Activity Report 2011

Section Dissemination

Edition: 2012-03-22
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### STOCHASTIC METHODS AND MODELS
9. Dissemination

9.1. Animation of the scientific community

Rémi Abgrall is associate editor of the international journals "Mathematical of Computation", “Computer and Fluids”, “Journal of Computational Physics”, “Journal of Scientific Computing” and “Journal of Computing Science and Mathematics”. He is co-editor in chief of the “International Journal on Numerical methods in Fluids”. He is member of the scientific committee of the international conference ICCFD, He is member of the CFD committee of ECOMAS and of the scientific comitee of ECCOMAS 2012. He is also member of the scientific committee of CERFACS. He is member of the GP1 group of Alistène. He is member of the Comité National du CNRS, section 01. He is member of the board of the GAMNI group of SMAI and is its current responsible. He is member of the board of Institut Polytechnique de Bordeaux.

Pierre Ramet and Rémi Abgrall are members of the GENCI scientific committee (Mathematics and Computer Sciences). R. Abgrall also belongs to the Fluid mechanics one.

François Pellegrini and Pierre Ramet have been members of the “commission consultative” for the LaBRI in 2010.

Pierre Ramet was in the decision board of the "MCIA" project (Mésocentre Aquitain : un environnent Mutualisé de Calcul Intensif en Aquitaine).

Cécile Dobrzynski is one of the organizers of the seminar "Modélisation et Calcul" of the Institut mathématiques de Bordeaux. She is member of the board of the GAMNI group of SMAI and she is secretary. She is member of the scientific committee for the organization of mini-symposia in collaboration between SMAI-GAMNI and AUM for CANUM 2012.

9.2. Teaching

Licence : Algorithmique et Programmation, 32h, L3, ENSEIRB-MATMECA, FRANCE
Licence : Algorithmique et programmation pour le calcul scientifique, 58.66h, L3, Université Bordeaux 1, FRANCE
Licence : Calcul scientifique: résolution de grands systèmes creux, 34.66h, L3, Université Bordeaux 1, FRANCE
Licence: Algorithmique Numérique, 32h, L3, ENSEIRB-MATMECA, FRANCE
Licence : Langages en Fortran 90, 42,67h, L3, ENSEIRB-MATMECA, FRANCE
Licence : TER, 20h, L3, ENSEIRB-MATMECA, FRANCE
Master : Approximation numérique et problème industriel, 26h, M2, ENSEIRB-MATMECA, FRANCE
Master : Projet fin étude, 6h, M2, ENSEIRB-MATMECA, FRANCE
Master : TER, 18h, M1, ENSEIRB-MATMECA, FRANCE
Master: TER, 8h, M2, ENSEIRB-MATMECA, FRANCE
Master: Equilibrage et régulation de charge, 17.33h, M2, ENSEIRB-MATMECA, FRANCE
Master: Mise à niveau: Algorithmique et Programmation, 30h, M1, FRANCE
Master: Approximation numérique et problème industriel, 26h, M1, ENSEIRB-MATMECA, FRANCE
Master: Projet fin étude, 10h, M2, FRANCE
Master: TER, 8h, M2, ENSEIRB-MATMECA, FRANCE
Master: Projets Fluent, 20h, M1, ENSEIRB-MATMECA, FRANCE
Master: Calcul Haute Performance, 45h, M1, ENSEIRB-MATMECA, FRANCE
Master: Calcul Haute Performance, 36h, M2, ENSEIRB-MATMECA, FRANCE
Master : Approximation numérique et problème industriel, 26h, M2, ENSEIRB-MATMECA, FRANCE
Master : Analyse Numérique, 24h, M1, ENSEIRB-MATMECA, FRANCE
Post-graduate : Introduction to CFD, 18h, post-graduate master (Master IAS), ENSAM, FRANCE

HdR : Mario Ricchiuto, Contribution Contributions to the development of residual discretizations for hyperbolic conservation laws with application to shallow water flows, Université de Bordeaux, december 12, 2011
PhD in progress : Robin Huart, Simulation numérique d’écoulements magnétohydrodynamique par des schémas distribuant le résidu, adviser: R. Abgrall. defence in january 2012.
9. Dissemination

9.1. Teaching

Pr. Jean-Claude Paul, Pr. Jun-Hai Yong, Dr. Bin Wang and Dr. Hui Zhang teach at Tsinghua University. Dr. Hui Zhang is the Dean of the School of Software Teaching Program.

Pr. Xiaopeng Zhang and Dr. Weiming Dong teach at Graduate University of Chinese Academy of Sciences.

9.2. International Conferences Organisation

Pr. Jean-Claude Paul was Honorary Chair and Pr. Xiaopeng Zhang was Program Chair of the ACM Siggraph VRCAI 2011 The 10th International Conference on Virtual Reality Continuum and Its Applications in Industry Dec.11-12, 2011, Hong Kong, China.
CAGIRE Team

9. Dissemination

9.1. Animation of the scientific community

Participants: Pascal Bruel, Erwin Franquet, Tarik Kousksou.

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

- Journal of Computational Physics
- International Journal for Numerical Methods in Fluids
- Journal of Mechanical Engineering Science
- Combustion and Flame
- AIAA Journal of Thermophysics and Heat Transfer
- Journal of Aerospace Engineering
- Computational Thermal Science

9.2. Teaching

Participants: Pascal Bruel [PB], Erwin Franquet [EF], Tarik Kousksou [TK].

Licence:
- TP Transferts thermiques, 48h, L1, IUT-GTE-UPPA, Pau, France. [PB]
- Programmation, 50h, L3, ENSGTI-UPPA, France [EF]
- TP Composants, 40h, L3, ENSGTI-UPPA, France [EF]

Master:
- An introduction to the numerical simulation of reacting flows, 15h, M2, ISAE-SupAéro, Toulouse, France. [PB]
- Machines hydrauliques, 30h, M1, ENSGTI-UPPA, France [TK]
- Machines aérauliques, 30h, M1, ENSGTI-UPPA, France [TK]
- Thermo-économie, 30h M2, ENSGTI-UPPA, France [TK]
- Modélisation des écoulments diphasiques, 30h, M1, ENSGTI-UPPA, France [TK]
- TP systèmes, 50h, M1, ENSGTI-UPPA, France [TK]
- Simulation industrielle, 40h, M1, ENSGTI-UPPA, France [EF]
- Fluides compressibles, 20h, M1, ENSGTI-UPPA, France [EF]
- Combustion industrielle, 30h, M1, ENSGTI-UPPA, France [EF]
- Réseaux de chaleur, 4h, M2, ENSGTI-UPPA, France [EF]
- Géothermie, 4h, M2, ENSGTI-UPPA, France [EF]
- Biomasse, 4h, M2, ENSGTI-UPPA, France [EF]
CALVI Project-Team

8. Dissemination

8.1. Animation of the scientific community

8.1.1. Invitations at conferences and summer schools

- Emmanuel Frénod (http://www-labsticc.univ-ubs.fr/~frenod/) was invited to give lectures in
  - Cemracs 2011 Summer School on "Two Scale Convergence" at Cirm, Marseille in July 2011 (http://smai.emath.fr/cemracs/cemracs11/),

- Eric Sonnendrücker gave invited talks
  - Lawrence Berkeley National Laboratory (USA), March 16, "Semi-Lagrangian methods for the Vlasov equation",
  - Lawrence Livermore National Laboratory (USA), March 17, "Gyrokinetic simulations",
  - i4energy seminar, University of California at Berkeley, March 18, "High performance computing challenges for magnetic fusion"
  - International Conference on the Numerical Simulation of Plasmas, Long Branch (USA), September 6-9, "Semi-Lagrangian methods for the Vlasov equation",
  - mini-course of 6 hours at ICERM, Brown university (USA), September 12-16, "Vlasov simulations",
  - Vlasov Workshop, ICERM, Brown university (USA), September 19-23, "gyrokinetic simulations",
  - NELIA workshop, Santiago de Compostella (Spain), October 25-28, "Arbitrary order discrete differential forms for Maxwell’s equations",
  - Case studies, ETH Zurich (Switzerland), November 24, "Modelling and simulation of particle accelerators".

8.1.2. Administrative duties

- Emmanuel Frénod, Michael Gutnic, Michel Mehrenberger, Eric Sonnendrücker
  - were member of selection committee for an Assistant Professor of Applied Maths position at Strasbourg.

- Eric Sonnendrücker
  - was a member of the AERES committee of M2P2 laboratory in Marseille
  - was a member of the AERES committee of mathematics laboratory of Université Technologique de Compiègne
  - was a member of CNU section 26 (applied mathematics)
  - is a member of the scientific committee of CIRM (Centre International de Rencontres Mathématiques) at Luminy,
  - was a member of a selection committee for a Professor position in Applied Mathematics in Marseille
was a member of a selection committee for a Professor position in Applied Mathematics in Lyon.

8.1.3. Organization of conferences

- Michael Gutnic and Philippe Helluy were co-organizers of CEMRACS 2011 at Luminy (France).
- Eric Sonnendrücker was a member of the scientific committee for the Fusion Summer School, Paris, September 26-30.

8.2. Teaching

Nicolas Besse

Licence: Complex analysis 18h, L3, UHP Licence: Analysis 80H L2, Université Henri Poincaré, France
Licence: Integration and differential form, 35h, L1, Université Henri Poincaré, France
Licence: Colles d’analyse 16h, L1, Université Henri Poincaré, France
Master: Plasma modelling and numerical methods 30h, M2, Université Henri Poincaré, France

Sever Hirstoaga

Analyse numérique, 70 h, L3, l’UFR Physique et Ingénierie, Université de Strasbourg, France

Simon Labrunie

Licence : Mathématiques générales, 160h, L1, Université Henri Poincaré Nancy, France
Licence : Mathématiques générales, 48h, L2, Université Henri Poincaré Nancy, France

Vladimir Latocha

Découverte des mathématiques, 81 h, L1, Nancy université, France
Méthodologie de l’exposé écrit et oral, 30 heures, L1, Nancy université, France
Analyse numérique, 12 h, L3, Nancy université, France
Algorithmique, 52h, L3, Nancy université, France
Analyse complexe, 10 h, L3, ENSEM, France
Mathématiques PACES UE4, 15h, L1, Nancy université, France
Livre pour la première année de santé, à paraître : Mathématiques UE4, éd. Ellipses, à paraître en décembre 2011.

Michel Mehrenberger

Licence : Optimisation non lineaire, 54h, L3, Université de Strasbourg, France
Licence : Méthodes d’Analyse Numérique, 39h, L3, ENSIIE (ecole d’ingenieur, antenne de Strasbourg), France
Licence : Analyse Numérique, 72h, L2, Université de Strasbourg, France
Licence : Calcul Formel et Simulation Numérique, 18h, L2, Université de Strasbourg, France
Licence : Compléments d’Analyse, 30h , L3, Université de Strasbourg
Master : Spectral Analysis, 30h, M1, Université de Strasbourg, France

Jean Roche

Licence : Analyse, 170h, L2, Université Henri Poincaré Nancy, France
Master : optimisation, 24h, M1, Université Henri Poincaré Nancy, France
Master : Décomposition de domaines, 24h, M2, Université Henri Poincaré Nancy, France
Eric Sonnendrücker
Master : Projet EDP, 30h, M2, Université de Strasbourg, France
Master : Calcul Scientifique pour l’agrégation, 60h, M2, Université de Strasbourg, France
Master : Méthodes numériques pour les EDP, 65h, M1, Université de Strasbourg, France
Master et Doctorat : Numerical methods for the Vlasov-Maxwell equations 36h, M2+D, ETH Zürich, Switzerland.

PhD & HdR:
HdR : Nicolas Crouseilles, Contributions à la simulation numérique des modèles de Vlasov en physique des plasmas, Université de Strasbourg, 14 janvier 2011
PhD : Ahmed Ratnani, L’analyse isogéométrique dans la physique des plasmas et l’électromagnétisme, Université de Strasbourg, 7 octobre 2011, Nicolas Crouseilles et Eric Sonnendrücker
PhD : Aurore Back, Etude théorique et numérique des équations de Vlasov-Maxwell dans le formalisme covariant, Université de Strasbourg, 7 novembre 2011, Advisors: Emmanuel Frénod et Eric Sonnendrücker
PhD in progress : Céline Caldini, Collisions dans les modèles gyrocinétiques, septembre 2010, Advisor: Mihai Bostan,
PhD in progress : Anais Crestetto, Méthode des moments pour les équations cinétiques, Advisor: Philippe Helluy,
PhD in progress : Mohammed Ghattassi, développement d’une méthode de résolution des équations de transfert radiatif couplées avec une équation de diffusion en deux et trois dimensions d'espace par des méthodes inspirées de la résolution des équations de Vlassov Poisson, septembre 2011, Advisor: Jean Roche.
PhD in progress : Mathieu Lutz, Etude théorique et numérique de l’approximation gyrocinétique, septembre 2010, Advisors: Emmanuel Frénod et Eric Sonnendrücker
PhD in progress : Sandrine Marchal, septembre 2006, Domain decomposition methods to solve a system of hyperbolic equations. Advisors: Simon Labrunie and Jean Rodolphe Roche.
PhD in progress : Christophe Steiner, Méthodes numériques pour l’équation de Vlasov, Advisors: Nicolas Crouseilles and Michel Mehrenberger
9. Dissemination

9.1. Animation of the scientific community

We have organized the sixth VMS (Variational MultiScale Methods) workshop [https://sites.google.com/site/conchapau/vms](https://sites.google.com/site/conchapau/vms), which has allowed the scientific exchange of about 40 experts in the field of numerical methods for multiscale problems mostly related to CFD.

9.2. Phd and Habilitation theses

Daniela Capatina has defended her Habilitation in November 2011 [11].

9.3. Teaching

The LMA has proposed a new Master program starting in 2007, which is called MMS (Mathématiques, Modélisation et Simulation) and has a focus on analysis, modeling, and numerical computations in PDEs; Robert Luce and R. Becker are co-responsables of this Master program. The core of this education is formed by lectures in four fields: PDE-theory, mechanics, numerical analysis, and simulation tools.

