of the recruiting committee for professorship in computer science (COS PR27- Univ. Tours - 2013).
- External reviewer for the PhD student grants at Microsoft Research Cambridge
- External reviewer for the Luxembourg National Research Fund (FNR)
- President of the Technological Development Commission (CDT) of Inria Lille.
- President of the Research Positions Commission (CER - Commission des Emplois de Recherche) of Inria Lille.
- External project reviewer, Qatar National Research Fund (QNRF) (2013).

Dessimination:

- Dimo Brockhoff: invited GECCO'2013 tutorial on Evolutionary Multiobjective Optimization
- El-ghazali Talbi: invited CEC'2013 tutorial on Parallel and Distributed Evolutionary Algorithms

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Engineering school : Clarisse Dhaenens, Graphs and Combinatorics, 80 HeqTD,Polytech Lille, University Lille 1, France

Engineering school : Clarisse Dhaenens, Operations Research, 70 HeqTD,Polytech Lille, University Lille 1, France

Engineering school : Clarisse Dhaenens, Algorithmics and programming, 45 HeqTD,Polytech Lille, University Lille 1, France

Master: D. Brockhoff, Advanced Control, 18h, M2, Ecole Centrale Paris, Chatenay-Malabry, France

Licence : L. Jourdan, Initiation à la programmation, 54 heures équivalent TD, niveau L1, université de Lille 1, France

Master : L. Jourdan, Fouille de données, 60 heures en équivalent TD, niveau (M1-Miage) université de Lille 1, France

Master : L. Jourdan, Informatique décisionnelle, 36 heures en équivalent TD, niveau (M1-Informatique) université de Lille 1, France

Master : L. Jourdan, Mise à niveau en Informatique décisionnelle, 24 heures en équivalent TD, niveau (M1-Miage) université de Lille 1, France

Licence: A. Liefooghe, Algorithmic and Data structure, 36h, L2, Université de Lille 1, France

Licence: A. Liefooghe, Algorithmic - Operations Research, 36h, L3, Université de Lille 1, France

Master: A. Liefooghe, Databases, 30h, M1, Université de Lille 1, France

Master: A. Liefooghe, Object-oriented Design and Programming, 52h, M1, Université de Lille 1, France

Master: A. Liefooghe, Combinatorial Optimization, 10h, M2, Université de Lille 1, France

Master of Advanced Scientific Computing: Nouredine Melab, Supercomputing, 33, M2, université Lille 1, France

Master Computer Science: Nouredine Melab, Parallel and Distributed Programming, 20, M1, université Lille 1, France

Master MIAGE: Nouredine Melab, Operations Research, 45, M1, université Lille 1, France

Polytech Lille : Marie-Eléonore Marmion, Database, 67h ETD, 1st year, Université Lille 1, France

Polytech Lille : Marie-Eléonore Marmion, Algorithm and Programming, 45h ETD, 1st year, Université Lille 1, France

Polytech Lille : Marie-Eléonore Marmion, Graph, 10h ETD, 1st year, Université Lille 1, France

Polytech Lille : Marie-Eléonore Marmion, Data Mining, 10h ETD, 3rd year, Université Lille 1, France

Master : Bilel Derbel, Combinatorial Optimization, 35h, M2, University Lille 1, France

Master : Bilel Derbel, Grid Computing, 16h, M2, University Lille 1, France

Master : Bilel Derbel, Parallel and Distributed Programming, 12h, M1, University Lille 1, France

Master : Bilel Derbel, Advanced Object Programming, 92h, M1, University Lille 1, France

Master : Bilel Derbel, Design of Distributed Applications, 60h, M1, University Lille 1, France

Master : Bilel Derbel, Algorithms and Applications, 28h, M1, University Lille 1, France

Engineering school : El-Ghazali Talbi, Advanced optimization, 36h, Polytech'Lille, University Lille 1, France

Engineering school : El-Ghazali Talbi, Data mining, 36h, Polytech'Lille, University Lille 1, France

Engineering school : El-Ghazali Talbi, Operations research, 60h, Polytech'Lille, University Lille 1, France

Engineering school : El-Ghazali Talbi, Graphs, 25h, Polytech'Lille, University Lille 1, France

9.2.2. Supervision

PhD : Julie Hamon, Optimisation combinatoire pour la sélection de variables en régression en grande dimension : Application en génétique animale, Université Lille 1, 26/11/2013, Clarisse Dhaenens, Julien Jacques (MODAL)

PhD : Khedidja SERIDI, Approches multi-objectives pour le biclustering : applications aux microarrays (puce à ADN), Université de Lille 1, soutenance 5/7/2013, Co-direction : El-Ghazali Talbi et Laetitia Jourdan

PhD : Julie Jacques, Classification sur données médicales à l'aide de méthodes d'optimisation et de datamining, appliquée au pré-screening dans les essais cliniques, Université de Lille 1, soutenance 2/12/2013, Co-direction : Clarisse Dhaenens et Laetitia Jourdan

PhD : Yacine KESSACI, Multi-criteria Scheduling on Cloud, Université Lille 1, 11/28/2013, Nouredine Melab and El-Ghazali Talbi

PhD : Imen CHAKROUN, Parallel Heterogeneous Branch and Bound Algorithms for Multi-core and Multi-GPU Environments, Université Lille 1, 06/28/2013, Nouredine Melab

PhD : Mathieu DJAMAI, Peer to Peer Branch and Bound Algorithms for Computational Grids, Université Lille 1, 03/11/2013, Nouredine Melab and Bilel Derbel

PhD in progress : Sophie Jacquin, Combining exact method and metaheuristics for production problems, début : 1/10/2012, Co-direction : El-Ghazali Talbi et Laetitia Jourdan

PhD in progress : Sylvain Dufourny, Optimisation de décisions économiques concurrentielles dans un simulateur de gestion d'entreprise, Novembre 2012, Clarisse Dhaenens

PhD in progress : Thanh-Do TRAN, Benchmarking Continuous Multiobjective Optimization Algorithms, 12/2011, Dimo Brockhoff and El-Ghazali Talbi

PhD in progress : Rudi LEROY, Massively parallel tree-based exact algorithms for hybrid clusters, 11/05/2012, Nouredine Melab

PhD in progress : Francois LEGILLON, Static and Dynamic Resource Brokering on multi-clouds, 09/01/2010, Nouredine Melab and El-Ghazali Talbi

PhD in progress : Trong Tuan VU, Large scale heterogeneous tree-based exact algorithms for grids, 11/05/2012, 09/01/2010, Bilel Derbel and Nouredine Melab

PhD : Mustapha DIABY, Approche de gestion de revenus pour un problème de tarification pour le transport longue distancd, UniversitÃ© de Lille 1, soutenance Nov 2013, El-Ghazali Talbi et Luce Brotcorne

PhD in progress : Nadia Dahmani, Multi-objective packing problems, 12/2009, El-Ghazali Talbi and François Clautiaux

PhD in progress : A. Stathakis, Satellite payload reconfiguration optimization, 12/2010, El-Ghazali Talbi and Pascal Bouvry

PhD in progress : A. Q. Nguyen, Green scheduling on cloud computing systems, 11/2012, El-Ghazali Talbi and Pascal Bouvry

PhD in progress : Oumayma Bahri, Fuzzy multi-objective optimization, 11/2013, El-Ghazali Talbi and Nayla Ben-Omar

PhD in progress : Asma Gannouni, Stochastic multi-objective optimization using metaheuristics , 11/2013, El-Ghazali Talbi and Rachid Ellaia

9.2.3. Juries

- Clarisse Dhaenens : Caractérisation d'instances difficiles pour des problèmes d'optimisation NP-difficiles de Valentin Weber, Université de Grenoble, Encadrants : Nadia Brauner, Yann Kieffer - July 2013 (Rapporteur et Présidente).
- Clarisse Dhaenens : Extraction de motifs contraints dans des donnés bruitées de K. Mouhoubi, Université de Paris XIII, Encadrants : Lucas Létocart, C. Rouveirol - September 2013 (Rapporteur).
- Clarisse Dhaenens : Metaheuristics, Heuristics and Exact Algorithms to Solve Constrained Hybrid Flow Shop : Application to a Three-stage Supply Chain de Walid Besbes, Université de Mons (Belgique), Encadrants : Taicir Loukil, Jacques Teghem - September 2013.
- Clarisse Dhaenens : Column generation for Bi-Objective integer Linear programs : Application to Bi-Objective Vehicle Routing Problems de Boasu Sarpong, Université de Toulouse, Encadrants : Christian Artigues, Nicolas Jozefowiez - December 2013 (Rapporteur).

- L. Jourdan: Métaheuristiques pour l'optimisation combinatoire sur processeurs graphiques (GPU) de Audrey DELEVACQ de l'Université de Reims, encadrants : Pierre Delisle et Michael Krajecki - February 4th 2013 (Rapporteur)
- L. Jourdan Hybrid Evolutionary Metaheuristics for Multiobjective Decision Supportde Ahmed M. KAFAFY de l'université de Lyon, encadrants : Stéphane Bonnevay et Ahmed Bounekkar - October 24th 2013 (Rapporteur)
- L. Jourdan: Optimisation multi-objectif de missions de satellites d'observation de la Terre de Panwadee Tangpattanakul, LAAS and INSA Toulouse, encadrant : Pierre Lopez et Nicolas Jozefowiez - September, 26th 2013 - (Présidente de Jury)
- E-G.Talbi: La métaheuristique CAT pour le design de réseaux logistiques déterministes et stochastiques de Marc-André Carle, Université Laval, Québec, Canada. encadrant: Nicolas Zuffery, Jan 2013 (Rapporteur)
- E-G. Talbi, Perfectionnement de métaheuristiques pour l'optimisation continue de Ilhem Boussaid, Université USTHB (Algérie) et Université Paris Créteil (France), encadrants: M. Ahmed-Nacer, P. Siarry, Juin 2013 (Rapporteur)
- E-G. Talbi: Modélisation dynamique de la densité de population via les réseaux cellulaires et optimisation multobjectif de l'auto-partage de Laurent Moalic Université Franche-Comté (France), encadrents: A. Caminada, S. Lamrous, F. Spies, Dec 2013 (Rapporteur).

9.3. Popularization

- Fête de la science
- Big Data Event (Mar 2013): Conference for industrial - Intervention on "Modeling and multi-objective optimization for knowledge discovery"

GEOSTAT Project-Team

8. Dissemination

8.1. Scientific Animation

- H. Badri has presented the Siggraph ASIA paper to Manao team seminar (Inria BSO) in November 2013.
- H. Badri has presentated his research projects to LRIT lab seminar (CNRST), December 2013, Rabat, Morocco.
- H. Badri is an invited speaker to the "Séminaire Signal-Image Bordeaux" organized by IMS, IMB and LaBRI, March 2014, Bordeaux.
- H. Yahia was an invited participant to the Workshop on "Global Systems Science: role of models and data" held at Brussels, February 7-8, 2013.
- H. Yahia was a member of the selection committee (February 25th, 2013) of the joint workshop in ICST held in Mumbai (India), 2013.
- H. Yahia participated in the CNU (Conseil national des Universités), section 61 selection meeting in January 2013.
- H. Yahia has presented the ICARODE project (*Integration and cascading for high resolution ocean dynamics*, CNES-NASA-OSTST) at the CNES meeting in September 2013 at LEGOS (UMR CNRS 5566), Toulouse.
- H. Yahia was an invited speaker at the India-CEFIPRA workshop in ICST "Challenges in overcoming complexity, from big data to cyberphysical systems", April 4 - 5, 2013, New Delhi- India, Bhagirathi Building - IIT Delhi. Title: *Advanced nonlinear approaches for handling complex datasets and acquisitions in Earth Observations and Universe Sciences"* [22].
- O. Pont, B. Xu and H. Yahia were invited speakers at IEEE EMBC 2013: 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Osaka, July 3-7, 2013. Title: *Arrythmic dynamics from singularity analysis of electrocardiographic maps* [21].
- H. Yahia is a member of Elsevier's Digital Processing editorial board (2010-2013), and of Frontiers in Fractal Physiology open journal editorial board.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

K. Daoudi was invited for the second time by the Moroccan CNRST within the FINCOME'2013 program (http://www.fincome.cnrst.ma/) to give a 20 hour set of lectures on speech processing at the Master2 InfoTelecom of the faculty of science of Rabat (http://www.fsr.ac.ma/MIT/).

8.2.2. Supervision

PhD : V. Khanagha, *Novel Multiscale Methods for Nonlinear Speech Analysis* , University Bordeaux-1, PhD defended on January 16th, 2013, supervisors: K. Daoudi and H. Yahia [13].

PhD : S. Kumar Maji, *Multiscale Methods in Signal Processing for Adaptive Optics* , University Bordeaux-1, PhD defended on November 14th, 2013, supervisor: H. Yahia [14].

PhD : J. Sudre, *Circulation submésoéchelle et comportements des prédateurs marins supérieurs : Apport de l'analyse multi-échelles et multi-capteurs* , University Toulouse-III Paul Sabatier, PhD defended on December 16th, 2013, supervisors: V. Garçon and H. Yahia [14].

8.2.3. Juries

- H. Yahia is a member of the jury ("reviewer") for the PhD of N. Navoret, defended on June 26th, 2013 at University of Bourgogne. Title: *Analyse et détection des électrogrammes complexes fractionnés en vue de soigner la fibrillation auriculaire à l'aide de techniques d'ablation par radiofréquence*. Jury: H. Yahia (reviewer), J.-M. Vesin (reviewer), A. Pumir (examiner), J.-M. Bilbault (examiner), G. Laurent (invited), S. Binczak (supervisor), S. Jacquir (co-supervisor).

8.3. Popularization

- H. Yahia made a presentation (title: *Dynamique océanique turbulente à super-résolution.* at the Unithé seminat, on September 2àth, 2013, Inria BSO.
- O. Pont participated to the "Ateliers de Médiation Scientifique" (Inria BSO).
- O. Pont did a radio interview with RFC radio station: “Que cherchent-ils ?”.

MISTIS Project-Team

8. Dissemination

8.1. Scientific Animation

Editorial activities

- Stéphane Girard is Associate Editor of the *Statistics and Computing* journal since 2012. He has been also an invited editor for a special issue of the *Journal de la Société Francaise de Statistique* dedicated to extreme-value analysis.

Workshops and summer schools

- Florence Forbes and Stéphane Girard co-organized the summer school "*Méthodes et applications de la régression en astrophysique*", Annecy, http://ecastrostat2013.sciencesconf.org/.
- Florence Forbes and Stéphane Girard co-organized the workshop "*Gémétrie Aléatoire et ses Applications*", Grenoble, http://gdr-geostoch.math.cnrs.fr/index.html.
- Stéphane Girard organized the workshop "*Copulas and extremes*", Grenoble, http://mistis.inrialpes.fr//workshop-copulas-extremes.html.
- Marie José Martinez, Jean Baptiste Durand, Florence Forbes in collaboration with Iragael Joly (Grenoble Applied Economics Laboratory) organized the workshop "Statistics, Activities and Transportation" in Grenoble http://mistis.inrialpes.fr/workshop-statistique-transport.html as part of the MOTU project (2013-14).