This master program includes lectures on physical applications, one of the three proposed application fields is CFD; lectures are provided by the members of the project; especially the following lectures have been given:

- Simulation numérique 1, Robert Luce and Eric Dubach,
- Analyse numérique des EDP, R. Becker and D. Capatina,
- Simulation numérique 2, Robert Luce and Eric Dubach,
- Méthodes numériques pour les EDP, R. Becker,
- Mécanique des fluides, R. Becker,
- Simulation numérique 3, P. Puiseux
- Mécanique des Fluides et Turbulence, Eric Schall, D. Graebling
9. Dissemination

9.1. Animation of the scientific community

- Gregoire Allaire
  Vice-president of the applied mathematics department at Ecole Polytechnique.
  Member of the board of SMAI (Société de Mathématiques Appliquées et Industrielles).
  Member of the managing committee of GAMNI/SMAI (Groupement pour l’Avancement des Méthodes Numériques pour l’Ingénieur).
  Chair of the Scientific Council of GDR MOMAS (MODélisations MAthématiques et Simulations numériques liées aux problèmes de gestion des déchets nucléaires).
  Member of the board of IHP (Institut Henri Poincaré).
  Member of the Scientific Council of GDR Calcul.
  Co-editor in chief of the series "Mathématiques et Applications" published by Springer and SMAI.
  Member of the editorial boards of 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’Università di Ferrara.
  Co-organizer of the annual CEA/GAMNI seminar on computational fluid dynamics (January 2011).
  Organizer of the workshop "mathematics and mechanics" at the French Congress of Mechanics in Besancon (August 2011).
  Co-organizer of the MOMAS workshop in Luminy (November 2011).

- Houssem Haddar
  Member of CNU 26, INSA, Toulouse.
  Member of the Scientific committees at INRIA Saclay Ile de France and at CMP.
  Organizer of a minisymposium at AIP 2011 and participates to the board committee of Waves 2011.

- Jing-Rebecca Li
  Associate editor of SIAM Journal on Scientific Computing.

9.2. Teaching

Licence: Grégoire Allaire teaches a semestrial course (18 lectures) on numerical analysis and optimization (L3). Ecole Polytechnique, France.

Master: Grégoire Allaire teaches two courses (9 lectures each) (M1). The first one on the optimal design of structures; The second one is taught in collaboration with François Golse on transport and diffusion with applications to energy and biology. Ecole Polytechnique, France.

Master: Grégoire Allaire teaches a semestrial course (12 lectures) on homogenization (M2). Ecole Polytechnique, France.

Master: Armin Lechleiter, MODAL MAP441 (54 hours, responsible: François Alouges). Supervision of two projects in pairs (M2). Ecole Polytechnique, France.

Licence (ou équivalent) : Houssem Haddar teaches a semestrial course (18 lectures) on numerical analysis and optimization (L3). Ecole Polytechnique, France.
Master (ou équivalent) : Houssem Haddar teaches one course (9 lectures) (M2 Ecole Polytechnique) on Mathematics of inverse problems.

Licence: Olivier Pantz teaches a semestrial course (36 lectures) on numerical analysis and optimization (L3). Ecole Polytechnique, France.

Master: Olivier Pantz teaches one course (7 lectures) (M1) on the optimal design of structures, Ecole Polytechnique, France.

Master: Olivier Pantz was responsible of a project training in Numerical Analysis (1 project - “Stimulation des neurones par une électrode”)

PhD: Olivier Pantz, WorkshopFreeFem++ (Université Pierre et Marie-Curie) An Introduction course in FreeFem++ and computer session.

PhD: Olivier Pantz, FreeFem++ course at the LERMA of the EMI (Rabat) (1 week: course and computer sessions)

9.3. PhD & HdR

PhD : Anne Cossonnière, Transmission eigenvalues and their use in the identification of inclusions from electromagnetic measurements, INSA Toulouse, 8/12/2011, Houssem Haddar and Anne Sophie Bonnet Ben-Dhia

PhD : Thomas Abballe, Multi-scale numerical methods for diffusion in heterogeneous media, Ecole Polytechnique, 24/06/2011, Grégoire Allaire.


PhD in progress : Y. Boukari, Qualitative Methods for Inverse Scattering by an Impedant Crack, 2008 (Defense in January 2012), Houssem Haddar (with Fahmi Ben Hassen).


PhD in progress : N. Chaulet, Inverse scattering problems for obstacles with non standard impedance models, 2009, Houssem Haddar (with Laurent Bourgeois).

PhD in progress : Ch. Dapogny, Geometric shape optimization, 2010, Grégoire Allaire (with Pascal Frey).

PhD in progress : G. Delgado, Optimal design of the draping of composite materials, 2010, Grégoire Allaire.

PhD in progress : G. Giovanni, Mathematical tools for microwave mammography and prostate cryosurgery, 2008 (Defense in January 2012), Houssem Haddar (with Michele Piana).


PhD in progress : Z. Jiang, Non linear optimization methods applied to non destructive testing using eddy current probes, 2010, Houssem Haddar.

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

PhD in progress : G. Migliorati, Qualitative methods for random backgrounds, 2011, Houssem Haddar (with Fabio Nobile).

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

9.4. Seminars, Conferences, Visits

G. Allaire
- Invited conference at the 10th "GAMM-Seminar on Microstructures", Darmstadt (January 2011).
- Invited conference at the MATCH colloquium "Analytical and numerical methods for multi-scale systems", Heidelberg (February 2011).
- Conference at the GNR PARIS workshop (physico-chemistry for the nuclear waste storage), Paris (March 2011).
- Invited conference at "the mathematics of porous media (in honour of H. van Duijn)", Split (June 2011).
- Speaker at the conference "Applied mathematics and scientific computing", Trogir (June 2011).
- Invited conference at "Inverse Problems and Applications", Ecole Polytechnique (September 2011).
- Journées scientifiques MOMAS, Luminy (November 2011).
- Seminar at BCAM, Bilbao (November 2011).

Y. Boukari
- Talk at the workshop Tendances dans les Applications Mathématiques en Tunisie, Algérie, Maroc (TAM TAM), Sousse (Tunisie), April 2011.
- Talk at the AIP Conference, May 2011, College Station, US.

N. Chaulet
- Talk in the minisymposium on Shape reconstruction in impedance tomography and inverse scattering at ICIAM 2011 conference in Vancouver in juillet 2011.
- Invited talk at Journée sur les problèmes inverses in November 2011, Annaba, Algeria.

A. Cossonnière
- Poster at COFREN, Dunkerque, May 24-27 2011.
H. Haddar
- Invited, minisymposium Piers in Marrakesh, March 20-23, 2011.
- Organized a minisymposium Advances in qualitative methods at the AIP Conference, May 2011, College Station, US.
- Invited conference, LERMA 20th birthday conference.
- Participation (organisation) WAVES’11, Vancouver, July 25-29, 2011
- Invited conference at "Inverse Problems and Applications", Ecole Polytechnique (September 2011).

Z. Jiang
- Poster at 2011 European Signal Processing Conference (EUSIPCO 2011), CTTC & UPC, Barcelona, Spain, 2011
- Poster at Workshop on Numerical Electromagnetics and Industrial Applications (NELIA 2011), Faculty of Mathematics of Saint Jacques de Compostella (Spain), October 2011.

A. Lechleiter
- Talk in the minisymposium Shape reconstruction in impedance tomography and inverse scattering the AIP Conference, May 2011, College Station, US.
- Talk in the minisymposium Advances on Numerical Methods for Electrical Impedance Tomography at the Fields-MITACS Conference on Mathematics of Medical Imaging, Toronto, Canada, June 2011.
- Invited seminar of the math department, Metz, France, October 2011.

J.-R. Li
- The International Society for Magnetic Resonance in Medicine (ISMRM) annual meeting, Montreal, May, 2011.

G. Migliorati
- Workshop on Large-scale inverse problems and quantification of uncertainty, IMA-University of Minnesota (USA), June 6-10 2011.
- Workshop on Wave Propagation and Scattering, Inverse Problems and Applications in Energy and the Environment, Linz(Austria), November 21-25, 2011.
- Workshop on Numerical Analysis of Multiscale Problems and Stochastic Modelling, Linz (Austria), December 12-16, 2011.

D. Nicolas

D. L. Nguyen

O. Pantz
- "Treatment of contacts and self-contacts with FreeFem++" Journees FreeFem++, UPMC (December 2011)
- Participation to the workshop "Multiscale Coupling of Complex Models" CEMRACS’11, Luminy (August 2011)
- "The modeling of contacts and self-contacts for finite deformations” Tunis (May 2011)
6. Dissemination

6.1. Teaching

Master : F. Alauzet: Simulation numérique en géométries complexes, niveau M1, École Centrale Paris

Master : P. Laug : CAO et maillage, 35 heures, niveau M2, UPEC (Université Paris-Est Créteil), France
8. Dissemination

8.1. Animation of the scientific community

8.1.1. Editorial activities

- P. Chartier is member of the editorial board of M2AN.
- P. Chartier is member of the editorial board of ESAIM Proceedings.
- A. Debussche is member of the editorial board of SINUM.
- A. Debussche is member of the editorial board of Differential and Integral Equations.
- A. Debussche is Director of the mathematics department of the antenne de Bretagne ENS Cachan.

8.1.2. Conference and workshop organisation

- The team organized a workshop on numerical methods for stiff problems, Saint-Malo (January).
- F. Méhats and F. Castella were members of the organization and scientific committees of the Conference in honor of N. Ben Abdallah, Toulouse.
- P. Chartier was member of the scientific committee of SciCADE11, Toronto, Canada, July 11-15, 2011.

8.1.3. Administrative activities

- P. Chartier was member of the Commission d’Evaluation at INRIA until June.
- P. Chartier is member of the bureau of the Comité des Projets at INRIA-Rennes.
- A. Debussche is member of the CNU, Section 26.

8.1.4. Talks in seminars and conferences, mini-courses

- P. Chartier: Seminar University of Geneva, November 2, 2011.
- P. Chartier: FOCM’11, Budapest, Hungary, July 4-6, 2011 (Invited Speaker)
- P. Chartier: Meeting on Geometric Numerical Integration, Oberwolfach, Germany, March 20-26, 2011 (Invited Speaker)
- E. Faou: November 2011: Seminar at the CNR, Pavia
- E. Faou: June 2011: Seminar at Fields Institute, Toronto (Canada)
- E. Faou: March 2011: Workshop on Geometric Numerical Integration, Oberwolfach (Germany)
- E. Faou: February 2011: Invitation to the university of Tokyo (Japan).
- F. Castella: talk at the conference in honor of N. Ben Abdallah, Toulouse.
- Arnaud Debussche: September 6-11, mini course on “Stochastic Navier-Stokes equations: well posedness and ergodic properties” in the CIME summer school "Topics in mathematical fluid-mechanics” at Cetraro, Italy.
- Arnaud Debussche: March 25 2011: *One day on SPDE and applications*, université du Mans, organisez by A. Matoussi.
- Arnaud Debussche: June 2011: Séminaire EDP, IECN, université de Nancy.
- Arnaud Debussche: November 2011: Colloquium de Mathématiques, université de Pau.
- Nicolas Crouseilles: : talk at the meeting of ANR E2T2
- Florian Méhats: Colloque "Asymptotic dynamics driven by solitons and traveling fronts in nonlinear PDE", Santiago (Chili).
- Florian Méhats: Workshop ”Asymptotic Regimes for Schrodinger equation”, Vienna (Autriche).
- Florian Méhats: Workshop ”KAM theory and Geometric Integration”, Banff (Canada).
- Florian Méhats: Seminar MODANT Grenoble.
- Florian Méhats: Colloque ”Kinetic models of classical and quantum particle systems”, Toulouse.
- Florian Méhats: Seminars IHP, Orsay, Rennes.

### 8.2. Teaching

HdR : Nicolas Crouseilles, “Contributions à la simulation numérique des modèles de Vlasov en physique des plasmas”, Université de Strasbourg [9]
9. Dissemination

9.1. Organization of workshops

- Minisymposium: "Tumor Growth Modeling and System Identification for Clinical Applications", within the International Conference in Industrial and Applied Mathematics, July 2011, Vancouver, B.C., Canada. (Thierry Colin, Angelo Iollo, Olivier Saut)


9.2. Animation of the scientific community

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 Hawaii July 2012.

Angelo Iollo is managing the national ANR research project Carpeinter.

9.3. 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)

PhD & HdR:

- HdR : Colin Mathieu, Etude de quelques problèmès issus de la physique des plasmas et de la mécanique des fluides, Université Sciences et Technologies - Bordeaux I, November 2011.
- PhD : J.-B. Lagaert, now post-doc in Grenoble, France, has constructed new models of brain tumour, in collaboration with H. Fatallah, University Hospital of the University of Alabama at Birmingham. (2008-2011)
- D. Lombardi, now post-doc at Inria Roquencourt (France), introduced new algorithms for the prediction of the evolution of lung metastasis using CT-scans. (2008-2011)
- D. Thanoon, dual PhD with Houston University, in collaboration with the Methodist Hospital, Houston studied some growth model of breast tumor as well as algorithm to predict cosmetic outcome after a lumpectomy (2008-2011)

PhD in progress : Gorsse Yannick, Méthode cartésienne pour les fluides compressibles et l’élasticité non-linéaire autour d’obstacles, started 1st October 2009, supervisors : Angelo Iollo and Lisl Weynans
PhD in progress : Hovnanian Jessica, Modélisation, Simulation et contrôle d’écoulement autour d’obstacle déformables, started 1st october 2009, supervisors : Angelo Iollo and Michel Bergmann
PhD in progress : Xin Jin, Etude et conception d’une éolienne, started 1st May 2011, supervisors : Angelo Iollo and Michel Bergmann
PhD in progress : Michael Leguebe, Electroporation modelling at the cell scale, started 1st october 2011, supervisors : Thierry Colin and Clair Poignard
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 : Manuel Lattige, (co-director G. Gallice, CEA CESTA). Numerical modeling of ablation. started october 2010
PhD in progress : Vincent Huber, numerical modelling of complex bifluid flows. started october 2009
8. Dissemination

8.1. Animation of the scientific community

E. Cancès

- is co-Editor in chief (with P. Del Moral and J.-F. Gerbeau) (2005-) of ESAIM Proc,
- 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.

E. Cancès has organized or co-organized

- a BIRS workshop on Density Functional Theory: fundamentals and applications in condensed matter physics, Banff, Canada, January 2011,
- a thematic minisymposium on electronic structure calculation at ICIAM 2011, Vancouver, Canada, July 2011,
- a minisymposium on mathematics in materials science, Beijing, China, September 2011.

Eric Cancès and G. Stoltz have co-organized the workshop “Interactions between PDEs and probability theory”, held in Grenoble, France, 23-25 november 2011, in the framework of the GdR CHANT.


C. Le Bris has been a member of the Scientific Program Committee of ICIAM 2011, Vancouver, Canada.

C. Le Bris is a member of

- 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,
- Conseil de perfectionnement du Master de Mathématiques de l’Université Pierre et Marie Curie.
C. Le Bris has co-organized, with M.P. Calvo (University of Valladolid, Spain) the minisymposium “Numerical integrators of Hamiltonian systems and related problems”, Centennial congress of the Spanish Royal Mathematical Society, February 1-5, 2011, Avila.

Tony Lelièvre co-organized a minisymposium on "Numerical Methods for Molecular Dynamics" at the ENUMATH 2011 conference (Septembre 2011), and a workshop on "Metastability and stochastic processes" at Ecole des Ponts (September 2011).

F. Nier is a member of the scientific committee of
- the workshop “Spectral Analysis of Non-Selfadjoint operators”, ANR NONAa, CIRM, December 2011,
- the workshop “Mathematics for semiconductor heterostructure 2012” WIAS-Berlin, September 2012,
- the CNRS-GDR “Dynamique Quantique” led by S. de Bièvre.

S. Olla is a member of the editorial boards of Annals of Probability and of Probability theory and related fields. He has organized with Carlangelo Liverani a workshop on “Fourier’s Law” at the Field Institute, Toronto in April 2011.

Gabriel Stoltz co-organized a mini-symposium on “Numerical methods in molecular simulation” at the SMAI 2011 meeting, in Guidel, France (may 2011).

8.2. Teaching

The members of the team have taught the following lectures:
- Licence: Formation au logiciel scientifique SCILAB, 12h, L3, Ecole des Ponts, France (D. Benoit, I. Dabo)
- Licence: Informatique, 50h, L2, CPGE Jean-Baptiste Say, France (D. Benoit, I. Dabo)
- Licence: Analyse, 36h, L3, Ecole des Ponts, France (E. Cancès, V. Ehrlacher, F. Legoll, F. Thomines)
- Licence: Optimisation linéaire et convexité, 36h, L3, Université Paris 6, France (R. Costaouec)
- Licence: Calcul Scientifique, 30h, L3, Ecole des Ponts ParisTech, France (M. Dobson, G. Stoltz)
- Licence: Mathématiques pour biologistes, 36h, L2, University of Cergy Pontoise, France (S. Lahbabi)
- Licence: Formation "C2i" (Certificat Informatique et Internet), 30h, L2, University of Cergy Pontoise, France (S. Lahbabi)
- Master: Introduction au calcul Scientifique, 12h, M1, Ecole des Mines ParisTech, France (D. Benoit, M. Dobson, G. Stoltz)
- Master: Analyse, 40h, M1, EPFL, Switzerland (S. Boyaval)
- Master: Analyse Numérique et Optimisation, 56h, M1, Ecole Polytechnique, France (E. Cancès, C. Le Bris)
- Master: Méthodes mathématiques en chimie quantique, 12h, M2, University Paris 6, France (E. Cancès)
- Master: Introduction à la physique quantique et statistique, 20h, M1, Ecole des Ponts, France (I. Dabo)
- Master: Mathématiques des modèles multi-Échelles, 39h, M1, Ecole des Ponts ParisTech, France (F. Legoll)
- Master: Problèmes multi-Échelles, 24h, M2, Université Paris 6, France (F. Legoll)
Master: Méthodes numériques probabilistes, 36 h, M2 Mathématiques et Applications, Université Pierre et Marie Curie, France (T. Lelièvre)

Master: Modéliser Programmer Simuler, 28 h, M1, Cours Ecole des Ponts ParisTech, France (T. Lelièvre)

Master: Méthodes déterministes en mathématiques financières, 42h, M2, Ecole des Ponts ParisTech, France (T. Lelièvre)

Master: Analyse spectrale, 39h, M1, Ecole des Ponts, France (G. Stoltz)

Master: Computational Statistical Physics, 18h, M2, Ecole des Ponts, France (G. Stoltz)

Doctorat: Introduction à l’informatique scientifique, 16h, D, Université Paris-Est, France (I. Dabo)

G. Stoltz supervised the internships of Laura Da Silva (Paris 7, Master 1 in biology (AIV)) from March, 1st to April 30th, 2011, and the internship of Etienne Germain (Ecole des Ponts, first year of training), from April 15th to July 15th.

The following PhD & Habilitation were defended:

- HdR: F. Legoll, Contributions à l’étude mathématique et numérique de quelques modèles en simulation multi-échelle des matériaux, Université Paris 6 Pierre et Marie Curie, 17 oct. 2011,
- PhD: R. Costaouec, Techniques numériques d’homogénéisation: application aux matériaux aléatoires, Université Paris-Est, Ecole des Ponts ParisTech, 23 nov. 2011, supervised by C. Le Bris.

The following PhDs are in progress:

- PhD in progress: D. Benoit, Méthodes numériques pour la simulation des fluides non-Newtoniens, Université Paris-Est, Ecole des Ponts ParisTech, started october 1st, 2010, supervised by C. Le Bris and T. Lelièvre
- PhD in progress: V. Ehlracher, Some mathematical and numerical problems in quantum mechanics and uncertainty quantification”, Université Paris-Est, Ecole des Ponts ParisTech, started october 1st 2009, supervised by E. Cancès and T. Lelièvre
- PhD in progress: S. Lahbabi, Mathematical study of quantum crystals with random defects, University of Cergy-Pontoise, started september 1st 2010, supervised by E. Cancès and M. Lewin
- PhD in progress: F. Thomines, Méthodes numériques multi-échelles: application à l’homogénéisation des matériaux aléatoires, Université Paris-Est, Ecole des Ponts ParisTech, started on Sept. 1st, 2009, supervised by C. Le Bris

8.3. Conference participation

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

- D. Benoit, Congrès SMAI 2011, Guidel, France, May 2010,
- S. Boyaval, séminaire Université de Lille, January 2011,
- S. Boyaval, workshop on Reduced basis methods in high dimensions, Paris, June 2011,
- S. Boyaval, ICIAM, minisymposium Reduced-Basis methods, Vancouver, Canada, July 2011,
- S. Boyaval, CEMRACS, SimTech Workshop on Current Trends in Computational Fluid Mechanics, Marseille, August 2011,
- S. Boyaval, workshop Numerical Analysis of Multiscale Problems and Stochastic Modelling, RICAM Linz, Austria, December 2011,
- E. Cancès, workshop on computational challenges in partial differential equations, Swansea, United Kingdom, April 2011,
• E. Cancès, workshop Polaritons 2011, CIRM, Marseille, April 2011,
• E. Cancès, summer program on electronic structure analysis, Shanghai, China, June 2011,
• E. Cancès, MFO workshop on mathematical methods in quantum chemistry, Oberwolfach, Germany, June 2011,
• E. Cancès, ICIAM 2011, Vancouver, Canada, July 2011,
• E. Cancès, Minisymposium on mathematics in materials science, Beijing, China, September 2011,
• E. Cancès, distinguished professor lecture, Chinese Academy of Sciences, Beijing, China, September 2011,
• E. Cancès, weekly seminar of the mathematics department, University of Grenoble, February 2011,
• E. Cancès, weekly seminar of the mathematics department, University of Nice, March 2011,
• E. Cancès, weekly seminar of the mathematics department, University of Créteil, May 2011,
• E. Cancès, weekly seminar of the chemistry department, University of Pisa, Italy, October 2011,
• E. Cancès, weekly seminar of the chemistry department, University of Lille, November 2011,
• R. Costaouec, Congrès SMAI 2011, Guidel, May 2011,
• R. Costaouec, ICIAM 2011 conference, Vancouver, July 2011,
• I. Dabo, CEA Seminar, CEA, Saclay, September 2011,
• I. Dabo, CEA Seminar, CEA, Grenoble, September 2011,
• I. Dabo, LPICM Seminar, Ecole Polytechnique, Palaiseau, April 2011,
• I. Dabo, GDR coDFT, Obernai, June 2011,
• I. Dabo, First-principles surface chemistry under applied voltage (contributed oral presentation), Electrochemical Society Meeting, Montreal, May 2011,
• I. Dabo, American Physical Society Meeting, Dallas, March 2011,
• M. Dobson, RSME2011 conference, Avila, February 2011,
• M. Dobson, ICIAM 2011 conference, Vancouver, July 2011,
• M. Dobson, 11th USNCCM conference, Minneapolis, July 2011,
• M. Dobson, workshop Nonequilibrium Processes, Obergurgl, Austria, August 2011,
• V. Ehrlacher, ICIAM 2011, Vancouver, Canada, July 2011,
• V. Ehrlacher, ENUMATH 2011, Leicester, United Kingdom, September 2011,
• V. Ehrlacher, BIRS workshop on Density Functional Theory: fundamentals and applications in condensed matter physics”, Banff, Canada, January 2011,
• V. Ehrlacher, IMA workshop on Large-scale Inverse Problems and Quantification of Uncertainty, Minneapolis, United States, June 2011,
• V. Ehrlacher, MFO workshop on mathematical methods in quantum chemistry, Oberwolfach, Germany, June-July 2011,
• C. Le Bris, plenary lecture, International conference on "Frontiers of Computational and Applied Mathematics", Peking University, Beijing China, October 2011,
• C. Le Bris, keynote lecturer, joint MIT (CCE) - Politecnico di Milano (MOX) workshop, "Reduction Strategies for the Simulation of Complex Problems", Milano, January 2011,
• C. Le Bris, INI/WIMCS Joint Follow-Up Meeting on Computational challenges in partial differential equations, Swansea University, April 2011,
• C. Le Bris, “The ACMAC workshop on Stochastic Partial Differential Equations”, Heraklion, Crete, June 2011,
• C. Le Bris, Sino-French Workshop on Contemporary Applied Mathematics, Fudan University, Shanghai, July 2011,
• C. Le Bris, ICIAM conference, Minisymposium on Reduced basis methods and their applications, Vancouver, Canada, July 2011,
• C. Le Bris, ICIAM conference, Minisymposium on Coupling Atomistic and Continuum Simulations: Coping with Length and Time Scales, Vancouver, Canada, July 2011,
• C. Le Bris, ICIAM conference, Minisymposium on multiscale interaction between microscopic and continuum scales, Vancouver, Canada, July 2011,
• C. Le Bris, Modern Trends in PDE’s, Geometric Analysis and Mathematical Physics, University of Cergy-Pontoise, September 2011,
• C. Le Bris, Workshop on Partial Differential Equations in Mathematical Physics and their Numerical Approximation, Levico Terme (Trento, Italy), September 2011,
• C. Le Bris, Workshop Modern Techniques in the Numerical Solution of Partial Differential Equations, Heraklion, Crete, September 2011,
• C. Le Bris, Minisymposium on mathematics in materials science, Beijing, September 2011,
• C. Le Bris, Workshop on Control and Optimization of PDEs, Graz, October 2011,
• C. Le Bris, Workshop Modeling of defects, Singapore, December 2011,
• C. Le Bris, Penn State University Math Colloquium, 2011,
• C. Le Bris, NCMIS Distinguished Lecture Series National Center for Mathematics and Interdisciplinary Science, Chinese Academy of Sciences, 2011,
• F. Legoll, workshop on “Multiscale simulation of heterogeneous materials and coupling of thermodynamic models”, Louvain, January 2011,
• F. Legoll, workshop on “Mathematical Analysis for Peridynamics”, Oberwolfach, January 2011,
• F. Legoll, Workshop “Random Media: Homogenization and Beyond”, IPAM, Los Angeles, January 2011,
• F. Legoll, RSME2011 conference, Avila, February 2011,
• F. Legoll, seminar of the POEMS team-project, Paris, February 2011,
• F. Legoll, Fraunhofer Institute seminar, Kaiserslautern, March 2011,
• F. Legoll, workshop on Stochastic Multiscale Methods, Banff, March 2011,
• F. Legoll, Applied Mathematics Colloquium, Caltech, April 2011,
• F. Legoll, 10ième Colloque National en Calcul des Structures, Giens, May 2011,
• F. Legoll, workshop on “Ginzburg-Landau equations, Dislocations and Homogenization”, Ile de Ré, May 2011,
• F. Legoll, Workshop on “Coarse-graining of many-body systems”, Heraklion, June 2011,
• F. Legoll, AMS von Neumann Symposium on Multimodel and Multialgorithm Coupling for Multiscale Problems, Snowbird, July 2011,
• F. Legoll, ICIAM 2011 conference, Vancouver, July 2011,
• F. Legoll, 11th USNCCM conference, Minneapolis, July 2011,
• F. Legoll, Enumath conference, Leicester, September 2011,
• F. Legoll, Mini-symposium on Mathematics in Materials Science, September 2011,
• F. Legoll, 3rd Summer School of the Large Scale Initiative "FUSION", Paris, September 2011,
• F. Legoll, Numerical analysis seminar, Department of Mathematics, Texas A & M University, September 2011,
• T. Lelièvre, Meeting on Computational Challenges in Partial Differential Equations, Swansea University, April 2011,
• T. Lelièvre, Workshop on complexity and computational methods in statistics, Sante Fe, April 2011,
• T. Lelièvre, Séminaire du CMAP, Ecole Polytechnique, May 2011,
• T. Lelièvre, Workshop on Macroscopic Modeling of Materials with Fine Structure, Carnegie Mellon University, Pittsburgh, May 2011,
• T. Lelièvre, Workshop Coarse-graining of many-body systems: analysis, computations and applications, University of Crete, Greece, June 2011,
• T. Lelièvre, ENUMATH 2011, Vancouver, July 2011,
• T. Lelièvre, Plenary speaker at the ENUMATH conference, University of Leicester, September 2011,
• T. Lelièvre, Minisymposium on Mathematics in Materials Science, Pekin, September 2011,
• T. Lelièvre, Workshop on Nucleation and Rare Events, Pekin, September 2011,
• T. Lelièvre, Journées scientifiques MoMaS, Marseille, November 2011,
• T. Lelièvre, Workshop Reduced Basis, POD or PGD-Based Model Reduction Techniques, Cachan, November 2011,
• T. Lelièvre, Workshop Interactions EDPs/Probas, GDR CHANT, Grenoble, November 2011,
• T. Lelièvre, Workshop on Multiscale Systems: Theory and Applications, Warwick, December 2011,
• F. Nier, Journée de la Fédération CNRS Amiens-Reims-Compiègne", November 2011,
• F. Nier, Mathematics-Physics meeting around Bose-Einstein Condensates, ANR Volquan, Versailles, December 2011,
• F. Nier, weekly seminar of the mathematics department, University of Créteil, December 2011,
• G. Samaey, Séminaire de mathématiques appliquées, Collège de France, Paris, May 2011,
• G. Samaey, SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 2011,
• G. Samaey, Making it Real Seminar, Bristol University, May 2011,
• G. Samaey, Applied Mathematics and Mathematical Physics Seminar, Imperial College, London, June 2011,
• G. Samaey, von Neumann Symposium, Snowbird, Utah, July 2011,
• G. Stoltz, Summer school on Electronic Structure Analysis and Computation, Shanghai Jiao Tong University, China, June 2011
• G. Stoltz, ICIAM, Vancouver, Canada, July 2011,
• G. Stoltz, Molecular Kinetics, Berlin, Germany, September 2011,
• G. Stoltz, Minisymposium on mathematics in materials science, Beijing, China, September 2011,
• G. Stoltz, weekly seminar of the mathematical physics group, Université de Cergy, November 2011,
• G. Stoltz, journée CECAM on modeling of matter, Paris, December 2011,
• G. Stoltz, Workshop on Multiscale Systems: Theory and Applications, Warwick, December 2011,
• F. Thomines, workshop on “Multiscale simulation of heterogeneous materials and coupling of thermodynamic models”, Louvain, January 2011,
• F. Thomines, ICIAM 2011 conference, Vancouver, July 2011,
• F. Thomines, ENUMATH conference, Leicester, September 2011,
• F. Thomines, Numerical analysis seminar, Department of Mathematics, Texas A & M University, September 2011,
In addition to the above, some members of the team have been invited for stays in institutions abroad:

- F. Legoll, Texas A & M University, College Station, USA, 30 Nov - 9 Dec 2011,
- F. Thomines, Texas A & M University, College Station, USA, September 2011,

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

- E. Cancès, Lectures (6h) on molecular modelling, Université de Versailles-St Quentin, March 2011,
- C. Le Bris, Lectures on Stochastic homogenization, Series of 4 one-hour lectures, Colloque "Marches aléatoires, Milieux aléatoires", Roscoff, June 2011,
- C. Le Bris, Lectures on Stochastic homogenization, Series of 3 one-hour lectures, Third International Riemann International School of Mathematics, "Free Surface, Multiphase and Multiphysics Problems", Verbania on the Lago Maggiore, September 2011,
- C. Le Bris, Lectures on Stochastic homogenization, Series of 3 one-hour lectures, National University of Singapore, December 2011,
- F. Legoll, Lectures (5h) on "Some recent numerical approaches for random multiscale materials", EMS School and Workshop on Mathematics for Multiscale Phenomena, Bedlewo, October 2011,
- F. Legoll, Lectures (3h) on "Energie libre et dynamique réduite en dynamique moléculaire", GdR CHANT workshop on “Interactions EDPs/Probas: modèles probabilistes pour la simulation moléculaire”, Grenoble, November 2011.