Societies and Networks

- F. Forbes is part of an INRA (French National Institute for Agricultural Research) Network (AIGM, http://carlit.toulouse.inra.fr/AIGM) on Algorithmic issues for inference in graphical models.
- F. Forbes and S. Girard were elected as members of the bureau of the "Analyse d'images, quantification, et statistique" group in the Société Française de Statistique (SFdS).

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence (IUT): Marie-José Martinez , *Statistics*, 192 ETD, L1 to L3 levels, université Grenoble 2, France.

Master: Jean-Baptiste Durand, *Statistics and probabilty*, 192 ETD, M1 and M2 levels, Ensimag Grenoble INP, France.

Licence (IUT) : Gildas Mazo, Mathematics and C language, 128h, L1 level, université Grenoble 1, France.

Master: Farida Enikeeva, *Statistics*, 96 ETD, M1 level, Ensimag Grenoble INP, France.

Licence: Christine Bakhous, *Mathematics and Statistics*, 64 ETD, L1 level, université Grenoble 1, France.

Licence: Jonathan El Methni, *Mathematics and Statistics*, 64 ETD, L1 level, université Grenoble 1, France.

Master : Stéphane Girard, *Statistique Inférentielle Avancée*, 45 ETD, M1 level, Ensimag Grenoble-INP, France.

Master : Florence Forbes, Mixture models and EM algorithm, 12h, M2 level, UFR IM2A, université Grenoble 1, France.

M.-J. Martinez is faculty members at Univ. Pierre Mendès France, Grenoble II.

J.-B. Durand is a faculty member at Ensimag, Grenoble INP.

F. Enikeeva is on a half-time ATER position at Ensimag, Grenoble INP.

C. Bakhous and J. El Methni were both moniteur at University Joseph Fourier.

8.2.2. Supervision

PhD: Christine Bakhous, "*Modèles d'encodage parcimonieux de l'activité cérébrale mesurée par IRM fonctionnelle*", Université Grenoble 1, defended on December 2013. Supervision : Florence Forbes & Michel Dojat (GIN).

PhD : Jonathan El-methni, "*Différentes contributions à l'estimation de quantiles extrêmes*" Université Grenoble 1, defended on october 2013. Supervision : Stéphane Girard & Laurent Gardes (Université de Strasbourg).

PhD : El-hadji Deme, "*Quelques contributions à la théorie univariée des valeurs extrêmes. Estimation des mesures de risque actuariel pour des pertes à queues lourdes*", Université Gaston Berger, Sénégal, defended on june 2013. Supervision : Stéphane Girard & Gane Samb Lo (Université Gaston Berger, Sénégal)

PhD in progress: Aina Frau-Pascual, "*Statistical Models for the coupling of ASL and BOLD Magnetic Resonance modalities to study brain function and disease*", Université Grenoble 1, started in october 2013. Supervision : Florence Forbes & Philippe Ciuciu (Parietal, NeuroSpin).

PhD in progress : Alessandro Chiancone "*Sequential dimension reduction*", Université Grenoble 1, started in october 2013. Supervision : Stéphane Girard & Jocelyn Chanussot (Gypsa-lab, Grenoble INP).

PhD in progress : Seydou Nourou Sylla "*Modélisation statistique pour l'analyse des causes de décès décrites par autopsie verbale en milieu rural africain : cas du Sénégal*", Université Gaston Berger, Sénégal, started in october 2012. Supervision : Stéphane Girard & Abdou Ka Diongue (Université Gaston Berger, Sénégal).

PhD in progress : Gildas Mazo, "*Estimation de quantiles extrêmes spatiaux à partir de données environnementales*", Université Grenoble 1, started in october 2011. Supervision : Florence Forbes & Stéphane Girard.

8.2.3. Juries

Stéphane Girard has been involved in the following PhD commitees:

- Yousri Henchiri, "*Support Vector Machine (SVM) pour l'analyse de données fonctionnelles*", Université Montpellier 2.
- François Portier "*Réduction de la dimension en régression*", Université Rennes 1.
- Smriti Joshi, "*Consommation statique dans les circuits numériques en CMOS 32nm: Analyse et méthodologie pour une estimation statistique au niveau porte*", Université Grenoble.

Florence Forbes has been involved in the PhD committees of:

- Xavier Alameda-Pineda, Egocentric audio-visual scene analysis: a machine learning and signal processions approach, University Grenoble 1.
- Antoine Deleforge, Acoustic Space Mapping: a machine learning approach to sound source separation and localization, University Grenoble 1
- Mohamad Belouni, Plans d'expérience optimaux en régression appliquée à la pharmacocinétique, University Grenoble 1.
- Solveig Badillo, Etude de la variabilité hémodynamique chez l'enfant et l'adulte sains en IRMf, University Paris Sud
- Virgile Fritsch, High-dimensional statistical methods for inter-subjects studies in neuroimaging, University Paris Sud

Since September 2009, F. Forbes is head of the committee in charge of examining post-doctoral candidates at Inria Grenoble Rhône-Alpes ("Comité des Emplois Scientifiques").

Florence Forbes is a member of the INRA committee (CSS MBIA) in charge of evaluating INRA researchers once a year in the MBIA dept of INRA.

Florence Forbes was a member of:

- the AERES committee in charge of evaluating the AgroParisTech unit.
- the committee for selecting a new professor at University Grenoble 1.
- the LJK committee for attributing the first Jean Kuntzman award.

MODAL Project-Team

9. Dissemination

9.1. Scientific Animation

- Alain Celisse is reviewer for numerous top-level statistical journal: Annals of Statistics, Electronic journal of Statistics, Biometrika,JSPI...He also reports on various French funding proposals (ANR, PEPII, PEPS,...). Alain Celisse is a member of The French Statistical Association (SFDS) and more precisely belongs to the “Mathematical statistics” board.
- C. Biernacki belongs to the program comity of "Extraction et gestion des connaissances" in 2013 and to the program comity of "Journées Françaises de Statistique" in 2013. Since ’10, he is an Associate Editor of the journal “Case Studies in Business, Industry and Government Statistics” (CSBIGS) http://www.bentley.edu/centers/csbigs.

  Since ’12, C. Biernacki is the president of the data mining and learning group of the French statistical association (SFdS) http://www.sfds.asso.fr/. Since ’11, he is leader of the team “Probability & Statistics” of the Laboratory of mathematics of U. Lille 1 http://math.univ-lille1.fr/. Since ’13 (September), he is co-leader of the Laboratory of mathematics “Painlevé” of U. Lille 1 http://math.univ-lille1.fr/.
- Sophie Dabo-Niang animates a research group on « Spatial Statistics and Archeology » with statisticians and archeologist.
- Guillemette Marot is a member of the organizing committee of seminars from Bilille platform. More information about seminars of the year is available on https://wikis.univ-lille1.fr/bilille/animation.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Christophe Biernacki (head of the M2 Ingénierie Statistique et Numérique http://mathematiques.univ-lille1.fr/Formation/):
  - Master 1st year: Mathematical statistics, 60h, coaching project, 10h, M1, U. Lille 1, France
  - Master 2nd year: Data analysis, 97.5h, Analysis of variance and experimental design, 22.5h, coaching internship, 20h, M2, U. Lille 1, France
- Alain Celisse (6 month delegation at Inria):
  - Licence 1st and 2nd year: (96h) Computer Science departement in IUT A, Univ. Lille 1
  - Master 2nd year: Statistical theory (30h) to Applied Mathematics students.
- Sophie Dabo-Niang:
  - Master MIASHS (Mathématiques, Informatique appliquées aux SHS),
  - Master of Statistics of university Gaston Berger (Senegal).
- Serge Iovleff (6 month delegation at Inria):
  - Markov chain theory, Algebra, graphs, languages and automate theory (120h).
- Julien Jacques:
  - Licence 3rd year: Statistique Inférentielle, 50h, École Polytechnique Universitaire de Lille, U. Lille 1,France
  - Master 1st year: Statistique Exploratoire, 40h, École Polytechnique Universitaire de Lille, U. Lille 1,France

  - Master 1st year: Modélisation Statistique, 30h, École Polytechnique Universitaire de Lille, U. Lille 1,France
  - Master 2nd year: Séries Temporelles, 25h, École Polytechnique Universitaire de Lille, U. Lille 1, France.
- Mathieu Marbac-Lourdelle:
  - Licence: Probabilités, 30h, École Polytechnique Universitaire de Lille, U. Lille 1, France.
  - Licence: Statistiques, 34h, École Polytechnique Universitaire de Lille, U. Lille 1, France.
- Guillemette Marot:
  - Licence: Biostatistics, 12h,PACES (équivalent L1), U. Lille 2, France
  - Master : Biostatistics, 45h, M1, U. Lille 2, France
  - Formation permanente: Data Analysis with R, 12h, U. Lille 2, France
  - Master: Internships, 15h, M1, U. Lille 2, France.

9.2.2. Supervision

- Alain Celisse is co-supervising the Ph.D. theses of Jérémie Kellner and Quentin Grimonprez respectively with Christophe Biernacki and with Julien Jacques and Guillemette Marot.
- Christophe Biernacki supervises Clément Thery and co-supervises Loic Yengo, Matthieu Marbac-Lourdelle and Jérémie Kellner.
- Sophie Dabo-Niang supervises:
  - Aladji BASSENE, until 2011. Co-tutelle with Aliou Diop (University Gaston Berger, Senegal)
  - Stéphane BOUKA, until 2012 : Co-tutelle with Guy Martial Nkiet, University of FranceVille, Gabon)
  - Emad Aldeen DRWESH, until 2012 : co-direction with Jerôme Foncel (Lille 3)
  - Camille TERNYNCK, until 2011 :co-direction with Anne-Françoise Yao et Fateh Chebana
  - Mohamed YAHAYA, until 2012 : co-direction with Aboubacar Amiri (Lille 3)
  - Mohamed Ould Yehdhih, until 2013 : Co-tutelle with Aliou Diop (University Gaston Berger,
  - Senegal) and Mohamed Attouch (University Sidi Bel Abbes, Algeria).
- Serge Iovleff has supervised a software development engineer (Parmeet Bathia).
- Julien Jacques is supervizing Julie Hamon who passed her Ph.D. in November, 26th, 2013. He also co-advised Quentin Grimonprez (co-supervision with Guillemette Marot and Alain Celisse) and Florence Loingeville (co-supervision with Cristian Preda) from 2013.
- Guillemette Marot co-supervised (with Alain Celisse) a one-year engineer Morgane Pierre-Jean, who worked on change point detection with kernel methods for genomic data. She also supervised Quentin Grimonprez (ADT MPAGenomics until october 2013 then PhD) and Samuel Blanck (ADT MPAGenomics from 2013).

9.2.3. Juries

- Alain Celisse was a jury member (examinator) at the Ph.D. defense of Van Hahn NGUYEN (Paris-Sud 11) and during the CR2 INRA competition.
- Christophe Biernacki participated to 7 PhD juries in 2013 (1 as an opponent, 5 as a reviewer, 1 as an examinator).
- Sophie Dabo-Niang was in the PhD jury of Karima Kimouche (University of Constantine; June 2013), Ibrahim Sidi Zakari (University of Marrakesh, June 2013) Van Ly Tran (University of Orleans, December, 12, 2013) Aubin N'dri Yao (University of Abidjan, July, 2013).
- Guillemette Marot was a jury member for the CR2 Inria 2013 competition.

9.3. Popularization

Alain Celisse has given a talk in "30 minutes de science" that is proposed to all Inria team members to illustrate the type research carried out within the different teams in Lille. This talk was about kernel change-point detection.

REALOPT Project-Team

9. Dissemination

9.1. Scientific Animation

Until June 2013, Pierre Pesneau was a member of the organizing comittee of the Polyhedral and Combinatorial Optimization working group of the CNRS Operations Research group. In this scope, he organized in April, 26th seminars arround the field of "Semi-Definite Programming".

The team members are regular referees for the best journals of the field. Besides, we are called on the scientific comittee of international and national conferences:

- Program comittee member of INOC 2013, International Network Optimization Conference, May 20-22, 2013
- Program comittee member for CPAIOR 2014, Eleventh International Conference on Integration of Artificial Intelligence (AI) and Operations Research (OR) techniques in Constraint Programming
- Program comittee for ISCO 2014, 3rd International Symposium on Combinatorial Optimization
- Program comittee for ICGT 2014, 9th International colloquium on graph theory and combinatorics, June 30-July 4, 2014.
- Program comittee for ROADEF 2014, 15ème congrès annuel de la Société française de recherche opérationnelle et d'aide à la décision (ROADEF)

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : Pierre Pesneau, Modèles et Méthodes d'Optimisation, 30h, L2, Université de Bordeaux, France

Licence : Pierre Pesneau, Système et Programmation, 59h, L2, Université de Bordeaux, France

Licence : Arnaud Pêcher, Programmation objet et impérative, 200h, DUT, Université de Bordeaux, France

Licence : Arnaud Pêcher, Théorie des graphes, 16h, DUT, Université de Bordeaux, France

Master : François Clautiaux, Programmation linéaire 1, 15h TD, M1, Université de Bordeaux, France

Master : François Clautiaux, Introduction à l'optimisation en nombres entiers, 15h TD, M1, Université de Bordeaux, France

Master : François Clautiaux, Programmation en C++, 60h TD, M1, Université de Bordeaux, France

Master : François Clautiaux, Recherche opérationnelle, 16h TD, M1, Institut Polytechnique de Bordeaux, France

Master : Boris Detienne, Gestion des opérations et planification de production, 30h TD, M2, Université de Bordeaux, France

Master : Boris Detienne, Programmation Linéaire 1, 14h TD, M1, Université de Bordeaux, France

Master : Boris Detienne, Programmation Linéaire 2, 14h TD, M1, Université de Bordeaux, France

Master : Boris Detienne, Introduction à l'optimisation en nombres entiers, 14h TD, M1, Université de Bordeaux, France

Master : Boris Detienne, Modèles de flot, 14h TD, M1, Université de Bordeaux, France

Master : Boris Detienne, Projet informatique, 9h TD, M2, Université de Bordeaux, France

Master : Pierre Pesneau, Combinatoire et Routage, 14h, M1, Université de Bordeaux et ENSEIRB IPB, France

Master : Ruslan Sadykov, Introduction à la Programmation par Contraintes, 30 HETD, M2, Université de Bordeaux, France

Master : Ruslan Sadykov, Modélisation, Optimisation, Complexité, et Algorithmes, 50 HETD, M2, CNAM Aquitaine, France

Master : François Vanderbeck, Recherche opérationnelle, 15h cours, M1, Institut Polytechnique de Bordeaux, France

Master : François Vanderbeck, Flot et routage, 15h cours, M1, Université de Bordeaux, France

Master : François Vanderbeck, Programmation linéaire 2, 15h cours, M1, Université de Bordeaux, France

Master : François Vanderbeck, Programmation entière, 50h cours/TD, M2, Université de Bordeaux, France

9.2.2. Supervision

PhD in progress : Nastaran Rahmani, Planning and Routing via Decomposition Approaches, Ruslan Sadykov & François Vanderbeck.

PhD in progress : Nadia Dahmani, Problèmes de packing multi-critères, 01/09/2010, François Clautiaux, El-Ghazali Talbi

PhD in progress : Matthieu Gérard, Résolution de problèmes d'optimisation dans le commerce de détail, 01/09/2012, François Clautiaux.

PhD in progress : Martin Bué, Gestion du revenu dans le cadre du voyage professionnel, 01/09/2012, François Clautiaux, Luce Brotcorne

PhD in progress : Nicolas Dupin, Optimisation robuste des arrêts de centrales nucléaires pour maintenance, 01/09/2012, François Clautiaux, François Vanderbeck

PhD : Sagnik Sen, Oriented graph colourings, 01/01/2011 - 03/02/2014, Arnaud Pêcher

9.2.3. Juries

- François Clautiaux : Evaluation (rapporteur) of the PhD thesis of Louise Brac de la Perrière (Université de Technologie de Compiègne)
- François Clautiaux : Evaluation (rapporteur) of the PhD thesis of Marat Mesyagutov (University of Dresden)
- Boris Detienne: Evaluation (examinateur) of the PhD thesis of Xavier Libeaut (University of Angers)
- Arnaud Pêcher : Evaluation (examinateur) of the PhD thesis of Pierre Aboulker (University of Paris 7)
- Arnaud Pêcher : Evaluation (examinateur) of the PhD thesis of Alberto Passuelo (University of Bordeaux)
- François Vanderbeck : Evaluation (rapporteur) of the PhD thesis of Stephen J Maher (University of New South Wales, Australia)
- François Vanderbeck : Evaluation (rapporteur) of the PhD thesis of Amal Benhamiche (University Paris Dauphine)
- François Vanderbeck : Evaluation (examinateur) of the PhD thesis of Pierre-Louis Poirion (ENSTA-Paristech UMA –CEDRIC)

SELECT Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Editorial responsibilities

Participants: Gilles Celeux, Pascal Massart, Jean-Michel Poggi.

- Gilles Celeux is Editor-in-Chief of *Journal de la SFdS*.

  He is Associate Editor of *Statistics and Computing*, *CSBIGS* and *La Revue Modulad*.
- Pascal Massart is Associated Editor of *Annals of Statistics*, *Confluentes Mathematici*, and *Foundations and Trends in Machine Learning*.
- Jean-Michel Poggi is Associated Editor of *Journal of Statistical Software*, *Journal de la SFdS* and *CSBIGS*.

9.1.2. Invited conferences

Participants: Gilles Celeux, Jean-Michel Poggi.

- Gilles Celeux was invited speaker to the annual meeting of the Italian Society of Statistics in Brescia (June 2013), to the joint meeting of the British Classification Society, and the German Classification Society in London (November 2013) and to the Summer Model-Based Clustering working group in Bologna (July 2013).
- Jean-Michel Poggi was invited speaker at , International worshop Unsupervised Learning and High-dimensional Statistics, ENS Ulm, Paris, 11 (September 2013).

9.1.3. Scientific animation

Participants: Gilles Celeux, Christine Keribin, Erwan Le Pennec, Pascal Massart, Jean-Michel Poggi.

- Gilles Celeux was Chair of the Program Committee of the Annual Journées de Statistique de la SFdS, Toulouse, May 2013. Gilles Celeux was organizer of the ERCIM 2013 Session Model Selection, London, 14-16 December 2013.
- Gilles Celeux is member of the CSS of INRA.
- Gilles Celeux was a member of the scientific committee of SMPGD (Statistical Methods for Post Genomics Data). Christine Keribin is member of the council of the French statistical society (SFdS). Since this year, she organizes conferences for statisticians from various backgrounds (academic, software, companies) to exchange experiences on statistical methods and software http://www.sfds.asso.fr/323-Rendez_vous_SFdS_Methodes_et_Logiciels.
- Erwan Le Pennec is a member of the Board of the MAS group of the SMAI (french SIAM).
- Erwan Le Pennec is a member of the Labex AMIES (Agence pour les Mathématiques en Interaction avec les Entreprises et la Société).
- Erwan Le Pennec and Pascal Massart are members of the C.N.U. (section 26).
- Pascal Massart is a senior member of the I.U.F.
- Pascal Massart is a member of the scientific council of the French Mathematical Society.
- Pascal Massart is a member of the scientific council of the Mathematical Department of the Ecole Normale Supérieure de Paris.
- Jean-Michel Poggi was President of the French statistical society (SFdS).
- Jean-Michel Poggi is member of the EMS (European Mathematical Society) Committee for Applied Mathematics.

- Jean-Michel Poggi is Guest Editor (with R. Kenett, A. Pasanisi) of the special issue on Special Issue on Graphical causality models: Trees, Bayesian Networks and Big Data, in Quality Technology and Quantitative Management (QTQM).
- Jean-Michel Poggi is Editor (with A. Antoniadis, X. Brossat) of a Lecture Notes in Statistics: Modeling and Stochastic Learning for Forecasting in High Dimension, Springer 2014.
- Jean-Michel Poggi was Member Editorial committee of 2013 Mathématiques pour la planète terre : un jour, une brève, an initiative from Cap'Maths, Inria, INSMI, SFdS, SMAI, SMF for 2013 the year of Mathematics for Planet Earth.
- Jean-Michel Poggi is Organizer and President of the Scientific committee (with R. Kenett, A. Pasanisi) of the ENBIS-SFdS 2014 Spring Meeting on Graphical causality models: Trees, Bayesian Networks and Big Data, IHP, Paris, 9-11April 2013.
- Jean-Michel Poggi is Organizer of the meeting Horizons de la Statistique, Paris, IHP, 21 January 2014.
- Jean-Michel Poggi was organizer of the ERCIM 2013 Session Random forests and related methods: theory and practice, London, 14-16 December 2013

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: Gilles Celeux, modèles à structure cachée ISUP 3ème année (Université Paris 6) 20 heures

Master: Gilles Celeux, modèles pour la classification M2 probabilités et statistique, Université Paris Sud, 24 heures

Master: Erwan Le Pennec, Méthode Parcimonieuse en Statistique, 30h, Université Paris Sud, France

Master: Erwan Le Pennec, Méthodes d'ondelettes, 20h, M2, Université Paris Diderot, France

Master: Erwan Le Pennec, Analyse Spectrale, 18h, M1, Ponts Paristech, France

Master: All the other SELECT members are teaching in various courses of different universities and in particular in the M2 "Modélisation stochastique et statistique" of University Paris-Sud.

9.2.2. Supervision

PhD : Jairo Cugliari Duhalde, Prévision d'un processus à valeurs fonctionnelles. Application à la consommation d'électricité, 22/11/2011 at Paris XI Orsay, J.-M. Poggi and Anestis Antoniadis (Univ. Joseph Fourier, Grenoble)

PhD in progress: Vincent Brault, 2011, Gilles Celeux and Christine Keribin

PhD in progress: Rémi Fouchereau, 2011, Gilles Celeux and Patrick Pamphile

PhD in progress: Émilie Devivjer, 2012, Pascal Massart and Jean-Michel Poggi

PhD in progress: Clément Levrard, 2009, Pascal Massart and Gérard Biau (UPMC)

PhD in progress: Lucie Montuelle, Sélection de modèles et mélange de gaussiennes en imagerie hyperspectrale, 2011, Erwan Le Pennec

PhD in progress: Nelo Molter Magalães, 2011, Pascal Massart

PhD in progress: Solenne Thivin, 2012, Erwan Le Pennec

9.3. Popularization

Erwan Le Pennec takes care of a Math en Jeans group at lycée Joliot Curie from Nanterre.

SequeL Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Awards

- ***Crazy Stone*** won the 6th edition of the UEC Cup (the most important international computer-Go tournament). It also won the first edition of the Denseisen, by winning a 4-stone handicap game against 9-dan professional player Yoshio Ishida.
- ***Alexandra Carpentier*** obtained an AFIA ex-aequo accessit for her PhD, (french machine learning/artificial intelligence second price).

9.1.2. Tutorials

- Tutorial by Rémi Munos at AAAI 2013: From Bandits to Monte Carlo Tree Search: The optimistic principle applied to Optimization and Planning.

9.1.3. Conferences, Workshops and Schools

- *Philippe Preux* and Marc Tommasi were the main organizers of the Conférence sur l'Apprentissage Automatique (CAP'13).
- *Rémi Munos* was the main organizer of the 8^{ith} Journées Francophones sur la Planification, la Décision et l'Apprentissage (JFPDA'13) along with *Marta Soare*, *Raphael Fonteneau*, *Michal Valko* and *Alessandro Lazaric*.
- *Rémi Munos* was co-chair of the Algorithmic Learning Conference, in Singapore, 2013.

9.1.4. Invited Talks

- Daniil Ryabko gave a talk entitled "Time-series information and unsupervised representation learning" at SMILE seminar in Paris
- Michal Valko gave an talk "Sequential Face Recognition with Minimal Feedback" which was opening talk of the series named 30 minutes of Science, a new format at Inria Lille to support intra-center collaboration.
- Rémi Munos gave a course (6 hours) at the Summer School Netadis in Hillerod, Denmark in September 2013.
- Rémi Munos was invited to give a talk at CMU in November 2013.
- Alessandro Lazaric was invited to give a talk at CMU in March 2013.
- Pierre Chainais gave a talk "Learning a common dictionary over a sensor network" at GDR Phénix - ISIS workshop about "Analysis and inference for networks" in Paris in november 2013.
- Pierre Chainais gave a tutorial talk on "Multifractal analysis of images and applicaitons" at the "Groupe Image of the company TOTAL in Paris La Défense on sept. 11th, 2013.
- Jérémie Mary gave a invited talk "Recommendation system from a bandit perspective" at GDR "Estimation et traitement statistique en grande dimension" on May 16th, 2013 - Télécom Paristech.
- Jérémie Mary gave an invited talk "Bandit point of view on recommenders" at Large-scale Online Learning and Decision Making Workshop Cumberland Lodge, Windsor, UK in September, 2013.
- Jeremie Mary gave an invited talk on recommender systems at "Journées rencontres AFIA/IHM" in may 2013.

9.1.5. Review Activities

- ***Participation to the program committee of international conferences***
  - International Conference on Pattern Recognition Applications and Methods (ICPRAM 2013)
  - Algorithmic Learning Theory (ALT 2013)
  - AAAI Conference on Artificial Intelligence (AAAI 2013)
  - European Workshop on Reinforcement Learning (EWRL 2013)
  - Annual Conference on Neural Information Processing Systems (NIPS 2013)
  - International Conference on Artificial Intelligence and Statistics (AISTATS 2013)
  - European Conference on Machine Learning (ECML 2013)
  - International Conference on Machine Learning (ICML 2013 and 2014)
  - International Conference on Uncertainty in Artificial Intelligence (UAI 2013)
  - French Conference on Planning, Decision-making, and Learning in Control Systems (JFPDA 2013)
  - IEEE FUSION 2013
  - IEEE Approximate Dynamic Programming and Reinforcement Learning (ADPRL 2013)
  - ICML workshop "Prediction with Sequential Models"
- ***International journal and conference reviewing activities*** (in addition to the conferences in which we belong to the PC)
  - IEEE Transactions on Image Processing
  - Journal of Statistical Physics
  - Digital Signal Processing
  - IEEE Transactions on Information Theory
  - IEEE Statistical Signal Processing SSP'2013
  - European Signal Processing Conference EUSIPCO 2013
  - 10th International Conference on Sampling Theory and Applications (SampTA 2013)
  - IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2013 & 2014)
  - Annual Conference on Neural Information Processing Systems (NIPS 2013)
  - International Conference on Machine Learning (ICML 2013)
  - European Conference on Machine Learning (ECML 2013)
  - Uncertainty in Artificial Intelligence (UAI 2013)
  - Machine Learning Journal (MLJ)
  - Journal of Machine Learning Research (JMLR)
  - Journal of Artificial Intelligence Research (JAIR)
  - IEEE Transactions on Automatic Control (TAC)
  - IEEE Transactions of Signal Processing
  - Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS)
  - Mathematics of Operations Research (MOR)

9.1.6. Evaluation activities, expertise

- *M. Ghavamzadeh* is in the Editorial Board Member of Machine Learning Journal (MLJ, 2011-present).
- *M. Ghavamzadeh* is in the Steering Committee Member of the European Workshop on Reinforcement Learning (EWRL, 2011-present).

- *P. Preux*, *R. Gaudel* and *J. Mary* are experts for *Crédit Impôt Recherche* (CIR).
- *E. Duflos* is a project proposal reviewer for ANR.
- *R. Munos* is a Member of the Belgium Commission Evaluation F.R.S-FNRS, 2013.

9.1.7. Other Scientific Activities

- *R. Munos* was Vice Président du Comité des Projets at Inria Lille-Nord Europe, until July 2013.
- *D. Ryabko* is a member of COST-GTRI committee at Inria.
- *D. Ryabko* is a general advisor at Inria Lille.
- *E. Duflos* is Director of Research of Ecole Centrale de Lille since September 2011.
- *E. Duflos* is the Head of the Signal and Image Team of LAGIS (UMR CNRS 8219).
- *R. Gaudel* is board member of LIFL.
- *R. Gaudel* manages the proml mailing list. This mailing list gathers French-speaking researchers from Machine Learning community.
- *P. Chainais* is a member of the administration council of GRETSI, the French association of researchers in signal and image processing.
- *P. Chainais* is co-responsible for the action "Machine Learning" of the GDR ISIS which gathers french researchers in signal and image processing at the national level.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Ecole Centrale de Lille: *P. Chainais*, , “Machine Learning”, 36 hours, 3rd year.

Ecole Centrale de Lille: *P. Chainais*, “Wavelets and Applications”, 24 hours, 2nd year.

Ecole Centrale de Lille: *P. Chainais*, “Introduction to Matlab”, 16 hours, 3rd year.

Ecole Centrale de Lille: *P. Chainais*, “Signal processing”, 22 hours, 1st year.

Ecole Centrale de Lille: *P. Chainais*, “Data Compression”, 16 hours, 2nd year.

Ecole Centrale de Lille: *Ph. Preux*, “Data Data Data Data”, 2 hours, 3rd year.

P. Chainais is Responsible for a new 3rd year program called Decision making & Data analysis.

Master: *O. Pietquin*, “Decision under uncertainty”, 46 hours, M2, Master in Computer Science, Université de Lille 1.

Master: *A. Lazaric*, “Introduction to Reinforcement Learning”, 30h eq. TD, M2, Master “Mathematiques, Vision, Apprentissage”, ENS Cachan.

Master: *R. Gaudel*, “Data Mining”, 30h eq. TD, M2, Université Lille 3.

Master: *R. Gaudel*, “Web Mining”, 32h eq. TD, M2, Université Lille 3.

Master: *R. Gaudel*, “Algorithmic”, 19h eq. TD, M2, Université Lille 3.

Master: *Ph. Preux*, “Mathematics, Computer Science, and Modeling”, M1 of psychology, Université of Lille 3.

Master: *Ph. Preux*, “Algorithms, and programming in Python”, M1 MIASHS, Université of Lille 3.

Licence: *Ph. Preux*, “Algorithms, and programming in Python”, L3 MIASHS, Université of Lille 3.

Licence: *R. Gaudel*, “Programing”, 2×16h eq. TD, L1, Université Lille 3.