Members of the project-team have presented posters in the following events:

- R. Costaouec, Workshop Random Media: Homogenization and Beyond, IPAM, Los Angeles, January 2011,
- M. Dobson, AMS von Neumann Symposium on Multimodel and Multialgorithm Coupling for Multiscale Problems, Snowbird, July 2011,
- M. Dobson, Metastability and stochastic processes, Ecole des Ponts ParisTech, September 2011,

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

- S. Lahbabi, BIRS workshop on Density Functional Theory: fundamentals and applications in condensed matter physics”, Banff, Canada, January 2011,
- S. Lahbabi, MFO workshop on mathematical methods in quantum chemistry, Oberwolfach, Germany, June-July 2011,
- S. Lahbabi, Modern Trends in PDE’s, Geometric Analysis and mathematical physics, Cergy, September 2011,
- S. Lahbabi, Frontiers in Mathematical Physics, Cergy, May 2011,
- S. Lahbabi, Summer school on current topics in Mathematical Physics, Vienna, Austria, August 2011,
NACHOS Project-Team (section vide)
NANO-D Team

8. Dissemination

8.1. Animation of the scientific community

8.1.1. Program Committees

Stéphane Redon was a member of the program committee of the 2011 SIAM Conference on Geometric and Physical Modeling (GD/SPM 2011).

8.1.2. Steering Committees

Stéphane Redon is a member of the steering committee of the Nanoscience Foundation in Grenoble.

8.2. Participation to conferences, seminars

- M. Bosson attended the First Les Houches school in computational physics - soft matter (June 2011).
- S. Grudinin participated in a conference "From Computational Biophysics to Systems Biology (CBSB11)", Juelich, Germany (July 20-22, 2011).
- S. Grudinin participated in a workshop "Innovative Approaches to Computational Drug Discovery", Lausanne, Switzerland (October 3-6, 2011).
- S. Grudinin gave a talk "Quadratic Optimization to Predict Protein-Protein Interactions" at a workshop "INRIA Workshop on Statistical Learning", Paris, France (December 5-6, 2011) where he participated with P. Popov.
- S. Redon gave a talk "Adaptive Algorithms for Modeling and Simulating Nanosystems” at McGill University, Montreal, Canada (August 28, 2011).

8.3. Teaching

8.3.1. Maël Bosson

- Licence: Analysis (Lebesgue theory, Fourier transform, distribution theory), 36h, INPG ENSIMAG, France
- Licence: Advanced numerical methods 12h, INPG ENSIMAG, France
- Licence: Numerical Analysis, 12h, INPG Pagora, France
- High School: Mobinet, 12h, INRIA Grenoble Rhone-Alpes, France
- High School: Introduction to chemistry, 3h, CIME Nanoschool, Grenoble, France

8.3.2. Sergei Grudinin

- Licence: Seminars on “Modeling and Simulations of Macromolecules”, 10h (May 23 - 37; September 19-26 2011), MIPT, Moscow, Russia

8.3.3. Stéphane Redon

- Licence: “Introduction to computer science”, INF311 and INF321, 80h, Ecole Polytechnique, Paris, France
9. Dissemination

9.1. Animation of the scientific community

- J.-A. Désidéri is appointed part-time by ONERA (Numerical Simulation and Aeroacoustics Department, DSNA-Châtillon, and Applied Aerodynamics Department, DAAP-Meudon). This primarily results in the supervision of theses in computational fluid dynamics and optimization. This year, M. Bompard defended his thesis and five other theses are in progress. This supervision stimulates a scientific cooperation between our laboratories at both levels of senior researchers (organization of seminars and a short-course of continuing education, multi-disciplinary prospective) and doctoral students (participation in technical brainstormings, exchange of software, etc).

- J.-A. Désidéri and J. Peter (ONERA/DSNA) have been the coordinators of the continuing education short course: Verification of numerical simulations in continuous mechanics. Notion of Validation at Collège de Polytechnique, June 7-8, 2011. At this occasion, J.-A. Désidéri gave the seminar: Analysis of approximation errors in classical PDE problems with application to continuous mechanics (4.5 hrs).

9.2. Participation in scientific committees

- R. Duvigneau is member of the CFD (Computational Fluid Dynamics) committee of ECCOMAS (European Community for Computational Methods in Applied Science).

- R. Duvigneau is member of CNU (Conseil National des Universités) for the 26th section (applied mathematics and application of mathematics).

- J.-P. Zolésio is chair of WG 7.2 on Computational Techniques in Distributed Systems, International Federation for Information Processing (IFIP) TC7: System Modeling and Optimization.

9.3. Teaching


Licence: Solid Mechanics (statics, kinematics, dynamics, energetics), 45.5 hrs, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (F. Z. Oujebbour).


Master: Conservation laws and traffic flow models, 32 hrs, M2, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis (P. Goatin).

PhD & HdR:
PhD : Manuel Bompard, Modèles de substitution pour l’optimisation globale de forme en aérodynamique et méthode locale sans paramétrisation, University of Nice Sophia Antipolis, December 2011, supervisors: J. A. Desideri and Jacques Peter (ONERA/DSNA).

PhD in progress : Sébastien Bourasseau, Méthodes de raffinement de maillages non structurés basées sur le vecteur adjoint pour le calcul de coefficients aérodynamiques, October 2011, Supervisors: Jean-Antoine Désidéri and Jacques Peter (ONERA/DSNA).

PhD in progress : Aalae Benki, Optimisation concurrente de forme de coque mince en régimes élastoplastique et de crash, October 2010, supervisor: A. Habbal.

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

PhD in progress : Samira El Moumen, Portfolio Management in Finance, October 2009, supervisors: R. Aboulaich, R. Ellaia (Rabat) and A. Habbal.

PhD in progress : Imane Ghazlane, Optimisation aérodynamique et structurale de la voilure d’un avion de transport avec la méthode adjointe, October 2009, Supervisors: Jean-Antoine Désidéri and Gérald Carrier (ONERA/DAAP).

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


PhD in progress : Andrea Minelli, Optimisation simultanée des performances aérodynamiques et du bang sonique d’un aéronef supersonique, October 2010, Supervisors: Jean-Antoine Désidéri and Itham El Salah Dinh (ONERA/DAAP).

PhD in progress : Maxime Nguyen Dinh, Qualification des simulations numériques par adaptation anisotropique de maillages, October 2011, Supervisors: Jean-Antoine Désidéri and Jacques Peter (ONERA/DSNA).

PhD in progress : Fatima Zahra Oujebbour, Modèles de jeux en optimisation de forme en emboutissage, October 2010, supervisor: A. Habbal.


PhD in progress : Anis Theljani, Stratégies de jeux et algorithmes en problèmes inverses et en traitement d’images, November 2011, Supervisors: M. Kallel, M. Moakher (Tunis) and A. Habbal.


PhD in progress : Adrien Zerbinati, Optimisation multidisciplinaire robuste pour application à l’automobile, January 2010, Supervisors: Jean-Antoine Désidéri and Régis Duvigneau.
POEMS Project-Team

9. Dissemination

9.1. Animation of the scientific community

- 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 (Responsable : Etienne Balmes)”.
- A. S. Bonnet-Ben Dhia is presidente of the “Conseil scientifique de l’Institut des sciences de l’ingénierie et des systèmes (INSIS-CNRS)”.
- M. Bonnet is associate editor of Engineering Analyses with Boundary Elements (since July 2011).
- 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) since July 2008
- 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 Hiring Committee of Ecole Polytechnique in Applied Mathematics.
- P. Joly is a member of the Post Docs Commission of INRIA Rocquencourt.
- 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.
- P. Joly is an expert for the MRIS (Mission pour l’Innovation et la Recherche Scientifique) of DGA (Direction Générale de l’Armement)
- P. Joly is a scientific expert for the “Fondation de Recherche pour l’Aéronautique et l’Espace” in the thematic “Mathématiques Appliquées au domaine de l’Aéronautique et Espace”.
- 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: A. Burel, N. Chaulet)

9.2. Teaching

- Eliane Bécache

- Anne-Sophie Bonnet-Ben Dhia
  - *Outils élémentaires d’analyse pour les EDP*, ENSTA, Paris (1st year).
Computational models and simulation - Dissemination - Project-Team POEMS

– Théorie spectrale des opérateurs autoadjoints et applications aux guides optiques, ENSTA, Paris (2nd year).
– Propagation des ondes, Ecole Centrale de Paris (M2).

• Marc Bonnet
– Problèmes inverses, Master TACS (ENS Cachan) et DSMSC (Centrale Paris).
– Méthodes intégrales, Master TACS (ENS Cachan).

• Laurent Bourgeois
– Outils élémentaires pour l’analyse des EDP, ENSTA, Paris (1st year).
– Fonctions de la variable complexe, ENSTA, Paris (2nd year).

• Aliénor Burel
– Probabilités, IUT d’informatique, Université Paris-Sud XI, Orsay (2nd year).
– Analyse, IUT d’informatique, Université Paris-Sud XI, Orsay (1st year).

• Maxence Cassier
– Système dynamique: Stabilité et Commande, ENSTA, Paris (1st year).
– Introduction à MATLAB, ENSTA, Paris (1st year).
– Fonction de variable complexe, ENSTA, Paris (2nd year).
– Tutorat pour élèves en difficulté en mathématiques appliquées, ENSTA, Paris (1st year).

• Stéphanie Chaillat
– Introduction à la discrétisation des équations aux dérivées partielles, ENSTA, Paris (1st year).

• Nicolas Chaulet
– Équations différentielles et introduction à l’automatique, ENSTA, Paris (1st year).
– Optimisation quadratique et analyse convexe, ENSTA, Paris (1st year).
– Méthode des éléments finis, ENSTA, Paris (2nd year).

• Lucas Chesnel
– Méthode des éléments finis, ENSTA, Paris (2nd year).
– Introduction au calcul scientifique, ENSTA, Paris (2nd year).
– Les équations de Maxwell et leur discrétisation, ENSTA, Paris (3rd year), and Master "Modeling and Simulation" (M2).

• Patrick Ciarlet
– Méthode des éléments finis, ENSTA, Paris (2nd year).
– Parallélisme et calcul réparti, ENSTA (3rd year), and Master "Modeling and Simulation" (M2).
– Les équations de Maxwell et leur discrétisation, ENSTA, Paris (3rd year), and Master "Modeling and Simulation" (M2).
– Practical tools to solve indefinite problems, Master, Facultade de Matemáticas, USC, Santiago de Compostela.

• Julien Coatléven
• Introduction à la discrétisation des équations aux dérivées partielles, ENSTA, Paris (1st year)

• Gary Cohen
  – Méthodes numériques pour les équations des ondes, Master 2, Université de Paris-Dauphine

• Sonia Fliss
  – Méthode des éléments finis, ENSTA, Paris (2nd year)
  – Programmation scientifique et simulation numérique, ENSTA, Paris (2nd year)
  – Introduction à la discrétisation des équations aux dérivées partielles, ENSTA, Paris (1st year).

• Christophe Hazard
  – Outils élémentaires d’analyse pour les EDP, ENSTA, Paris (1st year)
  – Théorie spectrale des opérateurs autoadjoints et applications aux guides optiques, ENSTA, Paris (2nd year).

• Sébastien Impériale
  – Introduction à la discrétisation des équations aux dérivées partielles, ENSTA, Paris (1st year).
  – Programmation scientifique et simulation numérique, ENSTA, Paris (2nd year)
  – Discrétisation de systèmes hyperboliques symétriques par Galerkin discret, Collège polytechnique.

• Patrick Joly
  – Introduction à la discrétisation des équations aux dérivées partielles, ENSTA, Paris (1st year).
  – Outils élémentaires d’analyse pour les EDP, ENSTA, Paris (1st year).

• Marc Lenoir
  – Fonctions de variable complexe, ENSTA, Paris (2nd year).
  – Équations intégrales, ENSTA, Paris (3rd year).

• Eric Lunéville
  – Introduction au calcul scientifique, ENSTA, Paris (2nd year)
  – Programmation scientifique et simulation numérique, ENSTA, Paris (2nd year)
  – Propagation dans les guides d’ondes, ENSTA, Paris (2nd year)

• Jean-François Mercier
  – Outils élémentaires d’analyse pour les EDP, ENSTA, Paris (1st year).
  – Fonctions de variable complexe, ENSTA, Paris (2nd year).
  – Fluides compressibles, ENSTA, Paris (2nd year).
  – Théorie spectrale des opérateurs autoadjoints et application aux guides optiques, ENSTA, Paris (2nd year).

• Nicolas Salles
  – Analyse et séries de Fourier, Université Paris XI Orsay (L2)
  – Systèmes Linéaires (Matlab), Université Paris XI Orsay (L3)
9.3. Participation in Conferences, Workshops and Seminars

- Eliane Bécache
  - *Some contributions to wave propagation problems in unbounded domains*, WAM, Heraklion, May 2-5, 2011

- Anne-Sophie Bonnet-Ben Dhia

- Marc Bonnet

- Jean-David Benamou
  - *Numerical Microlocal Analysis*, Advances in Viscosity Solutions Nom de la conference 1, Banff Research Centre (Canada), February 2011.