Licence: *R. Gaudel*, “Logic”, 31.5h eq. TD, L3, Université Lille 3.

Licence: *R. Gaudel*, “Information and Communication Technologies”, 2×16h eq. TD, L1, Université Lille 3.

Licence: *R. Gaudel*, “Artificial Intelligence”, 31.5h eq. TD, L2, Université Lille 3.

Licence: *R. Gaudel,*, “C2i”, 25h eq. TD, L1-3, Université Lille 3.

Licence: *R. Mary,*, “C2i”, 25h eq. TD, L1-3, Université Lille 3.

Master: *J. Mary*, “Programmation et analyse de donnée en R”, 24h eq TD, M1, Université de Lille 3, France.

Master: *J. Mary*, “Programmation web avancée”, 24h eq TD,M2, Université de Lille 3, France.

Master: *J. Mary*, “Programmation objet et Design Pattern”, 48h eq TD,M2, Université de Lille 3, France.

Master: *J. Mary*, “Algorithmique”, 12h eq TD,M1, Université de Lille 3, France.

Master (3rd year of Engineer School): *J. Mary*, “Machine Learning avec R" , 16 hours, M2, Option "Data Analysis and Decision", Ecole Centrale de Lille, France.

Master (3rd year of Engineer School): *E. Duflos*, “Advanced Estimation" , 20 hours, M2, Option "Data Analysis and Decision", Ecole Centrale de Lille, France.

Master (3rd year of Engineer School): *E. Duflos*, “Multi-Objects Filreting" , 16 hours, M2, Option "Data Analysis and Decision", Ecole Centrale de Lille, France.

9.2.2. Supervision

PhD: *Azadeh Khaleghi*, “Sur Quelques Problèmes non supervisés impliquant des séries temporelles hautement dépendantes”, Nov. 2013, Université de Lille 1, advisor: D. Ryabko.

PhD in progress: *Boris Baldassari*, *Apprentissage automatique et développement logiciel*, since May 2011, advisor: Ph. Preux.

PhD in progress: *Gabriel Dulac-Arnold*, *A General Sequential Model for Constrained Classification*, since Oct. 2011, advisor: Ph. Preux, L. Denoyer, P. Gallinari.

PhD in progress: *Victor Gabillon*, “Active Learning in Classification-based Policy Iteration”, since Sep. 2009, advisor: Ph. Preux, M. Ghavamzadeh.

PhD in progress: *Frédéric Guillou*, “Sequential Recommender System”, since Oct. 2013, advisor: Ph. Preux, J. Mary, R. Gaudel.

PhD in progress: *vicenzo Musco*, “Topology and evolution of software graphs”, since Oct. 2013, advisor: P. Preux, M. Monperrus

PhD in progress: *Olivier Nicol*, “Data-driven evaluation of Contextual Bandit algorithms and applications to Dynamic Recommendation”, since Nov. 2010, advisor: Ph. Preux, J. Mary.

PhD in progress: *Adrien Hoarau*, “Multi-arm Bandit Theory”, since Oct. 2012, advisor: R. Munos.

PhD in progress: *Tomáš Kocák*, “Sequential Learning with Similarities”, since Oct. 2013, advisor: R. Munos, M. Valko

PhD in progress: *Emilie Kaufmann*, “Bayesian Bandits”, since Oct. 2011, advisor: R. Munos, O. Cappé, A. Garivier.

PhD in progress: *Amir Sani*, “Learning under uncertainty”, Oct. 2011, since advisor: R. Munos, A. Lazaric.

PhD in progress: *Marta Soare*, “Pure Exploration in Multi-arm Bandit”, since Oct. 2012, advisor: R. Munos, A. Lazaric.

PhD in progress: *Hong Phuong Dang*, *Bayesian non parametric methods for dictionary learning and inverse problems*, since Oct. 2013, advisor: P. Chainais.

PhD in progress: *Linh Van Nguyen*, *High resolution reconstruction from low resolution measurements of velocity fields in turbulent flows*, since Oct. 2013, advisor: P. Chainais & J.p. Laval (Laboratoire de Mécanique de Lille).

9.2.3. Juries

- member of the recruitement committee for an assistant professor position at Université de Lille 3: R. Gaudel, Ph. Preux

- member of the recruitement committee for an assistant professor position at Université de Lille 1: P. Chainais
- member of the recruitement committee for a professor position at Université de Paris 6: Ph. Preux
- Member of the jury DR2 Inria 2013: R. Munos
- Member of the jury CR2 Rocquencourt Inria 2013: R. Munos

9.3. Popularization

- "Small or big (data), make it sequentially!", J. Mary, Ph. Preux, invited talk at Euratechnologies, March 2013.
- Inria publishes an article about Face Recognition, Michal Valko, http://www.inria.fr/centre/lille/actualites/intel-collabore-avec-inria, March 2013
- Jérémie Mary highlighted on TV and on Inria website: you are how you browse: http://www.inria.fr/en/centre/lille/news/you-are-how-you-browse, Dec. 2013

SIERRA Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Editorial boards

- F. Bach: Journal of Machine Learning Research, Action Editor.
- F. Bach: IEEE Transactions on Pattern Analysis and Machine Intelligence, Associate Editor.
- F. Bach: Information and Inference, Associate Editor.
- F. Bach: SIAM Journal on Imaging Sciences, Associate Editor.
- F. Bach: International Journal of Computer Vision, Associate Editor
- A. d'Aspremont: Optimization Methods and Software
- A. d'Aspremont: SIAM Journal on Optimization

9.1.2. Area chair

- F. Bach: International Conference on Machine Learning, 2013
- F. Bach: Neural Information Processing Systems, 2013

9.1.3. Workshop and conference organization

- S. Arlot, member of the program committee of the Second Workshop on Industry & Practices for Forecasting (WIPFOR), EDF R&D, Clamart. 5-7 June 2013.
- A. d'Aspremont was co-organizer of the workshop on optimization and machine learning at Les Houches in Janurary 2013.
- F. Bach organized a workshop on "Big data: theoretical and practical challenges" - May, 14-15, 2013 - Institut Poincaré (co-organized with Michael Jordan), funded by the Fondation de Sciences Mathématiques de Paris and Inria.
- F. Bach and Michael Jordan coorganized the "Fête Parisienne in Computation, Inference and Optimization: A Young Researchers' Forum". A workshop organized in the framework of the the Schlumberger Chair for mathematical sciences at IHÉS. March 20, 2013. http://www.di.ens.fr/~fbach/ihes.html
- F. Bach also coorganized the "Workshop on "Succinct Data Representations and Applications", Theoretical Foundations of Big data. Simons Institute, Berkeley, September 2013.

9.1.4. Other

- S. Arlot is member of the board for the entrance exam in Ecole Normale Supérieure (mathematics, voie B/L).
- A. d'Aspremont is a member of the scientific committee of the programme Gaspard Monge pour l'optimisation (PGMO).
- A. d'Aspremont is a member of the scientific committee of Thales Alenia Space.

9.1.5. Invited presentations

- S. Arlot, "Kernel change-point detection", Workshop "Non-stationarity in Statistics and Risk Management" (CIRM, Marseille, January, 21-25, 2013).
- S. Arlot, "Sélection de modèles par validation croisée et sélection de paramètres pour la régression ridge et le Lasso", Groupe de Travail Neurospin-Select (Saclay, February, 20, 2013).

- S. Arlot, "Optimal model selection with V-fold cross-validation: how should V be chosen?", Fête Parisienne in Computation, Inference and Optimization: A Young Researchers' Forum (IHES, Bures-sur-Yvette, March, 20, 2013).
- S. Arlot, "Kernel change-point detection", Groupe de Travail de Statistique de Jussieu (Paris, November, 11, 2013).
- S. Arlot, "Analyse du biais de forêts purement aléatoires", Séminaire de l'Equipe de Probabilités et Statistiques (Institut Elie Cartan, Nancy, November, 28, 2013).
- S. Arlot, "Optimal data-driven estimator selection with minimal penalties", keynote lecture, Workshop "Mathematical Statistics with Applications in Mind" (CIRM, Marseille, December, 9-13, 2013).
- Simon Lacoste-Julien, "Harnessing the structure of data for discriminative machine learning":
  - Department of Statistics, University of Oxford, February 2013
  - Intelligent Systems Lab Amsterdam, University of Amsterdam, February 2013
  - Département d'informatique, Université de Sherbrooke, April 2013
  - School of Computer Science, McGill University, April 2013
  - Département d'Informatique, École Normale Supérieure, April 2013
- "Block-Coordinate Frank-Wolfe Optimization for Structured SVMs"
  - ICML, Atlanta, USA, June 2013
  - ICCOPT, Lisbon, Portugal, July 2013
- Simon Lacoste-Julien, "SiGMa: Simple Greedy Matching for Aligning Large Knowledge Bases", KDD, Chicago, August 2013
- Simon Lacoste-Julien, "Frank-Wolfe optimization insights in machine learning"
  - Département d'informatique, Université de Sherbrooke, August 2013
  - SMILE seminar, Paris, November 2013
  - SAIL meeting, UC Berkeley, December 2013
  - CILVR Lab , New York University, December 2013
  - Machine Learning Lab, Columbia University, December 2013
  - Reasoning and Learning Lab, McGill University, December 2013
- Simon Lacoste-Julien, "Making Sense of Big Data", CaFFEET, Stanford University, November
- Michael Jordan, Keynote Speaker, ACM Conference on Knowledge Discovery and Data Mining (SIGKDD), Beijing, China, 8/15/12
- Michael Jordan, Keynote Speaker, 21st Century Computing Conference, Tianjin, China, 10/25/12
- Michael Jordan, Keynote Speaker, ICONIP, Doha, Qatar, 11/12/12
- Michael Jordan, Invited Speaker, SAMSI Workshop on Massive Data Analysis, 9/9/12
- Michael Jordan, Invited Speaker, Méthodes Bayésiennes non Paramétriques pour le Traitement du
- Michael Jordan, Signal et des Images, Telecom ParisTech, Paris, France, 9/8/12
- Michael Jordan, Invited Speaker, Seminaire Parisien de Statistique, Paris, France, 9/17/12
- Michael Jordan, Invited Speaker, Workshop on Random Matrices and their Applications, Paris, France, 10/9/12
- Michael Jordan, Colloquium, Department of Informatique, Ecole Normale Superieure, 10/2/12
- Michael Jordan, Vincent Meyer Colloquium, Israel Institute of Technology, 11/5/12
- Michael Jordan, Invited Speaker, Workshop on Optimization and Statistical Learning, Les Houches, France, 1/8/13
- Michael Jordan, Harry Nyquist Lecture, Department of Electrical Engineering, Yale, 1/23/13

- Michael Jordan, Invited Speaker, Simons Workshop on Big Data, New York, 1/24/13
- Michael Jordan, Keynote Speaker, Workshop on Nonsmooth Optimization in Machine Learning, Liege, Belgium, 3/4/13
- Michael Jordan, Keynote Speaker, StatLearn Workshop, Bordeaux, France, 4/8/13
- Michael Jordan, Lecture Series, Ecole Nationale de la Statistique et de l'Administration, Paris, 5/13
- Michael Jordan, Keynote Speaker, Amazon Machine Learning Conference, Seattle, 4/28/13
- Michael Jordan, Keynote Speaker, Bayesian Nonparametrics Workshop, Amsterdam, 6/10/13
- Michael Jordan, Invited Speaker, Workshop on High-Dimensional Statistics, Moscow, 6/26/13
- Michael Jordan, Distinguished Lecture, Department of Statistics, University of Oxford, 5/7/13
- Michael Jordan, Colloquium, Department of Statistics, University of Cambridge, 5/10/13
- Michael Jordan, Invited Speaker, GdR ISIS Conference, Telecom ParisTech, Paris 5/16/13
- Matthieu Solnon, "Analysis of the oracle risk in multi-task kernel ridge regression", Colloque Statistique Mathématique et Applications, Fréjus, France.
- Mark Schmidt, "Opening up the black box: Faster methods for non-smooth and big-data optimization problems". Invited talk at DeepMind Technologies, London (June 2013).
- Mark Schmidt, "Linearly-Convergent Stochastic-Gradient Methods". Invited talk at Paris 6, Paris (June 2013).
- Mark Schmidt, "Minimizing Finite Sums with the Stochastic Average Gradient Algorithm". "Invited" talk at ICCOPT, Lisbon (July 2013).
- Edouard Grave, Alpage, Inria / Paris 7, May 2013
- Edouard Grave, Criteo, September 2013
- Edouard Grave, Laboratoire de Science Cognitive et Psycholinguistique, EHESS / ENS / CNRS, November 2013
- Alexandre d'Aspremont, "Convex Relaxations for Permutation Problems"
  - Workshop on Succinct Data Representations and Applications, Simons Institute, Berkeley, Sept. 2013.
  - Workshop MAORI, Ecole Polytechnique, Nov. 2013.
- Alexandre d'Aspremont, "Phase Retrieval, MAXCUT and Complex Semidefinite Programming"
  - GdT CEREMADE, Paris Dauphine, April 2013.
  - Journée du GdR ISIS, Telecom, May 2013.
  - Journée du GdR MOA, June 2013.
- Alexandre d'Aspremont,"Approximation Bounds for Sparse PCA"
  - Workshop on Structured families of functions and applications, Oberwolfach, February 2013.
  - PACM seminar, Princeton, USA, February 2013.
  - Séminaire ENSAE, France, April 2013.
  - Big Data workshop, IHP, May 2013.
- Alexandre d'Aspremont, "An Optimal Affine Invariant Smooth Minimization Algorithm", International Workshop on Statistical Learning, Moscow, June 2013.
- F. Bach: Optimization and Statistical Learning, January 6 - 11, 2013. Les Houches, France (Invited presentation)
- F. Bach: international biomedical and astronomical signal processing (BASP) Frontiers workshop, January 2013 (Invited presentation)

- F. Bach: Convex Relaxation Methods for Geometric Problems in Scientific Computing, IPAM, Los Angeles, February 2013 (Invited presentation)
- F. Bach: Nonsmooth optimization in machine learning. March 04, 2013, University of Liège (Invited presentation)
- F. Bach: Microsoft Research Machine Learning Summit: April 22-24, 2013 (Invited presentation)
- F. Bach: International Workshop on Advances in Regularization, Optimization, Kernel Methods and Support Vector Machines: theory and applications, July 8 - 10, 2013, Leuven, Belgium (Invited presentation)
- F. Bach: European Conference on Dana Analysis, Luxembourg, July 2013 (Invited presentation)
- F. Bach: European Meeting of Statisticians (EMS), Budapest, Hungary, 20-25 July 2013 (Invited presentation)
- F. Bach: Fourth Cargese Workshop on Combinatorial Optimization. Institut d'Etudes Scientifiques de Cargèse, Corsica (France). September 30 - October 5, 2013 (Invited presentation)
- F. Bach: 9èmes Journées Nationales de la Recherche en Robotique, Annecy, October 16-18, 2013 (invited presentation)
- F. Bach: Radboud University, Nijmegen, Nederlands, November 29, 2013 (Seminar)
- F. Bach: GlobalSIP: IEEE Global Conference on Signal and Information Processing, December 3-5, 2013 (invited presentation)
- F. Bach: NIPS workshops, december 2013 (2 invited presentations)

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: F. Bach, G. Obozinski, R. Lajugie: "Apprentissage statistique", 35h, Ecole Normale Supérieure, Filière "Math-Info", première année.

Mastère: S. Arlot and F. Bach, "Statistical learning", 24h, Mastère M2, Université Paris-Sud, France.

Mastère: F. Bach, G. Obozibski, Introduction aux modèles graphiques (30h), Master MVA (Ecole Normale Supérieure de Cachan).

Master: S. Arlot and F. Bach, "Statistical learning", 24h, Mastère M2, Université Paris-Sud, France.

Doctorat: S. Arlot, "Classification and statistical machine learning", 1h tutorial for the CEMRACS 2013, Marseille, France.

Licence : A. d'Aspremont, "Optimisation", 36h, L3, ENSAE, France.

Master M2: A. d'Aspremont, "Convex Optimization, Algorithms and Applications", 27h, M2, ENS Cachan, France.

Master M2: A. d'Aspremont, "Optimisation et simulation numérique.", 14h, M2, Paris Sud (Orsay), France.

9.2.2. Supervision

PhD: Matthieu Solnon, "Multi-task statistical learning", UPMC, November 25, 2013. Advisors: S. Arlot and F. Bach.

PhD in progress: Fajwel Fogel, "Optimisation et Apprentissage", September 2012, A. d'Aspremont.

PhD in progress: Bamdev Mishra

PhD in progress: Loic Landrieu

PhD in progress: Sesh Kumar, "Optimization and submodular functions", May 2012, F. Bach.

PhD in progress: Edouard Grave, "A Markovian approach to distributional semantics", F. Bach, G. Obozinski (defended January 20, 2014).

PhD in progress: Anil Nelakanti, "Structured sparsity and language models", F. Bach, G. Obozinski (to be defended February 11, 2014).

PhD in progress: Rémi Lajugie, September 2012, S. Arlot and F. Bach.

9.2.3. Juries

- A. d'Aspremont was a member of the PhD committee of Nicholas Boumal's thesis at the Université Catholique de Louvain.
- F. Bach was a member of the PhD committee of Clément Calauzènes (UPMC), Azadeh Khaleghi (Inria Lille), Yao-Lian Yu (University of Alberta).
- F. Bach was a member of the HDR committee of Ivan Laptev (Inria-ENS), Pawan Kumar (Ecole Centrale).

9.3. Popularization

- A. d'Aspremont, Journée Big Data, ENSAI, Rennes, November 2013.

TAO Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Management positions in scientific organisations

International

- THRaSH, *Theory of Randomized Search Heuristics workshop*: Anne Auger, member of Steering Committee
- ACM SIGEVO (Special Interest Group on Evolutionary Computation), Marc Schoenauer, member of Executive Board since 2000, officer (Secretary) since 2012; member of Business Committe (2011-2013).
- Parallel Problem Solving from Nature: Marc Schoenauer, Member of Steering Committee, (since 1998).
- PASCAL NoE (Pattern Analysis, Statistical modelling, Computational Learning), Michèle Sebag, member of the Steering Committee (PASCAL 2004-2008; PASCAL2, 2009-2013).
- European Machine Learning and Knowledge Discovery from Databases Steering Committee, MichèSebag, member since 2010;
- ECCAI Fellow, Michè Sebag, since 2011;
- Marc Schoenauer, Honorary Adjunct Professor, School of Computer Science, University of Adelaide, Australia (2009-2015).

National

- Michè Sebag, member of the CoNRS; Senior Advisory Board CHIST-ERA; member of the CSFRS (Conseil Supérieur de la Formation et Recherche Stratégique); member of the Senate at Université Paris-Saclay; responsible for the DataSense axis in the DigiCosme Labex;
- EA – Association Evolution Artificielle: Marc Schoenauer, founding president, now member of Advisory Committee. Anne Auger, member of Executive Commitee since 2008.
- SimTools Network (RNSC Network). Philippe Caillou, coordinator since 2011.

Université Paris-Sud

- Jamal Atif, “Directeur d’études” at Computer Science department of IUT d’Orsay ; membre de la CCSU 27 (membre du Bureau) since 2012; membre élu au conseil d’Institut, IUT d’Orsay ; membre du Bureau du département Informatique de l’IUT d’Orsay since 2011.
- Anne Auger, membre du Conseil du Laboratoire de Recherche en Informatique since 2012;
- Philippe Caillou, membre élu du Conseil Scientifique de l’université since 2013, directeur des études à l’IUT de Sceaux since 2009
- Cécile Germain, membre élu du Conseil Scientifique de l’université since 2012, membre du Bureau, chargée de mission à l’Informatique Scientifique.
- Michèle Sebag, membre élu du Conseil du Laboratoire de Recherche en Informatique et membre de la CCSU 27 since 2004.
- Olivier Teytaud, représentant des B pour le comité d’évaluation du LRI.

Inria Saclay

- Anne Auger, membre de la Commission de Suivi Doctoral ; représentante du centre de Saclay à la Commission des Jeunes Chercheurs.
- Marc Schoenauer, Délégué Scientifique (aka VP Research) since 2010.
- Olivier Teytaud, TAO representative at CUMI since 2008.

9.1.2. Organisation of Conferences and Scientific Events

- *BBOB Black-Box Optimization Benchmarking* workshop at the ACM GECCO Genetic and Evolutionary Computation Conference, 2013, Anne Auger and Nikolaus Hansen, co-organizers.
- Dagstuhl Seminar 13271 *Theory of Evolutionary Algorithms*, 2013: Nikolaus Hansen, co-organizer.
- ACM-GECCO, ES-EP track, Anne Auger co-chair.
- Franco-Taiwanese 2013 meeting on AI, E-learning and power systems: https://www.lri.fr/~teytaud/france2013.html

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- L1 (IUT Orsay, Univ. Paris-Sud), Computer Science, Jamal Atif, approx. 192h since 2010.
- L1-3 (Ecole Centrale Paris), Stochastic Optimization, Anne Auger, 20h since 2011.
- L1 (IUT Sceaux, Univ. Paris-Sud), Computer science for Managers, Philippe Caillou, approx. 192h since 2011.
- L2, L3 (Polytech, Univ. Paris-Sud), Computer Architecture, Cécile Germain-Renaud, head of Licence, approx. 120h since 2009.
- L2 Univ Paris-Sud, Vie Artificielle, Michèle Sebag, 10h in 2013.
- L3 (ENS-Cachan), Introduction to Machine Learning, Michèle Sebag, approx. 24h since 2011.
- M1 Computer Science (U. Paris-Sud), Parallelisme, Cécile Germain-Renaud, approx. 50h since 2009.
- M1 Computer Science MPRI, Machine Learning, Michèle Sebag, 25h since 2013.
- Master 2 Recherche (U. Paris-sud), Optimisation, Anne Auger, 12h since 2011.
- Master 2 Recherche (U. Paris-Sud), Machine Learning, Michèle Sebag, 24h since 2011.
- Master 2 Recherche (U. Paris-Sud), Evolutionary Robotics, MichèSebag, 15h since 2013.
- Master 2 Recherche (U. Paris-Sud), Multi-Agents Systems, Philippe Caillou, 27h since 2011.
- Master 2 Recherche Paris-Dauphine, Multi-Agent Based Simulation, Philippe Caillou, 3h since 2011.

9.2.2. Supervision

- HdR: Jamal Atif, *Quelques contributions à l'interprétation d'images, à l'apprentissage statistique et à la cartographie cérébrale*, Université Paris-Sud, 31/10/2013
- PhD: Ludovic Arnold, *Learning Deep Representations: toward a new understanding of the deep learning paradigm*, 25/06/2013, Hélène Pagam-Moisy et Philippe Tarroux [1]
- PhD: Jean-Baptiste Hoock, *Contributions to Simulation-based High-dimensional Sequential Decision Making*, 10/4/2013, Olivier Teytaud [3]
- PhD: Ilya Loshchilov, *Surrogate-Assisted Evolutionary Algorithms*, 6/1/2013 [4]
- PhD: Jean-Marc Montanier, *Environment-driven Distributed Evolutionary Adaptation for Collective Robotic Systems*, 1/3/2013, Nicolas Bredèche [6]

- PhD: Victorin Martin, *Modélisation Probabiliste et Inférence par l'Algorithme Belief Propagation*, 23/5/2013, Cyril Furtlehner and Jean-Marc Lasgouttes [5]
- PhD: Adrien Couétoux, *Monte Carlo Tree Search (MCTS) for Continuous and Stochastic Sequential Decision Making Problems*, 30/9/2013, Olivier Teytaud [2]
- PhD in progress: Ouasssim Ait Elhara, *Stochastic Black-Box Optimization and Benchmarking in Large Dimension*, 1/10/2012, Anne Auger and Nikolaus Hansen
- PhD in progress: Riad Akrour, *Preference Based Reinforcement Learning*, 1/11/2010, Marc Schoenauer and Michèle Sebag
- Sandra Cecilia Astete Morales, *Random Processes for Optimization with Risk*, 1/9/2013, Olivier Teytaud
- PhD in progress: Asma Atamna, *Analysis, Improvement and Benchmarking of Constraint Handling for Stochastic Blackbox Continuous Optimization*, 1/11/2013, Anne Auger and Nikolaus Hansen
- PhD in progress: Jérémy Bensadon, *Information theory for learning and optimization*, 1/10/2012, Yann Ollivier
- PhD in progress: Vincent Berthier, *Unsupervised Learning and Brain Wave Data*, 1/10/2013, Jamal Atif and Michèle Sebag
- PhD in progress: Marie-Liesse Cauwet, *Noisy Optimization for Artificial Intelligence*, 1/9/2013, Olivier Teytaud
- PhD in progress: Alexandre Chotard, *Enhancement and Analysis of Evolution Strategies*, 01.10.2011, Anne Auger and Nikolaus Hansen
- PhD in progress: Jérémie Decock, *Large Scale Constrained Direct Policy Search and Applications to Power Systems*, 3/10/2011, Olivier Teytaud
- PhD in progress: Dawei Feng, *Détection et diagnostic d'anomalies dans les systèmes répartis à grande échelle*, 1/10/2010, Germain-Renaud
- PhD in progress: Nicolas Galichet, *Risk-Aware Reinforcement Learning*, 1/10/2011, Michl`e Sebag
- PhD in progress: Yoann Isaac, *Une approche non-supervisée pour la passage à l'échelle des interfaces cerveau-machine*, 1/10/2011, Jamal Atif and Michl`e Sebag
- PhD in progress: Jialin Liu, *Portfolios of Noisy Optimization Algorithms*, 14/03/2013, Marc Schoenauer and Olivier Teytaud
- PhD in progress: Gaetan Marceau Caron, *Global Multi-objective Optimization in Air Traffic Control*, 14/12/2010, Marc Schoenauer
- PhD in progress: Weija Wang, *Multi-Objective Reinforcement Learning*, 1/10/2010, Michèle Sebag
- PhD in progress: Yifan Yang, *Jamal*, 1/9/2013, Jamal Atif
- PhD in progress: Guohua Zhang, *Curiosity-Driven Navigation in Evolutionary Robotics*, 1/9/2011, Michèle Sebag

9.2.3. Juries

- Marc Schoenauer, reviewer for Pawan Kumar Mudigonda's HDR, Ecole Normale Supérieure de Cachan, Nov. 2013
- Marc Schoenauer, external reviewer for Martin Pilat's PhD, Charles University, Prague, Czech Republic, July 2013 ; external reviewer for Tianjun Liao's PhD, Ecole Polytechnique de l'Université Libre de Bruxelles, Belgian, June 2013; jury member for Una Blenic's PhD at Université d'Angers, France, April 2013; external jury member for José Manuel Garcia-Nieto's PhD, University of Malaga, Spain, January 2013.
- Michèle Sebag, reviewer for Yuan Yang, Telecom ParisTech, June 2013; Emilie Morvant, Université Aix Marseille, June 2013; Floarea Serban, University of Zurich, Switzerland, 2013; Darko Cerepnalkoski, Josef Stefan Institute, Slovenia, Sept. 2013.

- Marc Schoenauer, reviewer for Irish Science Foundation, Project *Multi-core Attribute Grammatical Evolution* at University Limerick, July 2013
- Michèle Sebag, jury de recrutement CR Inria Lille, April 2013; jury de recrutement TelecomParis-Tech, June 2013; jury de promotion TelecomParisTech, Oct. 2013.
- Jamal Atif, Michèle Sebag, Olivier Teytaud, members of juries for MDC and PR hiring at Université Paris-Sud.
- Michèle Sebag, jury AAP Digiteo, March 2013.

9.3. Popularization

- Michèle Sebag is interviewed at the *Palais de la Découverte* about Artificial Intelligence, and the video, by "Société de production Stand Alone Media", is visible on YouTube at http://www.youtube.com/watch?v=uEW32KikKJ8; talk in "Questions de science et enjeux citoyens" (QSEC), opération culturelle de la région Île-de-France (Ulm, May 2013);
- Yann Ollivier co-organized a bi-monthly math seminar for undergrad students on Saturdays at Institut Henri Poincare, with 100+ participants at each session.
- Yann Ollivier takes part in the organization of the European Union Contest for Young Scientists (science fair for high school students from 30+ countries organized by the European Commission).
- Yann Ollivier was part of the scientific steering committee for the booklet *L'explosion des mathématiques* presenting a wide range of applications of mathematics, edited by the SMF and SMAI (planned diffusion: 10,000–20,000 copies).

ALEA Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Editorial Board

P. Del Moral is currently associate editor/editor for the following journals

- Associate editor : Applied Mathematics and Optimization, since 2009.
- Associate editor Revista de Matematica: Teoria y Aplicaciones, since 2009.
- Associate editor : Stochastic Analysis and Applications, since 2001.

P. Legrand is currently associate editor/editor for the following publications

- EA artificial evolution, LNCS volume, Springer (biennal).

9.1.2. Responsibilities

B. Bercu is an assistant director of the Institut de Mathématiques de Bordeaux (IMB). He is a member of the CNU section 26.

B. Bercu is co-responsible of the specialty "Modélisation Statistique et Stochastique" of the Master MIMSE.

P. Legrand is a member of “bureau de l’association Evolution artificielle".

P. Legrand is in charge of the learning management system MOODLE of the UFR sciences et modélisation (University of Bordeaux II).