- Laurent Bourgeois
  - *Imaging an elastic waveguide with the Linear Sampling Method by using the Lamb modes*, Applied Inverse Problems, College Station (USA), may 2011

- Maxence Cassier

- Juliette Chabassier
  - *Introduction of high order $\theta$ schemes for the linear wave equation*, ICIAM conference, Vancouver, July, 2011.

- Stéphanie Chaillat

Fast Multipole Method for 3-D elastodynamic and viscoelastodynamic boundary integral equations, Seminar of the Department of Mathematics, Parma University, Italy, June 2011.

A fast and adaptive algorithm for the inverse medium problem with multiple frequencies and multiple sources for the 3-D elastodynamic equation, 8th International Conference on Structural Dynamics (Eurodyn 2011), Leuven, Belgium, July 2011.

Nicolas Chaulet

Lucas Chesnel
- Radiation condition for a non-smooth interface between a dielectric and a metamaterial, Numerical Electromagnetics & Industrial Applications (NELIA 2011), Santiago de Compostela, October, 2011.
- Radiation condition for a non-smooth interface between a dielectric and a metamaterial, 10th International Conference on Mathematical and Numerical Aspects of Waves, Vancouver, July, 2011.

Patrick Ciarlet
- Scalar transmission problems between dielectrics and metamaterials, 10th International Conference on Mathematical and Numerical Aspects of Waves, Vancouver, July, 2011.

Sonia Fliss
- Vers des méthodes de décomposition de domaines pour des problèmes de guides d’ondes non classiques, 5ème Colloque sur les Tendances des Applications Mathématiques en Tunisie, Algérie, Maroc (TAMTAM), Sousse (Tunisie), 23-26 April 2011.
- A DtN approach for the exact computation of guided moded in a photonic crystal waveguides, 10th International Conference on Mathematical and Numerical Aspects of Wave Propagation, Vancouver, July 2011.

Christophe Hazard
- Using time reversal for space-time focusing of acoustic waves, 5ème Colloque sur les Tendances des Applications Mathématiques en Tunisie, Algérie, Maroc (TAMTAM), Sousse (Tunisie), 23-26 April 2011.
- A uniqueness property for the scattering by a junction of open waveguides, 10th International Conference on Mathematical and Numerical Aspects of Wave Propagation, Vancouver, July 2011.
• Sébastien Impériale

• Patrick Joly
  – *Mathematical and numerical modeling of piezoelectric sensors for non destructive testing*, NELIA 2011, Santiago de Compostela, October 2011
  – *Mathematical modelling of electromagnetic waves in heterogeneous lossy coaxial cables*, 4th International Conference SCPDE, Hong Kong Baptist University, Hong Kong, December 2011

• Jean-François Mercier
  – *Time harmonic acoustic scattering in presence of a shear flow and an impedance condition*, Anne-Sophie Bonnet-Ben Dhia, Jean-François Mercier and Florence Millot, 10th International Conference on Mathematical and Numerical Aspects of Wave Propagation, Vancouver, July 2011.
  – *Time harmonic acoustic scattering in presence of a shear flow and a Myers impedance condition*, Anne-Sophie Bonnet-Ben Dhia, Jean-François Mercier and Florence Millot, 17th AIAA/CEAS Aeroacoustics Conference (32nd AIAA Aeroacoustics Conference), American Institute of Aeronautics and Astronautics, Portland, may 2011

• Nicolas Salles

• Ricardo Weder
  – *Creación de Entrelazamiento en Colisiones a Bajas Energías*, Seminario del Instituto de Física Rosario, Rosario, Argentina, 24.10.2011.
PUMAS Team

7. Dissemination

7.1. Animation of the scientific community

7.1.1. Conference Program Committees

- On behalf of GAMNI, H. Guillard is member of the Committee "Computational Fluid Dynamics" of ECCOMAS : European Community of Computational Methods in Applied Sciences
- H. Guillard was member of the scientific committee of the FVCA6 conference held in June 2011 in Prague - Czech republic.

7.1.2. Editorial activities

- H. Guillard has been the guest editor in charge of the section Fusion Plasma of the special issue of the Journal of computational physics (Volume 231, Issue 3, February 2012) devoted to Computational Plasma physics.
- E. Sonnendrucker (EPI CALVI) and H. Guillard have been editors of the proceedings of NMCF09 (Numerical Models for Controlled Fusion 09) in a special issue of the journal Discrete and Continuous Dynamical Systems, Series S DCDS-S 5-2 April 2012.
- E. Cancès, N. Crouseilles, H. Guillard, B. Nkonga and E. Sonnendrücker have been editors of the proceedings of CEMRACS’10 research achievements: Numerical modeling of fusion in the journal ESAIM: Proceedings Vol. 32 (October 2011)

7.1.3. Ph.D. thesis and HDR Committees

Alain Dervieux was in the PhD jury of

- Géraldine Olivier, Paris 6, 22 april 2011
- Anca Belme, University of Nice, 8 december 2011

and acted as “rapporteur” for the PhD Thesis of :

- Thibaud Marcel, Toulouse, 16 november 2011

Hervé Guillard was in the PhD jury of :


and acted as “rapporteur” for the PhD Thesis of :

- Walid Kherji, “Méthode de correction de pression pour les équations de Navier-Stokes compressibles”, University of Provence, 28 Novembre 2011
- Pierre-Elie Normand, " Application de méthodes d’ordre élevé en éléments finis pour l’aérodynamique", Université de Bordeaux 1, 13 Décembre 2011

Boniface Nkonga was as chair in the PhD jury of

- M. KRAUSHAAAR, Institut National Polytechnique de Toulouse.
- A. RATNANI, Université de Strasbourg.
acted as “rapporteur” for the PhD Thesis defences of

- J. VERGHAEGEN, Université de Marseille, 2011,
- G. OLIVIER, Université Pierre et Marie CURIE (Paris VI).

and as “rapporteur” for the HDR defence of

- G. TCHUEN, Univ. of Provence, Marseille.

R. Pasquetti was in the PhD jury of the following thesis defences:

- Laura Lazar, University of Nice, 19-04-2011
- Luca Biancofiore, University of Nice, 06-06-2011
- Adel Haddad, (Chair), University of Provence, 15-12-2011

7.2. Teaching

7.2.1. Doctoral formation

- H. Guillard is member of the "école doctorale" ED 353 council : Sciences pour l’Ingénieur : Mécanique, Physique, Micro et Nanoélectronique of the university of Provence.

7.2.2. Summer schools and tutorials

SIMPAF Project-Team

8. Dissemination

8.1. Animation of the scientific community

C. Calgaro is in charge of the communication of the Math. Department and she is in charge of the relation between the University of Lille and high schools. Accordingly, she organizes various events like “Les Métiers des maths”, “Stage de maths en seconde” and “Demain l’université”. With the help of the Communication Department of INRIA, C. Calgaro, E. Creusé and T. Goudon have 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”.

F. Lagoutière organized CEMRACS 2011, and A. Gloria and Y. Penel proposed and supervised two research projects at CEMRACS 2011.

8.2. Teaching

T. Goudon and P. Lafitte are members of the jury of the national hiring committee of the “Agrégation de mathématiques”.

S. De Bièvre is in charge of the Doctoral formation in Applied Mathematics at the University of Lille.

C. Besse and E. Creusé are involved in the project of a new International Master degree at the University of Lille devoted to Scientific Computing.

Members of the team are involved in MSc degrees at USTL (C. Calgaro, S. De Bièvre, G. Dujardin, A. Gloria, P. Lafitte, M. Rousset).
8. Dissemination

8.1. Animation of the scientific community

Reviewing activities in the following international journals:

- Journal of Fluid Mechanics
- Physics of Fluids
- Journal of Computational Physics
- International Journal of Multiphase Flows
- International Journal of Shock Waves
- International Journal of Numerical Methods in Fluids
- Combustion Theory and Modelling
- FUEL
- Journal of Scientific Computing
- European Journal of Mechanics B/Fluids
- Continuum Mechanics and Thermodynamics
- Journal of Engineering Mathematics
- Mathematical Reviews

8.2. Teaching

1. ÉRIC DANIEL:
   Polytech Engineering school: *Fluid Mechanics (perfect gas), Compressible Fluid Mechanics, Numerical Methods for the engineer and Two-phase gas-particle flows*, 144 h, respectively first, second, first and second year, Aix-Marseille University, France.

2. NICOLAS FAVRIE:
   Polytech Engineering school and Licence: *Structure modelling, Programming languages, Material resistance and concrete structure study in civil engineering and Engineering science initiation*, 240 h, first, second and third year and L1, Aix-Marseille University, France.

3. SERGEY GAVRILYUK:
   Master: *Mathematical methods for physicists, Continuum mechanics and Two-phase flow modelling*, 192 h, M1 and M2, Aix-Marseille University, France.

4. OLIVIER LE MÉTAYER:
   Polytech Engineering School: *Mathematics, Fluid mechanics and Thermics*, 192 h, first and second year, Aix-Marseille University, France.

5. JACQUES MASSONI:
   Polytech Engineering school, Master: *Programming languages for scientific computing, Fluid mechanics, Numerical methods for fluid dynamics and High performance computing*, 192 h, first, second and third year and M2, Aix-Marseille University, France.
6. **FABIEN PETITPAS**:

**Polytech Engineering school:** Thermodynamics, C programming language and Supervision of final study internship, first, third and fifth year, Aix-Marseille University, France.

7. **RICHARD SAUREL**:

**Polytech Engineering school, Master:** Heterogeneous flows, fifth year and M2, Aix-Marseille University, France.

**PhD & HdR:**


8.3. **Responsabilities**

**Éric Daniel:** Director of the Mechanical Engineering Department of the Polytech Engineering School of Marseille with a partial discharge of education.

**Nicolas Favrie:** Head teacher of international relations for the Civil Engineering Department.

**Sergey Gavrilyuk:** Director of the Master M2 Diphasic flows, Energetics and Combustion.

**Richard Saurel:** Director of the Doctoral School in Engineering Sciences (which includes all research units of Marseille, Aix en Provence and Toulon, in Mechanics, Acoustics, Energetics, Macroscopic Physics, Micro and Nanoelectronics). The laboratories involved are CNRS UMR and UPR units (LMA, IUSTI, IRPHE, M2P2, IM2NP), with a total of more than 300 researchers and about 200 PhD students.
8. Dissemination

8.1. Animation of the scientific community

- Anca Belme presented a talk on "A priori anisotropic goal-oriented estimates for mesh adaptation in compressible CFD" at the 16th International Conference on Finite Elements in Flow Problems (March).
- Alain Dervieux gave a short course on "Sensitivity analysis by adjoint Automatic Differentiation and Application" at the ERCOF-TAC Course on Uncertainty Management and Quantification in Munich, Germany (March), and again at the ERCOF-TAC-NIA Course in Hampton, Virginia, USA (September).
- Alexandre Carabias and Alain Dervieux presented their work on "Dissipation and dispersion control of a quadratic-reconstruction advection scheme" at Honom 2011 in Trento, Italy (April).
- Alain Dervieux was in the PhD jury of Géraldine Olivier, Paris VI (April).
- Alexandre Carabias has presented a poster on "Analyse et amélioration d’un schéma à reconstruction quadratique" at SMAI 2011, Lorient (May).
- Anca Belme presented her work at University of Montpellier and at University of Pau.
- Alain Dervieux presented a communication on "The effect of consistent coarse grid in Schwarz algorithms" at Parallel-CFD-2011, Barcelona, Spain (May).
- Hubert Alcin presented a talk on "Introduction des grilles grossières dans la méthode de définition et de balancing" in Montpellier at an ECINADS seminar, joint with the Barcelona Computing Center (May).
- Anca Belme presented a talk on "Application of anisotropic goal-oriented unsteady mesh adaptation to Aerodynamics and Aeroacoustics" at the ADMOS 2011 conference, Paris (June).
- Alain Dervieux gave a short course on "Indicateurs de raffinement et adaptation de maillage en simulation numérique pour la Mécanique des Fluides" at Collège X, Paris (June).
- Hubert Alcin presented a communication on "Volume-Agglomeration Coarse Grid In Schwarz Algorithm" to FVCA6, Prague, Czech (June).
- The team has an agreement with EADS in Suresnes, France, to support their use of AD in inverse problems. Laurent Hascoët visited them twice in 2011.
- Trond Steihaug presented his work on "A Class of Methods Combining L-BFGS and Truncated Newton" at the 26th International Symposium on Computer and Information Sciences, Royal Society, London, UK (September).
- Frederic Alauzet presented joint work on "Anisotropic goal-oriented mesh adaptation for time dependent problems" at the 20th IMR Conference in Paris (October).
- Laurent Hascoët was in the PhD jury of P. Pham Quang, INPG Grenoble (October).
- Laurent Hascoët gave a short course on "Automatic Differentiation in Optimization" at the ERCOF-TAC course on Design Optimization in Manching, Germany (November).
- Alain Dervieux was referee in the PhD jury of Thibaud Marcel, University of Toulouse (November).
- Laurent Hascoët is on the organizing committee of the Euro AD Workshops. He attended this year’s workshop in Berlin, Germany (December).
• Trond Steihaug gave a talk on "Factorable Programming revisited" at the 12th Euro AD Workshop in Berlin, Germany (december).

• Laurent Hascoët is a member of the internal “CDT” committee at INRIA Sophia-Antipolis (“Comité Développement Technologique”).

• TROPICS is coordinator of the ANR project ECINADS, with PUMAS team, university Montpellier 2, Institut de mécanique des Fluides de Toulouse and the Lemma company in Sophia-Antipolis. ECINADS concentrates on solution algorithms for state and adjoint systems in CFD.

8.2. Teaching

Anca Belme: "Algorithmique Numérique", 52 h, 1st year école d’ingénieur, Université de Nice.
Hubert Alcin: "Algorithmique Numérique", 45 h, 1st year école d’ingénieur, Université de Nice.
Hubert Alcin: "Outils mathématiques pour l’ingénieur", 20 h, 1st year prépa intégrée, Université de Nice.
Laurent Hascoët: "Optimisation Avancée", 10 h, Master 2, Université de Nice.

PhD & HdR

PhD : Anca Belme, "Aérodynamique instationnaire et méthode de l’adjoint", Université de Nice, defended december 8, 2011, advisor Alain Dervieux.
PhD in progress : Hubert Alcin, "Contribution algorithmique aux schémas hybrides pour la simulation des grandes structures d’écoulements turbulents", started october 2009, advisor Alain Dervieux.
PhD in progress : Alexandre Carabias, "Algorithmes parallèles et adaptation de maillages pour des phénomènes thermiques complexes", started october 2010, advisor Alain Dervieux.
9. Dissemination

9.1. Animation of the scientific community

L. Baratchart is a member of the editorial board of *Computational Methods and Function Theory* and *Complex Analysis and Operator Theory*.

He was an invited speaker at the Conference on Blaschke products and their Applications (Fields Institute, Toronto), at the Conference “Computational Complex Analysis and Approximation Theory” (Protaras, Cyprus) and at the conference “Recent Trends in Analysis” (Bordeaux). He was a speaker at the ERNSI Workshop on System Identification (Nice) and a colloquium speaker at the University of Wuhan (China).