9.1.3. Organization of Conferences

- International Conference Evolve 2013: P. Legrand, P. Del Moral (with A.A. Tantar, E. Tantar, P. Bouvry, O. Schütze)
- International conference EA 2013: P. Legrand (general chair)

9.1.4. Reviewing

- Journals: Annals of Statistics, IEEE TPAMI, Journal of the Royal Statistical Society B, Computational Statistics and Data Analysis, Statistics and Computing, Journal de la Société Francaise de Statistiques, Signal Processing.
- Conferences: UAI, NIPS, ICML, AISTATS, GECCO, CEC, EA

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence :

- B. Bercu, Mathématiques générales, Analyse et Algèbre SVE, 36h, L1, University of Bordeaux, France
- P. Legrand, Espaces Euclidiens, 54h, L2, University of Bordeaux, France
- P. Legrand, Traitement du Signal, 18h, L3, University of Bordeaux, France
- P. Legrand, Informatique pour les mathématiques, 36h, L1, University of Bordeaux, France
- P. Legrand, Algèbre, 72h, L1, University of Bordeaux, France

- P. Legrand, Technologies de l'information, de la communication pour l'éducation, 42h, University of Bordeaux, France
- A. Richou, Probabilités et statistiques, 32h, L3, University of Bordeaux, France
- A. Richou, Probabilités et statistiques, 32h, L1, University of Bordeaux, France

Master :

- A. Richou, Probabilité, 32h, M1, University of Bordeaux, France
- B. Bercu, Séries chronologiques, 48h, M2, University of Bordeaux, France
- B. Bercu, Processus aléatoires à temps discret, 30h, M1, University of Bordeaux, France
- B. Bercu, Probabilités, 30h, L3, University of Bordeaux, France
- F. Caron, Bayesian Methods, 33h, M2, University Bordeaux II, France
- F. Caron, Statistical Methods in Robotics, 25h, M2, IPB, France
- F. Caron, Advanced estimation tools in signal and image processing, 30h, M2, University Bordeaux I, France
- P. Legrand, Traitement du signal, 15h, M2, IPB, France

Other:

- P. Del Moral, Professeur chargé de cours (1/3 temps), Monte Carlo methods and Stochastic models, and introduction to probability calculus, Ecole Polytechnique, France.
- P. Del Moral, Mean field particle simulation for Monte Carlo integration, 10h, Lectures INLN-CNRS of the University of Nice Sophia Antipolis.
- P. Legrand, Course on Matlab, 42H

9.2.2. Supervision

PhD:

- François Giraud, Méthodes particulaires adaptatives pour l'estimation non linéaire, may 2013, P. Del Moral
- Vassili Blandin, Processus autorégressifs à bifurcation, june 2013, B. Bercu
- Frédéric Proia, Processus autorégressifs stables, nov. 2013, B. Bercu, P. Del Moral
- Philippe Fraysse, Algorithmes stochastiques pour la régression semi-paramétrique, july 2013, B. Bercu
- Laurent Vézard, Réduction de dimension en apprentissage supervisé. Application à l'étude de l'activité cérébrale, dec 2013, M. Chavent, F. Faita, P. Legrand

PhD in progress:

- Paul Lemaitre, Analyse de sensibilité et analyse de risques, Sept. 2010, P. Del Moral
- Nicolas Antunès, Etude du modèle GARP pour la prédiction de niches écologiques, Sept. 2011, P. Del Moral and P. Legrand
- Antoine Campi, Filtrage particulaire de fluides turbulents, 2012, P. Del Moral
- Christelle Vergé, Méthodes particulaires pour la propagation d'incertitudes dans des codes numériques, 2012, P. Del Moral
- Paula Craciun, Méthodes de filtrage multi-objets en analyse d'image, 2012, P. Del Moral
- Emigdio Zeta Flores, Genetic Programming and EEG.
- Marie Du Roy de Chaumaray, Grandes déviations pour des processus de diffusion, 2013, B. Bercu, A. Richou

9.2.3. Juries

- Raphael Coudret, P. Legrand
- Zoe Siegrist, P. Legrand
- Xiequan Fan, B. Bercu
- Francois Portier, B. Bercu

ASPI Project-Team

8. Dissemination

8.1. Scientific animation

François Le Gland is a member of the organizing committee of the *46èmes Journées de Statistique*, to be held in Rennes in June 2014.

Florent Malrieu has coordinated the spring semester of the Labex Henri Lebesgue on perspectives in analysis and probability, from April to September 2013, and he has co–organized the workshop on piecewise deterministic Markov processes in May 2013. He is also the coordinator of the ANR project PIECE (programme Jeunes Chercheuses et Jeunes Chercheurs), see 7.1.1 . He is the coordinator, with Tony Lelièvre (CERMICS, ENPC, Marne–la–Vallée and EPI MICMAC, Inria Paris—Rocquencourt), of the SMAI meeting series *EDP / Probabilités*. He his a member of the scientific and organizing committee of the conference in honour of the 60th birthday of Dominique Bakry, to be held in Toulouse in December 2014.

Valérie Monbet has co–organized with Pierre Ailliot (université de Bretagne occidentale, Brest) two workshops *Space–Time Data Analysis in Oceanography and Meteorology I* held in Berder in May 2013 and *Space–Time Data Analysis in Oceanography and Meteorology II* held in Landéda in November 2013.

François Le Gland is a member of the "conseil d'UFR" of the department of mathematics of université de Rennes 1.

Valérie Monbet is a member of the "comité de direction" and of the "conseil" of IRMAR (institut de recherche mathématiques de Rennes, UMR 6625). She is also a member of the "conseil scientifique" of the department of mathematics of université de Rennes 1.

8.2. Teaching, supervision, thesis committees

8.2.1. Teaching

Arnaud Guyader is a member of the committee of "oraux blancs d'agrégation de mathématiques" for ENS Cachan at Ker Lann.

François Le Gland gives a course on Kalman filtering and hidden Markov models, at université de Rennes 1, within the SISEA (signal, image, systèmes embarqués, automatique, école doctorale MATISSE) track of the master in electronical engineering and telecommunications, a 3rd year course on Bayesian filtering and particle approximation, at ENSTA (école nationale supérieure de techniques avancées), Paris, within the systems and control module, a 3rd year course on linear and nonlinear filtering, at ENSAI (école nationale de la statistique et de l'analyse de l'information), Ker Lann, within the statistical engineering track, and a 3rd year course on hidden Markov models, at Télécom Bretagne, Brest.

Florent Malrieu has given a doctoral course on piecewise deterministic Markov processes (PDMP) proposed as a complementary scientific training to PhD students of école doctorale MATISSE. He has also contributed to a pedagogical article in the *Revue de Mathématiques Spéciales*.

Valérie Monbet gives several courses on data analysis, on time series, and on mathematical statistics, all at université de Rennes 1 within the master on statistics and econometrics. She is also the director of the master on statistics and econometry at université de Rennes 1.

8.2.2. Supervision

François Le Gland has been supervising one PhD student

- Paul Bui Quang, title: *Particle approximation and the Laplace method for Bayesian filtering*, université de Rennes 1, defense in July 2013, funding: ONERA grant, co–direction: Christian Musso (ONERA, Palaiseau).

and he is currently supervising two PhD students

- Alexandre Lepoutre, provisional title: *Detection issues in track–before–detect*, université de Rennes 1, started in October 2010, expected defense in 2014, funding: ONERA grant, co–direction: Olivier Rabaste (ONERA, Palaiseau).
- Damien–Barthélémy Jacquemart, provisional title: *Rare event methods for the estimation of collision risk*, université de Rennes 1, started in October 2011, expected defense in 2014, funding: DGA / ONERA grant, co–direction: Jérôme Morio (ONERA, Palaiseau).

Florent Malrieu is currently supervising one PhD student

- Florent Bouguet, provisional title: *Coupling methods for PDMP*, université de Rennes 1, started in October 2013, co–direction : Jean–Christophe Breton (université de Rennes 1),

Valérie Monbet is currently supervising one PhD student

- Julie Bessac, provisional title: *Space time modelling of wind fields*, université de Rennes 1, started in October 2011, co–direction : Pierre Ailliot (université de Bretagne Occidentale),

and she is a member of the PhD thesis advisory committee of

- Jérôme Weiss, provisional title: *Modelling of extreme storm surge series*, funding : CIFRE grant with EDF R&D, direction : Michel Benoît (Laboratoire d'Hydraulique Saint-Venant).

8.2.3. Thesis committees

François Le Gland has been a member of the committees for the PhD thesis of Mathieu Chouchane (université de la Méditerrannée, advisors: Mustapha Ouladsine and Sébastien Paris) and for the habilitation thesis of Jérôme Morio (université de Rennes 1) and he as been a reviewer for the PhD thesis of Mélanie Bocquel (University of Twente, advisors: Arunabha Bagchi and Hans Driessen).

Florent Malrieu has been a member of the committees for the PhD theses of Bertrand Cloez (université Paris–Est Marne–la–Vallée, advisor: Djalil Chafaï) and Alexandre Genadot (université Pierre et Marie Curie, advisor: Michèle Thieullen) and he as been a reviewer for the PhD thesis of David Godinho Pereira (université Paris–Est Créteil, advisor: Nicolas Fournier).

Valérie Monbet has been a member of the committees for the PhD theses of Paul Bui Quang (université de Rennes 1, advisors: François Le Gland and Christian Musso) and Sébastien Béyou (université de Rennes 1, advisor: Étienne Mémin).

8.3. Participation in workshops, seminars, lectures, etc.

In addition to presentations with a publication in the proceedings, which are listed at the end of the document in the bibliography, members of ASPI have also given the following presentations.

Arnaud Guyader has been invited to give a talk on simulation and estimation of rare events and extreme quantiles, at the ESSEC working group on *Risk*, in October 2013 and at the université Pierre et Marie Curie working group on *Extreme Value Theory*, in December 2013. He has also given a talk on estimation of mutual nearest neighbors, at the *45èmes Journées de Statistique*, held in Toulouse in May 2013.

François Le Gland has been invited to give a talk on the ensemble Kalman filter, at the department of applied mathematics of the University of Twente, in October 2013.

Valérie Monbet has given a talk on dynamical partitioning of directional ocean wave spectra, at the workshop on *Space–Time Data Analysis in Oceanography and Meteorology I*, held in Berder in May 2013 and a talk on stochastic weather generators with non–homogeneous hidden Markov switching, at the workshop on *Space–Time Data Analysis in Oceanography and Meteorology II*, held in Landéda in November 2013. She has given a talk on stochastic weather generators, at the MODNAT workshop on *Modelling of Natural Events*, held at ONERA Palaiseau in October 2013, and at the *5ème École Interdisciplinaire de Rennes sur les Systèmes Complexes — Stochasticité dans les Systèmes Complexes : Désordre, Hasard, Incertitudes*, held in October 2013, and a talk on stochastic weather generators and switching auto–regressive models, and application to temperature series, at the PEPER workshop on *Extreme Value Theory and Risk Assessment in Climate Sciences*, held in Aussois in December 2013.

CQFD Project-Team

9. Dissemination

9.1. Scientific Animation

The team CQFD organized a *journée SMAI maths-industrie* on dependability and safety in Bordeaux in April 2013.

The CQFD team organized the workshop Statlearn'13 on the challenging problems in Statistical Learning in Bordeaux on April 8-9, 2013.

F. Dufour is associate editor of the journal: SIAM Journal of Control and Optimization since 2009.

J. Saracco is an associate editor of the journal Case Studies in Business, Industry and Government Statistics (CSBIGS) since 2006.

All the member of the team are regular reviewers for the most important journals in applied probability and statistics.

F. Dufour is member of the scientific council of the engineering school ENSEIRB-MATMECA.

F. Dufour is member of the scientific council of the Institute of Mathematics of Bordeaux.

F. Dufour was vice-president of the Inria Project Committee.

B. de Saporta is president of the "Congress and Colloquium" commission of the Inria Bordeaux Sud-Ouest.

B. de Saporta is in charge of the seminar of the team *Statistics and Probability* of the Institute of Mathematics of Bordeaux (IMB).

B. de Saporta is a member of the council of the Institute of Mathematics of Bordeaux (IMB).

A. Gégout-Petit was elected member of the CEVU of University Bordeaux Segalen

A. Gégout-Petit was member of the Mathematical Institute of Bordeaux council

A. Gégout-Petit was general secretary and elected member of the council of the Société Française de Statistique.

J. Saracco is member of the commission Inria "Jeunes Chercheurs".

J. Saracco is member of the council of ENSC

J. Saracco is the leader of the team "Statistics and Probability" of the Institute of Mathematics of Bordeaux (IMB).

B de Saporta, J. Saracco and M. Chavent are elected members of the CNU 26.

J. Saracco is the head of the engineering department of ENSC.

F. Dufour is the head of the second year cursus engineering school MATMECA.

M. Chavent is co-director of the cursus *Modélisation Statistique et Sochastique* of the master MIMSE *Ingénierie Mathématique, Statistique et Economique* of the University of Bordeaux.

H. Zhang is director of the cursus *Ingénierie Mathématique* of the Licence de Mathématiques of the University of Bordeaux.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : F. Dufour, Probabilités et statistiques, 16 heures, niveau L3, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France.

Licence : F. Dufour, Probabilités 10,6 heures, niveau L3, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France.

Master : F. Dufour, Méthodes numériques pour la fiabilité, 24 heures, niveau M1, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France.

Master : F. Dufour, Probabilités, 20 heures, niveau M1, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France.

Licence : A. Gégout-Petit, Etudes de cas en statistique, 28h, L3 MASS (applied mathematics), Université Bordeaux Segalen, France.

Licence : A. Gégout-Petit, Econométrie et séries chronologiques, 24h, L3 MASS (applied mathematics), Université Bordeaux Segalen, France.

Master : A. Gégout-Petit, Analyse de variance, 36h, M1, université Bordeaux, France.

Licence : M. Chavent, Statistique descriptive, 36 ETD ,L1, university Bordeaux Segalen, France

Master : M. Chavent, Analyse des données 2, 25 ETD, niveau M2, university Bordeaux Segalen, France

Master : M. Chavent, Scoring, 21 ETD, niveau M2, university Montesquieu Bordeaux 4, France

Licence: J. Saracco, Descriptive statistics, 10.5h, L3, First year of ENSC, France

Licence: J. Saracco, Mathematical statistics, 20h, L3, First year of ENSC, France

Licence:J. Saracco, Data analysis (multidimensional statistics), 20h, L3, First year of ENSC, France

Licence: J. Saracco, Mathematics (complement of linear algebra), 20h, L3, First year of ENSC, France

Master: J. Saracco, Statistical modeling, 20h, M1, Second year of ENSC, France

Master: J. Saracco, training project, 20h, M1, Second year of ENSC, France

Master : B. de Saporta, Processus aléatoires en finance 30h ETD, M1, université de Bordeaux, France

Master : B. de Saporta, Finance en temps continu, 10h ETD, M2, université de Bordeaux, France

Master : B. de Saporta, Finance en temps discret, 29h ETD, M2, université de Bordeaux, France

Master : B. de Saporta, Processus de Markov, 25h ETD, M2, université de Bordeaux, France

9.2.2. Supervision

HdR : B. de Saporta, Contribution à l'estimation et au contrôle de processus stochastiques, Univ. Bordeaux I, July 2013

PhD in progress : Christophe Nivot, Optimisation de la chaîne de montage du futur lanceur européen, sept. 2013, B. de Saporta and F. Dufour

PhD completed : Azaïs Romain, Inférence des processus Markoviens déterministe par morceaux , juillet 2013, supervised by François Dufour and Anne Gégout-Petit

PhD completed : Camille Baysse, Analyse et optimisation de la fiabilité d'un équipement opto-électronique équipé de HUMS, novembre 2013, supervised by Anne Gégout-Petit and Jérôme Saracco

PhD completed : Laurent Vezard, Classification de signaux EEG et synthèse de paramètres musicaux par algorithme évolutionnaire, december 2013, supervised by M. Chavent and P. Legrand.