He was co-organizer (with A. Borichev and N. Nikolskii) of the summer school *Bellman Functions* held at INRIA-Sophia-Antipolis-Méditerranée.

B. Bonnard gave a plenary talk at the “Workshop on Weak KAM theory” in Bordeaux. He was invited to give a talk at LAGEP (Lyon) on optimal contrast in NMR.

Y. Fischer was an invited speaker at the conference WIS&E (Mexico, Nov.). He gave a talk at the SMAI congress (Guidel, May), and at the seminars of the teams MAC (LAAS, Toulouse, Jan.), LMAP (Univ. Pau et Pays de l’Adour, Mar.), at the working groups ITER (lab. JLL, Univ. Paris 6), plasma (JAD lab., Univ. Nice Sophia-Antipolis).

Y. Fischer and M. Olivi gave a talk at the Journées d’Identification et de Modélisation Expérimentale (JIME, Douai, Apr.).

J. Leblond was an invited speaker at the Journées d’Analyse Mathématique et Applications (JAMA 2011, Hammamet, March), at the Second International Conference on the Mathematical Sciences, (Buea, Cameroon, May). She gave a communication at the seminar of the team Analyse et Géométrie, LATP-CMI, Univ Aix-Marseille I (Feb.), and at the meeting of the ANR project AHPI, Bordeaux (Nov.).

A.-M. Nicu gave a communication at the Journées d’Analyse Mathématique et Applications (JAMA 2011, Hammamet, March).

M. Olivi organized the ERNSI workshop in Nice (Sept.).


E. Pozzi gave a communication at the meeting of the GDR AFHA (Clermont-Ferrand, Oct.).

S. Chevillard organized the “Computer arithmetic” session at the “Rencontres arithmétiques de l’informatique mathématique” (RAIM’11, Perpignan, France).

S. Chevillard gave a talk at the conference “ARITH 20”, Tuebingen, Germany.

F. Seyfert gave two talks at the "European Microwave Conference (EuMC 2011)" in Manchester on the topics of filter synthesis and de-embedding of multiplexers. He was at the origin of a European work-group hosted by ESA on the topic of compact multiplexer design, whose first meeting took place in Noordwijkerhout at the end of November.

9.2. Teaching

Licence (or equivalent) : Martine Olivi and Sylvain Chevillard (with Maureen Clerc), Mathématiques pour l’ingénieur (Fourier analysis and integration), section Mathématiques Appliquées et Modélisation, 3rd year, École Polytechnique Univ. Nice-Sophia Antipolis (EPU), France. 13 hours of plenary course, and 26 hours of practical sessions (divided in two groups of students, hence 52 hours of teaching in total).
Doctorat (or equivalent) : Juliette Leblond, Real and complex analysis with applications to other sciences (10h), CIMPA-UNESCO-MICINN Research School, Univ. Buea, Cameroon.

PhD & HdR :


PhD in progress : Slah Chaabi, « Problèmes extrémaux pour l’équation de Beltrami réelle 2-dimensionnelle et application à la détermination de frontières libres », L. Baratchart (co-advised with Univ. Aix-Marseille I).


9.2.1. Committees

- B. Bonnard was President of the PhD defense committees of B. Daoud (Université de Bourgogne, Dijon) and K. Zhang (Univ. C. Bernard, Lyon 1).
- Juliette Leblond was a member of the PhD defense committees of P. Eyimi (Univ. Poitiers), D. Duc Thang (UTC), and of the HdR defense committee of F. Delvare (Univ. Orléans-Bourges).
- Jean-Baptiste Pomet was a member of the PhD defense committee of B. Daoud (Université de Bourgogne, Dijon).
- Martine Olivi was a member of the PhD defense committees of Christian Fischer (École des Mines, Sophia-Antipolis).
- Fabien Seyfert was a member of the PhD defense of Monica Mendoza (Technical University Cartagena, Spain) and Hussein Ezzeddine (Xlim, Lioges, France).
9. Dissemination

9.1. Animation of the scientific community


- V. Acary is co-animator (with R. Leine ETH Zurich) of the European network for nonsmoth dynamics. Member of the ENOC (EUROMECH Nonlinear Oscillations Conference) comittee. Reviewer in 2011 for IEEE Transactions on Automatic Control, Math reviews, ASME Journal of Applied Mechanics, Applied Numerical Mathematics, American Control Committee


9.2. Teaching

Licence : F. Descoubes (Optimisation numérique, 22.5 equiv. TD), J. Malick (Optimisation numérique, 50 equiv. TD)

Master : B. Brogliato (Nonsmooth Dynamical Systems, Master 2 Acsyon, Université de Limoges, 13.5 equiv. TD)
9. Dissemination

9.1. Animation of the scientific community

- F. Bonnans is Corresponding Editor of “ESAIM:COCV” (Control, Optimization and Calculus of Variations), and Associate Editor of “Applied Mathematics and Optimization”, and “Optimization, Methods and Software”.
- F. Bonnans is chairman of the SMAI-MODE group (the optimization group of the French Applied Mathematics Society).

9.2. Teaching

Teaching

Frédéric Bonnans: Cochair of the third year program in applied mathematics, Ecole Polytechnique, France.

- Master Continuous Optimization, 18h, M2, Ecole Polytechnique and U. Paris 6, France.

Hasnaa Zidani: in charge of the third year module "B7: Commande des Systèmes" (84h) at Ensta ParisTech, and of the following courses:

- Master Numerical approximation for front propagation, 21h, M2, Ensta ParisTech, France (also at ECP, France, in collaboration with Ch. Chalons).
- Master Optimal control of nonlinear systems, 21h, M2, Ensta ParisTech
- License Quadratic Optimization, L1, 21h, Ensta ParisTech, France.

Pierre Martinon: Teaching Assistant

- License Quadratic Optimization, L1, 12h, Ensta ParisTech, France.
- License Matlab Introduction, L1, 16h, Ensta ParisTech, France.
- License Numerical Analysis, L1, 16h, Ensae, France.

Zhiping Rao: teaching assistant

- Licence Quadratic Optimisation, L1, 16h, ENSTA ParisTech, France.
- Master Markov Chain process, M1, 16h, ENSTA ParisTech, France.

PhD & HdR theses

HdR : Nicolas FORCADEL, Contribution à l’analyse d’équations aux dérivées partielles avec applications à la dynamique des dislocations et au contrôle optimal. Université Paris-Dauphine, 05-12-2011.


PhD in progress: Xavier Dupuis, Optimal control of populations; medical applications. Sept. 2010, F. Bonnans.


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


9. Dissemination

9.1. Animation of the scientific community

9.1.1. Organization of conferences

- The workshop "The Stochastic Schrödinger Equations in Selected Physics Problems", CEA, Espace de Structure Nucléaire Théorique, Saclay, was partially organized by X. Antoine, December 2011.
- The conference “Contrôle et énergie” has been organized in Nancy by T. Chambrion and G. Millerioux (CRAN, Nancy).

9.1.2. Editorial activities

- F. Alabau is a member of the editorial board of the journal Evolution Equations and Control Theory (EECT), American Institute of Mathematics and Sciences (AIMS)

9.1.3. Expertise

- F. Alabau is a member of the evaluation panel for the INDAM post-doctoral fellowship, 7th european program and member of the scientific committee of the CIMPA-UNESCO-TUNISIE ”Contrôle et stabilisation des EDP”, 9-19 may, Monastir, Tunisia. In may 2011, she carried out an expertise for Paris town for the program “Research in Paris”, for foreign researchers. In February 2011, she carried out an expertise for promotion to the highest grade of professorship for a Research Institute in mathematics, India.

9.1.4. Invited conferences (selection)

- K. Ramdani was invited to
  - Workshop “Control of PDE and Inverse Problems” (Amiens, September 2011);
  - Workshop “Polaritons 2011” (CIRM, April 2011).
- F. Alabau took part to conferences
  - GDRE CONEDP, LATP, Marseille, 21-23 november 2011;
  - IFIP TC7 2011, Mini-symposium Analysis and control of composite PDE systems: new challenges and methods, 12-16 September 2011, Berlin;
  - Conference “Partial Differential Equations, Optimal Design and Numerics”, IV Edition, International Center of Sciences, Benasque, Espagne (Plenary conference);
  - Workshop program of INDAM, GDRE CONEDP, “New trends in Analysis and Control of Nonlinear PDEs”, 13-15 june 2011, Rome (Plenary conference);
  - Conference on Modeling and Control of Nonlinear Evolution Equations, Trieste, 24-27 may 2011, Italy. (plenary conference).
- T. Takahashi was invited to
  - Control of Partial and Differential Equations Days in Orleans, September 26-27, 2011;
International Workshop on Control and Optimization of PDEs, Graz (Austria), October 10-14, 2011

- T. Chambrion was invited to
  - Workshop on Quantum Control, April 2011, Banff, Canada.

- J.F. Scheid was invited to
  - Seminar at the Applied Mathematics Laboratory (LJK) of the University of Grenoble, January 2011;
  - Seminar "GDR MACS / GDR "Contrôle des décollements", ENS Cachan, November 2011.

- X. Antoine was invited to
  - General meeting of GDR Ondes, Nice, 24-26 October 2011;
  - Seminar in Zurich University, Switzerland, March 2011;
  - Seminar of nuclear physics in CEA Bruyères-le-Châtel, June 2011;
  - Seminar in Genève University, Switzerland, October 2011.
  - Université de Liège, Belgique, one month stay, November-December 2011.

9.2. Teaching

9.2.1. Teaching positions

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

- Fatiha Alabau has a full time full professor position in the University of Metz;
- Xavier Antoine has a full time full professor position at INPL;
- Thomas Chambrion has a full time associate professor position at ESSTIN;
- Antoine Henrot has a full time full professor position at INPL;
- Bruno Pinçon has a full time associate professor position at ESIAL;
- Lionel Rosier has a full time full professor position at ESSTIN;
- Jean-François Scheid has a full time associate professor position at ESIAL;
- Marius Tucsnak has a full time full professor position at UHP;
- Julie Valein has a full time associate professor position at ESSTIN.

9.2.2. Other teaching activities

- F. Alabau gave a course on control and stabilization of PDE's, USTBH, Algiers, Algeria (graduate level);
- F. Alabau gave a course on “Stabilization and observability of ordinary and partial differential equations” CIMPA-UNESCO-TUNISIE school on "Contrôle et stabilisation des équations aux dérivées partielles, 9-19 may, Monastir, Tunisia (graduate level);
- T. Chambrion gave a lecture on “Control of bilinear Schrödinger equations” in Würzburg, Germany (graduate level);

9.2.3. PhD & HdR

- Bertrand Thierry has defended his thesis “Analyse et Simulations Numériques du Retournement Temporel et de la Diffraction Multiple” (supervisor: X. Antoine and K. Ramdani);
Erica Schwindt defended her PhD thesis “Problèmes d’interaction entre un fluide newtonien incompressible et une structure” in cotutelle between the University of Chile and the University of Nancy 1 with Carlos Conca and Takéo Takahashi. Her work deals with two different fluid–structure interaction problems in the three dimensional case: in the first problem, she make a theoretical analysis of a problem of interaction between a deformable structure and an incompressible Newtonian fluid; in the second problem, she consider a geometrical inverse problem associated to a fluid-rigid body system.

Jérôme Loheac is a PhD student in UHP since 2010 (supervisor: M. Tucsnak);

Roberto Guglielmi is a PhD student in cotutelle with University Tor Vergata, Roma, Italy, since october 2010 (co-supervisor F. Alabau).
DISCO Team

9. Dissemination

9.1. Animation of the scientific community

+ C. Bonnet is a member of the IFAC Technical Comittee on Robust Control, of the Program Committee of the Septième Conférence Internationale Francophone d’Automatique, CIFA 2012, Grenoble and of the CNU61 (National Council of Universities). She is also in the boards of the association Femmes et Mathématiques and of the consortium Cap’Maths. She is co-organizer of the “Séminaire du Plateau de Saclay”.

+ Frédéric Mazenc was associate editor for the conferences : 2012 Chinese Control and Decision Conference, Taiyuan, China, 2012 American Control Conference, Montréal, Canada, Septième Conférence Internationale Francophone d’Automatique, CIFA 2012, Grenoble, 50th IEEE Conference on Decision and Control and European Control Conference, Orlando, FL, USA. He is co-organizer of the ‘Séminaire du Plateau de Saclay”.

+ A. Quadrat is an Associate Editor’ of the international journal “Multidimensional Systems and Signal Processing” (Springer). With Thierry Coquand, he organized a mini-workshop on constructive homological algebra, its applications and its implementations at the CIRM, Luminy, 24–28/01. He was a member of the Program Committee of the “7th International Workshop on Multidimensional Systems” (nDS’11, Poitiers, 05–07/09). He was an invited speaker at the “2nd workshop on Differential Equations by Algebraic Methods” (DEAM2, Linz, 09–11/02), at the conference “Functional Equations at Limoges” (FELIM, Limoges, 14–16/03) and at the conference “Modern Constructive Algebra – Dedicated to Henri Lombardi” (Besançon, 15–16/10). He was also invited to give a lecture at the conference “Mathematics: Algorithms and Proofs” (MAP, Lorentz center, Leiden, 28–11/02–12), and to give a talk at RWTH-Aachen University (Graduiertenkolleg on “Experimental and Constructive Algebra”), and a talk at the seminar of the INRIA team project Non-A, INRIA Lille-Nord Europe. He also participated to the “7th International Workshop on Multidimensional Systems” (nDS’11, Poitiers, 05–07/09) where he presented two papers, gave a talk at the GDR SAR and a talk at the GDR EDP. He attended the conferences “MaGiX@LiX 2011” (Ecole Polytechnique, 19–24/09), “Equations différentielles et théorie de Galois” (IHES, 17–21/10), “Bicentenaire de la naissance d’Evariste Galois” (IHP, 24–28/11) and “Journées Nationales de Calcul Formel” (JNCF, Luminy, 14–18/11). Within the PHC Procope, he visited the Lehrstuhl B für Mathematik, RWTH Aachen University twice, to cowork with this group (12–18/06, 04–11/12). Finally, he was a referee for the PhD theses entitled by “Linear Systems and Fliess Models” by Muhammad Khurram Zafar, Abdus Salam School of Mathematics Sciences, GC University Lahore, Pakistan, and “Reduced Order Multiobjective Control” by Christian Fischer, Mines-ParisTech, CMA, Sophia Antipolis, and he was a member of the jury for the PhD thesis “Analyse des erreurs d’estimateurs des dérivées de signaux bruits et applications”, by Dayan Liu of the team project Non-A, INRIA Lille-Nord Europe.