PhD completed : Raphaël Coudret, Modélisation statistique de données acquises à haute fréquence : application en environnement et génétique, september 2013, supervised by J. Saracco and G.Durrieu.

PhD in progress : Karim Claudio, Un outil d'aide à la maîtrise des pertes dans les réseaux d'eau potable : mise en place d'un modèle de fuite multi-état en secteur hydraulique instrumenté , supervised by J. Saracco and V. Couallier.

PhD in progress : Amaury Labenne, Approche Statistique du diagnostic territorial par la notion de qualité de vie, supervised by M. Chavent, J. Saracco and V. Kuentz.

PhD in progress : Adrien Todeschini, Elaboration et validation d'un système de recommandation bayésien, supervised by F. Caron and M. Chavent.

PhD in progress : Isabelle Charlier, Optimal quantization applied to conditional quantile estimation, University of Bordeaux 1 and Université Libre de Bruxelle, supervised by J. Saracco and D. Paindaveine.

9.2.3. Juries

B. de Saporta was a member of the PhD jury of Camille Baysse. B. de Saporta is an elected member of CNU 26.

9.3. Popularization

B. de Saporta took part in a speed mediation event at Inria Bordeaux Sud Ouest (dec. 2013).

MATHRISK Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Collective responsabilities

- A. Alfonsi: Co-organizer of the working group seminar of MathRisk “Méthodes stochastiques et finance”.
  In charge of the Master “Finance and Application” at the Ecole des Ponts.
- B. Jourdain:
  - Head of the doctoral school MSTIC, University Paris-Est,
  - Associate Editor of ESAIM:Proc,
  - Member of editorial board of American Journal of Algorithms and Computing.
- B. Jourdain and A. Sulem: Guest Editors of a special issue on systemic risk, to appear in *Statistics and Risk modeling*.
- C. Labart: reviewer for : Mathematical Reviews and Referee for Stochastic Processes and Their Applications, Mathematical Finance and Mathematics of computation, Journal of Computational Finance, SIAM Numerical Analysis and Annals of Applied Probability.
- D. Lamberton: associate editor of *Mathematical Finance* and co-editor of *ESAIM Probability and Statistics*.
  Research Vice President of Université Paris-Est Marne-la-Vallée.
- B. Lapeyre: Head of the doctoral department of Université Paris-Est.
- A. Sulem:

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

  - Participation to selection committees:
    - Full Professor of Mathematics, Ecole Centrale de Paris, September 2013.
    - Researcher, Inria Sophia-Antipolis, 2013.

9.1.2. Invitations and participations in conferences

- A. Alfonsi :
  - "Optimal execution and price manipulations", ANR Liquirisk Workshop, Paris Dauphine.
  - "Pathwise optimal transport bounds between a one-dimensional diffusion and its Euler scheme", (June at Mannheim, October at Evry).
- V. Bally
  - Visits to Ritsumeikan University (Japan), Collaboration with A. Kohatsu Higa, September 2013, and to Tor Vergata University, Roma (May-June and July 2013).
  - 29-31 August 2013. Conference for the 150 aniversary of the Mathematical Faculty of Bucharest. Romania
- R. Dumitrescu:

  Poster Presentation, SMAI Congress, Seignosse (Landes), 27-31 May 2013.

- C. Fontana:
  - 7th Bachelier Colloquium on Mathematical Finance and Stochastic Calculus, Métabief, 13-20 January 2013 (speaker);
  - visits Politecnico di Milano, collaboration with Emilio Barucci, 27-29 January, 27 March - 1 April, 13-14 May.
  - Seminar: Université Marne La Vallée, Laboratoire d'Analyse et de Mathématiques Appliquées, 8 February 2013;
  - Current Topics in Mathematical Finance, Wien, 18-19 April 2013 (participant);
  - Seminar: Politecnico di Milano, Department of Mathematics, 14 May 2013;
  - 30th International French Finance Association Conference, Lyon, 28-31 May 2013 (speaker & discutant);
  - 6th General AmaMeF and Banach Center Conference, Warsaw, 10-15 June 2013 (speaker);
  - Workshop on Stochastic Portfolio, Arbitrage Theory, Role of Information and Credit Risk, Beijing, 24-28 June 2013 (invited speaker);
  - Seminar: Ludwig-Maximilians-Universität Munich, 8 July 2013, and collaboration with Alessandro Gnoatto et Christa Cuchiero, 7-10 July ? 37th Meeting of the Italian Association for Mathematics Applied to Economics and Social Sciences (AMASES), 5-7 September 2013 (speaker);
  - Workshop on Mathematics in Finance, Zurich, 18 October 2013 (participant);
  - Seminar: ENSTA Paris, 28 October 2013.
- B. Jourdain:
  - colloquium Bezout, 31 January 2013, Discretization of stochastic differential equations.
  - BigMC Seminar, 21 February 2013 , Optimal sclaing of the transient phase of Metropolis-Hastings algorithms
  - Ergonum workshop , CIRM, 25-28 February 2013 : Optimal scaling of the transient phase of Metropolis-Hastings algorithms
  - Seminar of the chair "Financial risks", 22 April 2013 : American Put in an exponential Levy model with discrete dividends
  - German-Polish joint Conference on Probability and Mathematical Statistics, Torun, 6-9 juin 2013, Optimal scaling of the transient phase of Metropolis-Hastings algorithms
  - ANR Stab meeting, Paris Dauphine, 11-12 June 2013, Optimal transport bounds between a one-dimensional diffusion and its Euler scheme
  - LIASFMA Summer school : new developments in stochastic analysis : probability and PDE, interactions, Beijing, 8-12 july 2013 : Optimal scaling of the transient phase of Metropolis-Hastings algorithms
  - Scicade 2013, 19 September 2013, Optimal scaling of the transient phase of Metropolis-Hastings algorithms, in an invited session on MCMC algorithms
  - Seminar Stochastic Analysis, Oxford MAN Institute, 14 October 2013, Optimal transport bounds between a one-dimensional diffusion and its Euler scheme
  - Mathematics seminar of Marne-la-Vallée, 3 December 2013, Optimal scaling of the transient phase of Metropolis-Hastings algorithms
  - ANR Stab meeting, 16-17 December 2013, 4h lecture on "Discretization of stochastic differential equations : strong error, weak error and optimal transport"
- C. Labart:
  - Colloquium on Financial Mathematics and Numerical Probability, Beijing.

  - Local organizer of the international conference IMACS 2013, which took place in Annecy.
- J. Lelong:
  - Conference "Les Nouveaux Outils du Développement Durable", Paris, October 2013.
  - 9th IMACS Seminar on Monte Carlo, Annecy, July 2013.
  - Workshop on Financial Mathematics and Numerical Probability, Beijing, June 2013.
- A. Sulem:
  - Plenary talk at the IFIP TC 7 Conference on System Modelling and Optimization, Klagenfurt, Austria. September 2013
    http://ifip2013.uni-klu.ac.at/
  - Invited talk, "Stochastic Analysis and Mathematical Finance", September 2013, Bergen
  - "PDE and Mathematical Finance V", Stockholm, June 10-14, 2013.
    http://www.math.kth.se/pdefinance/2013/Welcome.html
  - Stochastics and Real World Models 2013, July 2013, Bielefeld, Germany.
    http://www.igk.math.uni-bielefeld.de/workshop2013
  - Nomura seminar, Mathematical Institute, University of Oxford , March 8 2013,
    http://www.maths.ox.ac.uk/events/seminars/upcoming/P10Y/4/1664
  - Stochastic Analysis and Applications Conference, Växjö, Sweden, June 2013,
  - Seminar of Probability, Rennes University, June 2013
  - Talk at *Horizon Maths 2013*, Fondation Sciences Mathématiques de Paris, Paris, December 16-17 2013.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- A. Alfonsi:
  - Modéliser, Programmer et Simuler, second year course at the Ecole des Ponts, France.
  - Calibration, Volatilité Locale et Stochastique, third-year course at ENSTA (Master with Paris I).
  - Traitement des données de marché : aspects statistiques et calibration, lecture for the Master at UPEMLV.
  - Mesures de risque, Master course of UPEMLV and Paris VI.
- V. Bally:
  - Mini course (6 hours) for Phd and Post Doc students, Ritzumeikan University, Japan, September 2013.
  - "The Malliavin calculus and applications in finance", 30 hours, Master 2 Finance University Marne la Vallée,
  - "Risk methods in acuarial science", 36 hours, Master IMIS, University Marne la Vallée.
- R. Dumitrescu:
  - Evaluation d'actifs financiers par absence d'opportunité d'arbitrage (3rd year ENSAE, M2 MASEF Dauphine and M2 Modélisation aléatoire Paris Diderot).
  - Calcul stochastique appliqué à la finance (2nd year ENSAE).
  - Algèbre linéaire (L2, Paris Dauphine).

- B. Jourdain:
  - Course "Probability theory and statistics", 1st year ENPC.
  - Course "Introduction to probability theory", 1st year, Ecole Polytechnique.
  - Course "Stochastic numerical methods", 3rd year, Ecole Polytechnique.
  - Projects in finance and numerical methods, 3rd year, Ecole Polytechnique.
- B. Jourdain, B. Lapeyre:
  - Course "Monte-Carlo methods in finance", 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
- D. Lamberton: Master course “Calcul stochastique et applications en finance", Université Paris-Est Marne-la-Vallée.
- B. Lapeyre:
  - Monte-Carlo methods in finance, 3rd year ENPC and Master Recherche Mathématiques et Application, University Paris-Est Marne-la-Vallée
  - "Finance : mathematical and numerical aspects", 2nd year ENPC, professor, 15 hours/year
- J. Lelong:
  - Oct. 2012 – May 2013 : supervisor of 2 third year students from Ensimag to work on an adaptive Monte Carlo method for jump diffusion models. See the research report “Importance sampling for jump processes and applications to finance” I am co-responsible for the *Financial Engineering* major at Ensimag.
  - Lectures on “Parallel programming in financial mathematics” at Ensimag (third year course)
  - Lectures on “Monte-Carlo methods in financial engineering” at Ensimag (third year course)
  - Lectures on “Numerical methods for pricing American options” at Ensimag (third year course)
  - Lectures on “Martingales and stochastic approximation” at Ensimag (third year course)
  - Lectures on “Interest rate and Foreign exchange derivatives” at Ensimag (third year course)
  - Lectures on “Numerical programming in C++” at Ensimag (second year course)
  - Supervision of third year students for a long term project on “Pricing structured products”
  - Supervision of second year students for long term projects on numerical finance.
- A. Sulem:
  - Master of Mathematics, "Numerical methods in Finance", Luxembourg University, 20 hours
  - Master course, Université Paris IX-Dauphine, Department "Mathématiques et Informatique de la Décision et des Organisations" (MIDO), Master MASEF, 21 hours “Numerical Methods for PDEs in Finance"

9.2.2. Supervision

PhD theses defended in 2013:

- José Infante Acevedo, Méthodes et modèles numériques appliquées aux risques du marché et à l’évaluation financière, Université Paris-Est, December 9 2013, Adviser: A. Alfonsi and T. Lelièvre.

-Ayech Bouselmi, "Processus de Lévy et options américaines", University of Marne la Vallée, December 11 2013, Adviser : D. Lamberton.

- Maxence Jeunesse, "Etude de deux problèmes de contrôle stochastique : Put Americain avec dividendes discrets et principe de programmation dynamique avec contraintes en probabilités", Université Paris-Est, 29 january 2013, Adviser: B. Jourdain.

PhD in progress:

- Clément Rey: ENPC and UPMLV. Weak error analysis of discretization schemes for some financial processes. Advisers: A. Alfonsi and V. Bally (from Oct. 2012).

- Pierre Blanc: Modeling the price impact of limit and market orders. Adviser: A. Alfonsi. (from Nov. 2012).

- Anis Al Gerbi : Discretization of stochastic differential equations and systemic risk modeling. Adviser B. Jourdain (from Sept. 2013).

- J. Reygner, Longtime behaviour of particle systems : applications in physics, finance and PDEs, Advisers: B. Jourdain and L. Zambotti (from Sept. 2011).

- A. Kritoglou, Stochastic modelling for ferromagnetic materials, Since sept. 2013 : Advisers: J. Lelong and S. Labbé (from Sept. 2013).

- R. Dumitrescu, Reflected BSDEs with jumps, 2nd year : Advisers: A. Sulem and R. Elie (from Sept. 2012).

- Victor Rabiet, On a class of jump type stochastic equations, Adviser : V. Bally (from Sept. 2009).

- Paolo Pigato, Lawer bounds for the density of the solution of SDE's under the weak Hörmander condition, and applications in finance, Advisers: V. Bally and A. Dai Pra.

- Ernesto Palidda (Since September 2010), Crédit Agricole, Operation Research group, Adviser: B. Lapeyre (from Sept. 2010).

- Marouen Iben Taarit (from September 2013), Cifre industrial contract Natixis/ENPC, Adviser: B. Lapeyre.

- Jyda Mint Moustapha (Since November 2012), IFSTTAR, Adisers: D. Daucher and B. Jourdain.

9.2.3. Participation to PhD committees

- A. Alfonsi
  - Florian Klöck, "Regularity of Market Impact Models, Time-Dependent Impact, Dark Pools and Multivariate Transient Impact", University of Mannheim, June 18 2013.
  - Timothée Papin,"Pricing of corporate loan: Credit risk and Liquidity cost", Université Paris-Dauphine, September 25 2013
- A. Sulem:
  - Myriana Grigorova, *Quelques liens entre la théorie de l'intégration non-additive et les domaines de la finance et de l'assurance*, (President of the committee), Laboratoire de Probabilités et Modèles Aléatoires (LPMA), Université Paris VII, October 18 2013
  - Fabien Guilbaud, *Contrôle optimal dans des carnets d'ordres limites*, (President of the committee), LPMA, Université Paris VII, 1 February 2013

REGULARITY Project-Team

9. Dissemination

9.1. Scientific Animation

Benjamin Arras attented the *Journées de Probabilités* at Orléans from 17th june 2013 to 21rst june 2013. During a talk, he presented his research regarding wavelets expansion and Hölderian regularity of stochastic processes belonging to Wiener chaoses.
Benjamin Arras attented classes during the "Ecole de probabilités de Saint-Flour" at Saint-Flour from 10th july 2013 to 21rst july 2013.
Paul Balança attented the *Journées de Probabilités* at Orléans from 17th june 2013 to 21rst june 2013: Presentation on 2-microlocal analysis and Lévy processes. Paul Balança attented the *7th international conference on Lévy processes* at Wroclaw: Poster on 2-microlocal analysis and Lévy processes.
Alexandre Richard attented the *Journées de Probabilités* at Orléans from 17th june 2013 to 21rst june 2013: Presentation on fractional Brownian fields in abstract Wiener spaces.
Alexandre Richard attented classes during the "Ecole de probabilités de Saint-Flour" at Saint-Flour from 10th july 2013 to 21rst july 2013.
Xiequan Fan is a reviewer for Mathematical Reviews (AMS).
Jacques Lévy Véhel is associate editor of the journal *Fractals*.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Licence: Erick Herbin, Probability course at Ecole Centrale Paris (20h).
- Master: Erick Herbin, Advanced Probability course at Ecole Centrale Paris (30h).
- Master: Erick Herbin and Jacques Lévy Véhel, Brownian Motion and Stochastic Calculus course at Ecole Centrale Paris (30h).
- Master: Jacques Lévy Véhel teaches a course on Wavelets and Fractals at Ecole Centrale Nantes (8h).
- Licence: Benjamin Arras, Analysis, Probability and PDE, 3x10 hours, L3, Ecole Centrale Paris.
- Licence: Paul Balança, Analysis, Probability, 2x10 hours, L3, Ecole Centrale Paris.
- Master: Benjamin Arras, Brownian motion and Stochastic Calculus, 20 hours, M2, Ecole Centrale Paris.
- Master: Paul Balança, Advanced Probability, 18 hours, M1, Ecole Centrale Paris.