+ G. Regensburger coedited with Markus Rosenkranz and William Sit a double special issue on “Algebraic and Algorithmic Aspects of Differential and Integral Operators” (AADIOS) in Mathematics in Computer Science, which was published in February 2011, see [131] and http://www.springerlink.com/content/1661-8270/42-3/. He coorganized the AADIOS Session at “Applications of Computer Algebra” (ACA’11, Houston, 27–30/06) and served as publicity chair and web master for “Mathematical Aspects of Computer and Information Sciences” (MACIS 2011, Beijing, 19–21/10). He was an invited speaker at “Functional Equations in LIMoges” (FELIM, Limoges, 14–16/03) and at the Symbolic Analysis workshop at the conference “Foundations of Computational Mathematics” (Symbolic Analysis@FoCM 2011, Budapest, 12–14/07). He was invited to give a talk at the Algorithms project, Joint Centre INRIA - Microsoft Research (Orsay, 31/03), and at the Laboratoire d’Informatique Fondamentale de Lille (LIFL), University of Lille I (Lille, 08/11). G. Regensburger gave contributed talks at the workshop “Constructive homological algebra methods, implementations and applications” (CIRM, Marseille, 24–28/01), at the “Second Workshop on Differential Equations by Algebraic Method” (DEAM2, Linz, 09–11/02), and at the Journées Nationales de Calcul Formel (JNCF, CIRM, Marseille 14–18/11). He participated in the conferences “MaGiX@LiX 2011” (Ecole Polytechnique, 19–24/09), “Equations différentielles et théorie de Galois” (IHES, 17–21/10), and “Célébration du bicentenaire de la naissance d’Évariste Galois” (IHP, 24–28/10).
9.2. Teaching

Teaching

Sorin Olaru and Guillaume Sandou are associate Professors at SUPELEC.


G. Sandou: identification for control, 21h, M2, ENSTA, Paris, France; signal analysis, 15h, M1, Ecole Militaire, Paris, France; mu-analysis, nonlinear systems, 22h, M2, Ecole des Mines de Nantes, France; Linear Quadratic and $H_\infty$ Control, 7h, M2, Université d’Evry, France; Embedded systems and Control, 20h, L3, M1, Ecole Centrale Paris, France.

PhD & HdR:


PhD in progress:


## 7. Dissemination

### 7.1. Animation of the scientific community

**Conference organization**
- IFIP 2011, Double session on “Optimization and Control of Nanosystems I-II”, September 2011 (organizers: A. Borzi, U. Boscaïn)

**Editorial activity**
- M. Sigalotti is Referee for IEEE TAC, SIAM J. Control Optim., Automatica, MathSciNet, Journal of Functional Analysis…and for the conferences CDC, ACC, IFAC…

### 7.2. Teaching

**Licence:** Mario Sigalotti, Systèmes Dynamiques: Stabilité et Commande (main teacher: F. Jean), 16 hours TD, first year engineering school (L3), ENSTA

**PhD:** Ugo Boscaïn, Introduction to geodesics in sub-Riemannian geometry, 5 hours, Seventh School on Analysis and Geometry in Metric Spaces, Levico Terme, Italy.

**PhD & HdR**

MAXPLUS Project-Team

9. Dissemination

9.1. Animation de la communauté scientifique

- M. Akian :
  - Membre nommée du conseil du laboratoire CMAP.

- S. Detournay.
  - Membre élue (collège doctorants) du conseil du laboratoire 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 Conseil de la formation de l’ENSTA.
  - Membre du comité éditorial de la collection Mathématiques et Applications, SMAI et Springer.
  - Membre du comité éditorial du journal RAIRO Operations research.
  - Membre de la commission de recrutement en Informatique à l’École polytechnique.
  - Membre du conseil scientifique du CMAP.

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

- S. Sergeev
  - A coorganisé un mini-symposium “max-linearity and its applications” dans le cadre de la conférence ILAS Braunschweig, Germany, avec 12 participants, dont 3 participants de l’équipe (Xavier Allamigeon, Meisam Sharify, et Sergeev).

9.2. Enseignement universitaire

- M. Akian
  - Cours “ Contrôle de chaînes de Markov : programmation dynamique et applications” du M2 Modélisation et Méthodes Mathématiques en Économie et Finance (MMMEF) de Paris I, 1er semestre.

- X. Allamigeon
  - Petites classes et encadrement d’enseignements d’approfondissement de Recherche Opérationnelle en troisième année à l’École Polytechnique (majeure de Mathématiques Appliquées).

- O. Fercoq
  - Petites classes du cours d’analyse numérique de 1ere année de l’ENSTA.

- S. Gaubert
9.3. Encadrement de thèse

- Sylvie Detournay, inscrite à l’École Polytechnique depuis septembre 2008, sous la direction de M. Akian.
- Olivier Fercoq, inscrit à l’École Polytechnique depuis octobre 2009. Encadrement assuré par S. Gaubert (directeur de thèse), M. Akian et M. Bouhtou (Orange Labs).
- Zheng Qu, inscrite à l’École Polytechnique depuis septembre 2010, encadrée par S. Gaubert et S. Tang (Université Fudan, Shanghai, Chine).
- Jean-Baptiste Dumont, inscrit à l’École Polytechnique depuis septembre 2011, encadré par M. Bouhtou (Orange Labs) et S. Gaubert (directeur de thèse).
- Pascal Benchimol, inscrit à l’École Polytechnique à partir de septembre 2011, encadré par S. Gaubert (directeur de thèse) et 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).
- S. Gaubert et X. Allamigeon participent à l’encadrement de Victor Magron, inscrit à l’École Polytechnique sous la direction de Benjamin Werner (INRIA et LIX).

9.4. Membre de jury

- M. Akian

- X. Allamigeon

- S. Gaubert
- Membre de la commission de recrutement en informatique à l’École Polytechnique.
- Jury d’HDR de S. Lahaye, Nov. 2011, Angers (rapporteur).

9.5. Participation à des colloques, séminaires, invitations

- M. Akian

- X. Allamigeon
  - Congrès SPECIF 2011, Grenoble, France, 3 Février 2011, “Algorithmics of tropical polyhedra, and application to software verification”.
  - Groupe de travail de l’équipe PEQUAN (LIP6), Paris, France, 7 Avril 2011, “Algorithmics of tropical polyhedra, and application to software verification”.
  - Optimization seminar, TU Darmstadt, Allemagne, 6 Juin 2011, “Algorithmics of tropical polyhedra, and application to software verification”.
  - 17th Conference of the International Linear Algebra Society (ILAS), Braunschweig, Allemagne, 23 Août 2011, “Algorithmics of tropical polyhedra, and application to software verification”.

- S. Detournay


• O. Fercoq


– Participation to the summer school “Topics on Tensors”, University of Coimbra, July 2011.

• S. Gaubert
– Visite d’une semaine à l’Université Fudan, Shanghai, Jan 2011.


– MOPNET 4 meeting, Manchester, 27-28 April, 2011, title “Tropical aspects of eigenvalue problems”.

– Séminaire EDP et applications à l’Université de Lyon 1, 17 Mai 2011, titre “Aspects tropicaux de la programmation dynamique”.


– Workshop on Tropical Geometry and Integrable Systems, Glasgow, July 4-8, 2011, title: “Tropical convexity applied to control and games and vice versa”.

– Second Workshop on Computational Issues in Nonlinear Control, Monterey, California, title: “Tropical methods in dynamic programming”.


– Tropical geometry workshop, Castro-Urionales, December 12-16, 2011. Title: “Tropical methods for optimal control and zero-sum games”.


• Z. Qu
– Séjour à l’université Fudan, June-Nov 2011.

Second Workshop on Computational Issues in Nonlinear Control, Monterey, California, title: “Curse of dimensionality reduction in max-plus based approximation methods: theoretical estimates and improved pruning algorithms”.

50th IEEE CDC (Conference on Decision and control), Dec. 2011, to present the work [43].

M. Sharify

S. Sergeev.
Research visits to Birmingham, UK (Peter Butkovič), April and September 2011.
Research visit to Madison, Wisconsin, USA (Hans Schneider), August 2011.
Tropical Workshops in Manchester (April 2011) and Birmingham (June 2011). In Birmingham, talk on “Tropical linear programming”.
Research visits to Prague and Hradec Kralove, Czech Republic (Martin Gavalec and Karel Zimmermann), June 2011. Two talks given at the summer school INKOV in Hradec Kralove (Inter-disciplinary approaches in informatics and cognitive science), on “Tropical linear programming” and “Tropical two-sided eigenproblem”.
Conference in Glasgow ”Tropical geometry and integrable systems”, July 2011. Talk on “Tropical two-sided systems”.
SIAM Control Conference in Baltimore (USA), July 2011. Talk on “Tropical linear programming”.
ILAS conference in Braunschweig, Germany, August 2011. Talk on “Fiedler-Ptak scaling in max algebra”.
Research visit to St.-Petersburg, Russia (N. K. Krivulin and I. V. Romanovskii). Talk on “Tropical linear programming”.

C. Walsh
Séminaire Gaston Darboux, Institut de Mathématiques et de Modélisation de Montpellier, Université Montpellier 2, 14 Jan 2011. Titre de l’exposé: “The horofunction boundary of Thurston’s metric on Teichmüller space”.
School of Mathematics, Statistics and Actuarial Science, University of Kent, 14 June 2011 Titre de l’exposé: “The horofunction boundary of some finitely-generated groups”.
Guest received: Weixu Su Department of Mathematics, Fudan University, Shanghai, China and Université de Strasbourg and CNRS. 27–29 July.
NECS Project-Team

9. Dissemination

9.1. Animation of the scientific community

- C. Canudas de Wit has participated to several concertation meetings in the CORDIS research program at the ITC department in the EU. He participated as evaluator in the FP7 program “Factories of the Future”: FP7-2010-NMP-ICT-FoF, and as reviewer of EU projects in the FP6 program on Embedded Systems and Control. He was nominated at the Board of Governors of the IEEE Control System Society for 2011, and he has been elected for 3 more years. He is also the responsible of joint activities between the IEEE-CSC and the EUCA (European Control Associated) where he belongs to the steering board.

- F. Garin has been a member of the recruiting committee, held in May 2011, for an Associate Professor position (poste de Maître de Conférences) in IUT 1 (University Joseph Fourier, Grenoble) and the Automatic Control Departement of GIPSA-LAB. She organized the 3rd annual Consortium Meeting of the FeedNetBack European project, held at INRIA in Montbonnot, on October 11-12th 2011. She has been a peer-reviewer for international journals (IEEE Trans. Automatic Control, IEEE Trans. Inform. Theory, Automatica, Systems and Control Letters) and conferences (CDC-ECC 2011, ACC 2011, ACC 2012).

- A. Kibangou was a member of the Technical Program Committee of the European Signal Processing Conference (EUSIPCO) 2011. For the Carnot Institute LSI, he was member of the “Sensor Networks Initiative” of the ICT-MNT Carnot alliance. In this framework, he was a contributor to a white book devoted to the vision of the ICT-MNT Carnot alliance on Internet of things. He was member of two selection committees for University Joseph Fourier in 2011. He serves as a reviewer for the following international journals: Automatica, IEEE Transactions on Control Systems and Technology, Signal Processing (Elsevier), Electronics Letters, Int. J. of Adaptive control and Signal Processing, and System control letters. Locally, he is the organizer of seminars for the Control Department of GIPSA-LAB.

- A. Seuret is co-animator of the “Time-delay System” group (GDR SAR) since March 2008. He is leader of a Workpackage of the European Project FeedNetBack. He is general chair of the Summer School on Automatic Control of Grenoble since 2010. He is also reviewer for the major Journals and Conferences of the field. Among them, there are journals (IEEE Trans. on Automatic Control, Automatica, System Control and Letter, International Journal of Systems Science) and conferences (Conference on Decision and Control (CDC), American Control Conference (ACC), IFAC Workshops on Robust Control (ROCOND) and on Time Delay Systems (TDS)).

- D. Simon is member of the RTNS’11 (international conference on Real Time and Network Systems) and CIFA’12 (Conference Internationale Francophone d’Automatique) program committees. He has been also member of the scientific and organization committees of CAR’11 (Control Architectures for Robots) at Montbonnot, Grenoble. He served as reviewer for the PhD of H. H. Nejad (July 2011, CRAN, Nancy), C. Faure (October 2011, IFFEN and ISIEE, Paris), J. B Chaudron (December 2011, Onera and ISAE, Toulouse) and examiner for the PhD defense of S. Durand (January 2011, Grenoble INP), F. Felicioni (January 2011, Loria Nancy and University Rosario, Argentina) and E. Roche (October, Grenoble INP). Involvement and talks within the API (Automatique Pour l’Informatique) PEPS headed by E. Rutten (SARDES). He has been also a peer-reviewer for MSR’11 (Modélisation des Systèmes Réactifs) and MED’11 (Mediterranean Conference on Control and Automation) conferences.
• H. Fourati has been a peer-reviewer for international journals (IEEE Sensors Journal, IEEE/ASME Transactions on Mechatronics).

9.2. Teaching

9.2.1. Courses

• A. Kibangou
  DUT: Mathematics, 20h, Licence 2, IUT 1 (GEII 1), University Joseph Fourrier, France.
  DUT: Automatic Control, 46h, Licence 2, IUT 1 (GEII 1), University Joseph Fourrier, France.
  He is in charge of the Automatic control Lab of the GEII 1 department at IUT 1 of Grenoble.

• A. Seuret
  MASTER: Automatic Control, 40h, MASTER 1 and 2, Grenoble INP, France.
  He organizes the 32\textsuperscript{th} International Summer School of GIPSA-Lab on Automatic Control, September, 12-16, 2011, Grenoble, France.
  The Summer School was on Robust Control and Linear Parameter Varying approaches: Application to vehicles dynamics, with the scientific direction of O. Sename (Grenoble INP), see \url{http://www.gipsa-lab.inpg.fr/summerschool/auto2011/}.

• H. Fourati
  DUT: Informatique Industrielle, 24h, Licence 1, IUT 1 (GEI2), University Joseph Fourrier, France.
  DUT: Automatismes industriels et réseaux: réseaux, 90h, Licence 1 et 2, IUT 1 (GEI2), University Joseph Fourrier, France.

9.2.2. Advising

Postdocs:

PhD students in progress:


– Valentina Ciarla, Commande d’un système de puissance électrique pour personne âgée et/ou handicapée, Grenoble INP, Dec. 2010 - Nov. 2013, co-advised by C. Canudas de Wit, Franck Quaine (UJF) and Violaine Cahouet (UJF).


PhD defended:

– Sylvain Durand, Reduction of the energy consumption in embedded electronic devices with low control computational cost [12], Grenoble INP, 17/01/2011, co-advised by N. Marchand and D. Simon.


– Emilie Roche, Commande à échantillonnage variable pour les systèmes LPV : application à un sous-marin autonome [13], Grenoble INP, 18/10/2011, co-advised by O. Sename and D. Simon.