9.2.2. Supervision

PhD in progress : Benjamin Arras, Self-similar processes in higher order chaoses, started in September 2011, supervised by J. Lévy Véhel.

PhD in progress : Paul Balança, Stochastic 2-microlocal analysis of SDEs, started in October 2010, supervised by Erick Herbin.

PhD in progress : Alexandre Richard, Regularity of set-indexed processes and construction of a set-indexed process with varying local regularity , started in October 2010, supervised by Erick Herbin and E. Merzbach.

TOSCA Project-Team

9. Dissemination

9.1. Scientific Animation

- M. Bossy is a member of the Scientific Committee of the *École Doctorale "Sciences Fondamentales et Appliquées"* of the Université de Nice - Sophia Antipolis.
- M. Bossy is a member of the *Collectif Andromede* of the PACA Region council.
- M. Bossy is a elected member of the Inria Evaluation Board.
- M. Bossy served as an Associate Editor of *Annals of Applied Probability*.
- M. Bossy participated to the junior position recruitment committee at the University of Nice - Sophia Antipolis.
- M. Bossy has been a member of the Committee for junior permanent research positions of Inria Nancy - Grand Est.
- N. Champagnat is a member of the *Commission de Développement Technologique* of Inria Nancy - Grand Est, a subsitute member of the *Comité de Centre* of Inria Nancy - Grand Est since October and a member of the *Commission bibliothèque* of IECL.
- N. Champagnat organized the Team Working Group on Probability and Statistics of IECL until January.
- N. Champagnat serves as an Associate Editor of *Stochastic Models* since October.
- N. Champagnat, with T. Lelièvre and A. Nouy, was member of the organizing committee of the *Centre d'Eté de Mathématiques et de Recherche Avancée en Calcul Scientifique* (CEMRACS 2013) held in CIRM, Luminy, from July 22nd until August 30th.
- N. Champagnat, with T. Lelièvre and A. Nouy, was member of the organizing committee of the *Special Event "Mathématiques pour la planète Terre* held at CIRM, Luminy, on the 23rd July.
- N. Champagnat organized with D. Ritchie a *Journée Scientifique de la Fédération Charles Hermite* on *Ancestral Inference and Evolutionary Relationships in Biology* at Inria Nancy - Grand Est in September.
- N. Champagnat organized a mini-symposium on *Quasi-stationary distributions and Q-processes* at the *Congrès SMAI 2013* in Seignosse in May.
- M. Deaconu is member of *Comité des Projets* and *Bureau du Comité des Projets* at Inria Nancy - Grand Est.
- M. Deaconu organized with S. Herrmann the Workshop *Hitting times and exit problems for stochastic models* held in Dijon, 27-29 November.
- M. Deaconu organized with E. Vincent (Inria, Centre de recherche Nancy-Grand Est) a *Journée Scientifique de la Fédération Charles Hermite* on *Uncertainties: approaches and challenges* at IECL in December.
- M. Deaconu and A. Lejay were members of the organizing committee of the *Semaine d'Étude Maths-Entreprises Nancy*, 11-15 February 2013.
- A. Lejay is member of a editorial board of the collection *Séminaire de Probabilités*.
- A. Lejay is member of the scientific committee of the *Journées de Probabilités*.
- A. Lejay is General Secretary of Société des Mathématiques Appliquées et Industrielles (SMAI).
- D. Talay continued to serve as the Head of Science and Chair of the Project-Teams Committee of Inria Sophia Antipolis - Méditerrannée.

- D. Talay, jointly with F. Delarue (Université Nice - Sophia Antipolis) organized the workshop ERGONUM at CIRM (Marseille) in February.
- D. Talay served as an Associate Editor of: *Stochastic Processes and their Applications*, *ESAIM Probability and Statistics*, *Stochastics and Dynamics*, *Journal of Scientific Computing*, *Monte Carlo Methods and Applications*, *Oxford IMA Journal of Numerical Analysis*, *Communications in Applied Mathematics and Computational Science*, *Éditions de l'École Polytechnique*. He also served as the Co-editor in chief of *MathematicS in Action*.
- D. Talay is serving as a member of the Advisory Board of the Centro de Mathematica da Universidade do Porto (Portugal).
- D. Talay participated to Professor position recruitment committees at Paris 6 University and Nice Sophia Antipolis University.
- D. Talay chaired the AERES Evaluation Committee of the Mathematics Department of Paris Descartes University.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: M. Bossy, *Continuous time stochastic models for quantitative Finance*, 45h, M2 IMAFA (Informatique et Mathématiques Appliquées à la Finance et à l'Assurance), École Polytechnique Universitaire, Univ. Nice - Sophia Antipolis, France.

Master : M. Bossy, *Risk on energetic financial markets*, 27h, Master Ingénierie et Gestion de l'Énergie, Mine ParisTech, France.

Master : M. Bossy *Stochastic Particle Methods for PDEs*, 18h, M2 Probabilité et Applications, Université Paris 6, France.

Master: N. Champagnat, *Introduction to Quantitative Finance*, 18h, M1, École des Mines de Nancy, France.

Master: N. Champagnat, *Introduction to Quantitative Finance*, 18h, M2, École des Mines de Nancy, France.

Master: N. Champagnat, *Génétique des Population et Généalogies Aléatoires*, 22.5h, M2, École supérieure des sciences et de la technologie de Hammam Sousse, Tunisia.

Master: M. Deaconu, *Simulation de variables aléatoires*, 14h, M1, École des Mines de Nancy, France.

Master: M. Deaconu, *Modélisation stochastique*, 33h, M2, Université de Lorraine, France.

Master: J. Inglis, *Advanced Numerics for Computational Finance*, 15h, M2, UNSA (Mathmods Erasmus Mundus), France.

Master: A. Lejay, *simulation des marchés financiers*, 23h, M2, Université de Lorraine, Metz.

Master : D. Talayy *Stochastic Methods for PDEs with Boundary Conditions*, 18h, M2 Probabilité et Applications, Université Paris 6, France.

Master: E. Tanré, *Advanced Numerics for Computational Finance*, 15h, M2, UNSA (Mathmods Erasmus Mundus), France.

Master: E. Tanré, *Numerical Probability in Finance*, 12h, M2, Ecole PolytechNice (IMAFA), France.

Master: E. Tanré, *Mathematical Methods for Neurosciences*, 25h, M2, ENS - Master MVA / Paris 6 - Master Maths-Bio, France.

Master: L. Violeau, *Continuous Probabilistic Models with Applications in Finance* (exercice classes), 20h, M2 IMAFA (Informatique et Mathématiques Appliquées à la Finance et à l'Assurance), École Polytechnique Universitaire, Univ. Nice - Sophia Antipolis, France.

Licence: L. Violeau, *Probabilty and Statistics* (exercice classes), 20h, L3, Ecole Polytechnique Universitaire, Univ. Nice - Sophia Antipolis, France.

9.2.2. Supervision

- PhD in progress: Maxime Bonelli, *Behavioral finance approach to risk assessment in quantitative portfolio management*, September 2013, M. Bossy.
- PhD in progress: Paul Charton, *Hedging strategies for wind energy prices*, September 2010, M. Deaconu and A. Lejay.
- PhD in progress: Julien Claisse, *Stochastic control of population dynamics*, September 2010, N. Champagnat, D. Talay.
- PhD in progress: Benoît Henry, *Modeling Evolutionary Relationships Between Three-Dimensional Protein Structures*, October 2013, N. Champagnat, D. Ritchie (ORPAILLEUR team).
- PhD : Dalia Ibrahim, *Étude théorique d'indicateurs d'analyse technique*, Université de Nice - Sophia Antipolis, November 2009, D. Talay and E. Tanré.
- PhD in progress; Lionel Lenôtre, *Simulation of processes in discontinuous media*, 2012, J. Erhel (Irisa), A. Lejay and G. Pichot (Irisa). L. Lenôtre has a grant from the MESR and stays at Rennes.
- PhD in progress: Sebastian Niklitschek-Soto, *Discretized stochastic differential equations related to one-dimensional partial differential equations of parabolic type involving a discontinuous drift coefficient*, September 2010, D. Talay.
- PhD in progress: Hernán Mardones, *Numerical Solution of Stochastic Differential Equations with Multiplicative Noise*, 2009, C. Mora (Universidad de Concepción), A. Lejay. H. Mardones spends six months in France (nov. 2013-april 2014) with a grant Becas Chile.
- PhD in progress: Khaled Salhi, *Estimation of Risk in Finance*, October 2013, M. Deaconu, A. Lejay.
- PhD in progress: Laurent Violeau, *Stochastic Lagrangian Models and Applications to Downscaling in Fluid Dynamics*, October 2010, M. Bossy and A. Rousseau.

9.2.3. Juries

- M. Bossy chaired the Committee for the Ph.D. thesis of Paul-Eric Chaudru de Raynal, *Équations différentielles stochastiques : résolubilité forte d'équations singulères dégénérées ; analyse numérique de systèmes progressifs-rétrogrades de McKean-Vlasov*, Université de Nice - Sophia Antipolis, December 2013.
- M. Deaconu served as referee for the Ph.D. thesis of O. Lupaşcu, *Probabilistic and deterministic models for fracture type phenomena*, IMAR Bucarest and Université de Paris 13, Bucarest, December 2013.
- A. Lejay serves as examiner for the Ph.D. thesis of Paul-Éric Chaudru de Raynal, *Équations différentielles stochastiques : résolubilité forte d'équations singulères dégénérées ; analyse numérique de systèmes progressifs-rétrogrades de McKean-Vlasov*, Université de Nice - Sophia Antipolis, December 2013.
- D. Talay chaired the Committees for the Habilitation à Diriger des Recherches de B. de Saporta (université Montesquieu Bordeaux 4), the Ph.D. thesis of O. Aboura (Université Paris 1 Panthéon Sorbonne), the Ph.D. thesis of C.A. Garcia Trillos (Université Nice Sophia Antipolis).
- E. Tanré reported on the Ph.D. thesis of Mauricio Tejo, Pontificia Universidad Católica de Chile (PUC).

9.3. Popularization

- M. Bossy contributed as a Guest Blogger on the Mathematics of Planet Earth 2013 web site.
- D. Talay gave lectures to scholars in Nice.

9.4. Participation to congresses, conferences, invitations...

- M. Bossy gave a seminar talk at the research sessions of the CEMRACS 2013, Luminy in August.
- M. Bossy gave an invited talk at the Focus Program on Commodities, Energy and Environmental Finance of the Fields Institute, Toronto (Canada) in August.
- M. Bossy gave an invited talk at the European Science Foundation OPTPDE Workshop "Modeling and Control of Large Interacting Dynamical Systems" in September at Université Paris-Dauphine.
- M. Bossy gave an invited talk at the workshop METEO, Université d'Orléans in October.
- N. Champagnat gave a plenary talk at the *57th Annual Meeting of the Australian Mathematical Society* in Sydney (Australia) in October.
- N. Champagnat gave talks at the Conference on *Genetic models and quasi-stationarity* at CIRM, Luminy in March, at the Conference on *Biological invasion and evolutionary biology: stochastic and deterministic models* in Lyon in March, at the *Congrès SMAI 2013* in Seignosse in May, at the *Workshop "Mathematics for Planet Earth"* of the *Fédération Charles Hermite* in Nancy in October, and at the *International Conference on Stochastic Models in Ecology, Evolution and Genetics* (SMEEG 2013) in Angers in December.
- N. Champagnat gave seminar talks at the *Mark Kac seminar on Stochastics and Physics* in Utrecht (The Netherlands) in May, and at the *Oberseminar Stochastics* of the Probability Theory and Stochastic Analysis Group of the University of Bonn (Germany) in June.
- P. Charton participated at the *Cinquième Semaine d'Étude Maths-Entreprise* at Nancy, France in February. He and his group studied the asymptotic properties of the process Garch(1,1). A report has been written [32].
- P. Charton made a poster on *Optimal operating of a windfarm equipped with a storage device* at the *Congrès SMAI 2013* in Seignosse in May. A proceeding has been written [21].
- P. Charton gave talk at the *Ninth IMACS seminar* at Annecy-le-Vieux (France) in July. A proceeding is being written.
- M. Deaconu gave a invited talk in a special session at the *Joint International Meeting of the American Mathematical Society and the Romanian Mathematical Society*, in Alba Iulia (Romania) in June.
- M. Deaconu gave a talk at the *Ninth IMACS Seminar on Monte Carlo Methods*, Annecy-le-Vieux (France) in July.
- J. Inglis gave seminar talks at the *analysis and probability seminar*, Imperial College London, in January and at the probability seminar, University of Rennes, in February.
- J. Inglis gave an invited talk at the European project MATHEMACS meeting, held at the Max-Planck Institute, Leipzig, in December.
- A. Lejay gave a 4h30 lecture on *Rough paths* a the *35th Finnish Summer School on Probability Theory and Statistics* in Finland.
- A. Lejay gave talks at the workshop *rough paths* (Berlin) *Interplay of Theory and Numerics for Deterministic and Stochastic Homogenization* (Oberwolfach, Germany) in August and at the international conferences *Stochastic processes and their statistics in Finance* (Naha, Okinawa, Japan) in October, and at the Workshop on *Hitting times and exit problems for stochastic models* (Dijon, France) in December.
- A. Lejay gave a talk at the *COMCA-2013* congress (La Serena, Chile).
- D. Talay gave a series of lectures at the Pauli Institute in June.
- D. Talay gave a talk at the University of Antwerp.
- D. Talay gave a talk at the Workshop on Extreme Events in November in Nice.
- D. Talay gave two lectures at the Conference in the honor of Etienne Pardoux (Marseille) in February.

- E. Tanré gave a talk at the Centro Interdisciplinario de Neurociencia de Valparaíso (Chile) in January.
- E. Tanré gave a talk at the conference on *Mathematical Methods and Modeling of Biophysical Phenomena* in Cabo Frio (Brazil) in March.
- E. Tanré gave a seminar talk at Toulouse in May.
- E. Tanré gave a talks at the workshop on *Hitting times and exit problems for stochastic models* at Dijon in November and at the *First Workshop CIMFAV on Stochastic Analysis and its Applications* at Valparaíso (Chile) in December.
- D. Villemonais gave a 4h lecture at the Conference on *Genetic models and quasi-stationarity* at CIRM, Luminy in March.
- D. Villemonais gave a talk at the *Congrès SMAI 2013* in Seignosse in May.