Master students:


Bachelor students:


8. Dissemination

8.1. Animation of the scientific community

8.1.1. Editorial boards

- Jean-Pierre Richard is currently Associate Editor of *Int. J. of Systems Science*.
- Mamadou Mboup is currently Managing Editor of *African Diaspora Journal of Mathematics* and Associate Editor of *EURASIP Journal on Advances in Signal Processing*.
- Thierry Floquet is currently Associate Editor of *Nonlinear Analysis : Hybrid Systems* and *e-sta*.

8.1.2. Program Committees

- IFAC Technical Committees: The members of Non-A are participating to several technical committees of the IFAC (International Federation of Automatic Control, see the TC list on [http://www.ifac-control.org/areas](http://www.ifac-control.org/areas)): TC 1.3 - Discrete Event and Hybrid Systems, TC 1.5 Networked Systems, TC 2.2 Linear Control Systems, TC 2.3 Nonlinear Control Systems, TC 2.5 Robust Control.
- Cédric Joint was in committee of Conférence Méditerranéenne sur l’Ingénierie sûre des Systèmes complexes, 2011;
- Lotfi Belkoura was in committee of Journées Identification Modélisation Expérimentale, 2011;
- Gang Zheng was in committee of IEEE International Conference on Intelligent Control and Information Processing, 2011;
- Mamadou Mboup was in the Program committee of IEEE International Workshop on Machine Learning for Signal Processing 2011;
- Jean-Pierre Barobt was in evaluation committee of PES-(61 section of CNU).

8.1.3. Scientific and administrative responsibilities

- Jean-Pierre Richard is president of the GRAISyHM, federation from the French government. He is an expert for the evaluation of projects submitted to ANR, CNRS, DGRI and AERES, and heading the 3rd year professional training "Research" of the École Centrale de Lille;
- Wilfrid Perruquetti is the scientific head of ANR program Blanc SIMI3, and is heading the 3rd year professional training "ISD: Information System and Decision" of the École Centrale de Lille; He is an expert for ANR, AERES and ARC (Australian Research Council);
- Mamadou Mboup is heading the group SYSCOM - CReSTIC, University of Reims Champagne-Ardenne;
- Lotfi Belkoura is heading the Master "AG2i: Automatique, Génie Informatique et Image", University of Lille 1 and École Centrale de Lille. This Master, after a national evaluation (A), is presently "SMaRT: Systèmes, Machines autonomes et Réseaux de Terrain";
• Thierry Floquet is an expert for the evaluation of projects submitted to ANR and Israel Science Foundation, and a member of Conseil National des Universités, 61ème Section. He is as well the head of the groupe SyNeR of LAGIS laboratory;
• Cédric Join is heading the AII-ASRI, IUT Nancy-Brabois;
• The team members are also involved in numerous examination committees of theses and Habilitations, in France and abroad.

8.1.4. Stay

• Thierry Floquet: 2-week stay in University of Cagliari, Italy, with Dr. Alessandro Pisano.

8.1.5. Visitors

• Emilia Fridman, Professor of Tel Aviv University, Israel, June 2011, supported by École Centrale de Lille;
• Marc Bodson, Professor of University of Utah, USA, June 2011, supported by École Centrale de Lille;
• Benachir Bouchikhi, Professor of University Moulay Ismail of Meknès, supported by “Partenariat Hubert Curien Volubilis”;
• Hisaya Fujioka, Associate Professor of Kyoto University, September 2011, supported by Kyoto University.

8.1.6. Participation to conferences

• IFAC World Congress, 2011, Italy (Jean-Pierre Richard, Jean-Pierre Barbot, Wilfrid Perruquetti, Mamadou Mboup, Gang Zheng, Denis Efimov, Samer Riachy);
• International Workshop in honour of Prof. Giorgio Bartolini Retirement, 2011, Italy (Wilfrid Perruquetti, Jean-Pierre Barbot);
• IEEE Conference on Decision and Control, 2011, USA (Wilfrid Perruquetti, Jean-Pierre Barbot);
• IEEE Chinese Conference on Control and Decision, 2011, China (Gang Zheng);
• Journées Nationales de la Recherche en Robotique, 2011, France (Wilfrid Perruquetti);
• Summer School on Robotics and Automation, 2011, Alger (Wilfrid Perruquetti);
• Conférence Méditerranéenne sur l’Ingénierie sûre des Systèmes complexes, 2011, Maroc (Cédric Join);
• Summer school on Automatic control, 2011, Romania (Lotfi BelKoura);
• Journée d’Identification et de Modélisation Expérimentale, 2011, France (Lotfi Belkoura);
• IEEE International Workshop on Machine Learning for Signal Processing, 2011, China (Mamadou Mboup);
• Colloque on Signal and Image Processing, 2011, France (Mamadou Mboup).

8.1.7. Reviews

8.1.8. Theses and Habilitations


8.2. Teaching

The members of the team teach at different level in universities and engineering schools and, in particular, at Master Thesis level:

<table>
<thead>
<tr>
<th>Name</th>
<th>Course title</th>
<th>Level</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbot</td>
<td>Process Control</td>
<td>Master</td>
<td>Univ. Tlemcen, Algeria</td>
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<tr>
<td>Gibaru</td>
<td>Applied Mathematics</td>
<td>Master</td>
<td>USTL-UVHC-ULCO</td>
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<td>Mboup</td>
<td>Advanced Signal Processing</td>
<td>Master</td>
<td>Univ.Paris 5, ENIT-Tunis</td>
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<td>Perruquetti</td>
<td>Nonlinear control</td>
<td>Master</td>
<td>EC Lille</td>
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<td>Perruquetti</td>
<td>Robotics</td>
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<td>EC Lille - USTL</td>
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<tr>
<td>Richard</td>
<td>Mathematical tools for nonlinear systems</td>
<td>Master AG2i</td>
<td>EC Lille - USTL</td>
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<td>Richard</td>
<td>Dynamical systems</td>
<td>Research training</td>
<td>EC Lille</td>
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<tr>
<td>Belkoura</td>
<td>An introduction to distributions</td>
<td>Master AG2i</td>
<td>EC Lille - USTL</td>
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- Jean-Pierre Richard is in charge of the professional training "Research" of Ecole Centrale de Lille since 2003 (training for last-year students of EC Lille who are preparing a research career). ([http://www.ec-lille.fr/85787934/0/fiche___pagelibre/](http://www.ec-lille.fr/85787934/0/fiche___pagelibre/)).
- Wilfrid Perruquetti is in charge of the professional training "ISD: Information System and Decision" of Ecole Centrale de Lille since 2010 ([http://www.ec-lille.fr/syst_auto/0/fiche__formation/](http://www.ec-lille.fr/syst_auto/0/fiche__formation/)).
- Lotfi Belkoura is in charge of the SMART Master Thesis training in control of University of Lille 1 and Ecole Centrale de Lille.
- Jean-Pierre Barbot is in charge of the Master Thesis training in control of the University of Tlemcen, Algeria.
CLASSIC Project-Team

8. Dissemination

8.1. Animation of the scientific community

8.1.1. Editorial activities, reports written on articles

Gérard Biau serves as an Associate Editor for the journals Annales de l’ISUP, ESAIM: Probability and Statistics and International Statistical Review.

Olivier Catoni is a member of the editorial committee of the joint series of monographies “Mathématiques et Applications” between Springer and SMAI.

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

8.1.2. Report written on PhD / habilitation theses, participation to defense committees

We wrote reports on PhD (1 by Gilles Stoltz) and habilitation (1 by Olivier Catoni) theses.

We were examinators for other PhD (4 by Gérard Biau, 1 by Olivier Catoni) and habilitation (1 by Gérard Biau) defenses.

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

Vincent Rivoirard was elected at the Conseil de la SFdS.

Gérard Biau was elected member of the national council of French universities (CNU) within the applied mathematics section (number 26).

Olivier Catoni is a member of the doctoral commission in mathematics of Universities Pierre et Marie Curie and Paris Diderot.

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

8.1.4. Conference organization

Gilles Stoltz was a member of the program committee of the 24th Conference on Learning Theory (COLT’11); Vincent Rivoirard was a member of the program committee of the Journées de la SFdS 2011.


8.1.5. Dissemination of scientific knowledge to the general audience

Gille Stoltz participated in a meeting [Rencontres S’Cube] between a crowd of 4 professional mathematicians and a general audience; the theme was “Perdre ou gagner, peut-on prévoir ?” and the meeting took place in Gif-sur-Yvette, in May 2011.
8.2. Teaching

The permanent members of the team (Gérard Biau, Olivier Catoni, Vincent Rivoirard, and Gilles Stoltz) taught the following classes.

- **Licence**: Statistiques, 39h, niveau L2, Université Paris-Dauphine, par Vincent Rivoirard
- **Licence**: Apprentissage, 20h, niveau L3, Ecole normale supérieure, par Olivier Catoni et Gilles Stoltz
- **Licence**: Théorie des probabilités, 40h, niveau L3, ISUP – Université Pierre et Marie Curie), par Gérard Biau
- **Licence**: Statistiques pour citoyens d’aujourd’hui et managers de demain, 40h, niveau L3, HEC Paris, par Gilles Stoltz
- **Master**: Groupe de travail en statistique, 12h, niveau M1, Ecole normale supérieure, par Gérard Biau, Olivier Catoni et Gilles Stoltz
- **Master**: Statistique mathématique, 30h, niveau M1, Ecole normale supérieure, par Gérard Biau
- **Master**: Statistique non-paramétrique, 8h, niveau M1, Ecole normale supérieure, par Vincent Rivoirard
- **Master**: Statistique non-paramétrique, 35h, niveau M1, Université Paris-Dauphine, par Vincent Rivoirard
- **Master**: Classification et statistique en grandes dimensions, 18h, niveau M2, Université Paris-Sud, par Vincent Rivoirard
- **Master**: Statistiques et théorie de l’information, 10h, niveau M2, Université Paris-Sud, par Gilles Stoltz
- **Master**: Apprentissage statistique, 36h, niveau M2, Université Pierre et Marie Curie, par Gérard Biau
- **Master**: Méthodes pour les modèles de régression, 21h, niveau M2, Université Paris-Dauphine, par Vincent Rivoirard
- **Master**: Statistique bayésienne non-paramétrique, 21h, niveau M2, Université Paris-Dauphine, par Vincent Rivoirard
- **Master**: Examinateur à l’oral de probabilités et statistiques de l’agrégation de mathématiques, par Gilles Stoltz

PhD & HdR

- **HdR**: Gilles Stoltz, *Contributions à la prévision séquentielle de suites arbitraires : applications à la théorie des jeux répétés et études empiriques des performances de l’agrégation d’experts*, Université Paris-Sud; defended on February 3, 2011
- **PhD**: Sébastien Gerchinovitz, *Prédiction de suites individuelles et cadre statistique classique : étude de quelques liens autour de la régression parcimonieuse et des techniques d’agrégation*, Université Paris-Sud; defended on December 12, 2011; supervised by Gilles Stoltz
- **PhD in progress**: Thomas Mainguy, *Modèles statistiques pour la linguistique computationnelle*, since September 2009, supervised by Olivier Catoni
- **PhD in progress**: Pierre Gaillard, since September 2011, supervised by Gilles Stoltz
- **PhD in progress**: Emilien Joly, since September 2011, supervised by Gábor Lugosi and co-supervised by Gilles Stoltz
- **Several other PhD in progress**: Gérard Biau and Vincent Rivoirard [co-]supervise[d] several other PhD students who are not members of our project-team (respectively, Benjamin Auder, Aurélie Fischer, Benoît Patra, Clément Levrand, Benjamin Guedj, Svetlana Gribkova, Baptiste Gregorutti for Gérard Biau, and Laure Sansonnet for Vincent Rivoirard)

**MSc thesis**: Pierre Gaillard (Master MVA, ENS Cachan) was supervised by Gilles Stoltz during this MSc thesis, whose subject was the use of aggregation techniques (based on random forests and/or stemming from the theory of the prediction of individual sequences) for the forecasting of electricity consumption.
DOLPHIN Project-Team

9. Dissemination

9.1. Animation of the scientific community

Members from the DOLPHIN project team are involved into the following activities relation to the animation of the scientific community.

9.1.1. Research management

- Co-founder and chair of the group META (Metaheuristics: Theory and Applications, http://www.lifl.fr/~talbi/META). This group is associated with the ROADEF (French Operations Research Society), and the CNRS research groups GDR ALP and MACS.
- Co-founder and co-chair of the Euro Working Group en Tarification et Gestion du Revenu. This group is associated with EURO (European Operations Research Society).
- Chair of the group PM2O (Multi-objective Mathematical Programming, http://www.lifl.fr/PM2O). This group is associated with the ROADEF (French Operations Research Society), and the CNRS research group GDR RO (Operations Research).
- International correspondent for ROADEF (French Operations Research Society).
- Secretary and Treasurer of EA (National group on evolutionary computation - http://www2.lifl.fr/EA).
- Direction of the CIB (Bioinformatics Center) of the Genopole of Lille.
- Scientific Committee of the Genopole of Lille.
- Steering Committee of the INRIA nation-wide ADT Aladdin-Grid5000.
- Co-leader of an ALADDIN working group on scalability of Grid-enabled algorithms and applications.
- Member of the Scientific Committee of High-Performance Computing of Université Lille1.
- Coordinator of the High Performance Computing collaborative research action at LIFL.
- Leader of the PPF "High Performance Computing" at Université Lille1.
- Member of the committee of the jury to deliver the TSL best paper award (INFORMS: Transportation Section and Logistics).

9.1.2. Participation to working groups

- EURO-PAREO (European working group on Parallel Processing in Operations Research).
- EURO-PRM (European working group on Pricing and Revenue Management).
- EURO-EU/ME (European working group on Metaheuristics).
- EURO-ESICUP (European Working Group on Cutting and Packing).
- EURO-MCDA (European Working Group on Multicriteria Decision Aiding).
- ECCO (European Chapter on Combinatorial Optimization).
- ERCIM (European Research Consortium for Informatics and Mathematics) working group on Soft Computing.
- EA - JET (National Group on Evolutionary Computation).
- KSO (National Group on Cutting and Packing).
- MCDM (International society on multiple criteria decision making).
9.1.3. Editions

- Special Issue (Graph and Optimization Meeting 2008) in Networks, volume 58, issue 2, 2011

9.1.4. Organizations of sessions, workshops and conferences

- Organization of the Stream on Pricing and Revenue Management at IFORS 2011 (The International of Operational Research Societies), Melbourne
- Publicity chair of international conference EA 2011 (Angers, France)
- Co-organization of the 6th summer school of EA 2011 (Calais, France)
- Organization of sessions at ROADEF 2011 (St Etienne, France)

9.1.5. Editorial boards

- Editorial board of the International Journal of Intelligent Computing and Cybernetics (IJICC)
- Editorial board of the International Journal of Innovative Computing and Applications (IJICA)
- Editorial board of the International Journal of Pervasive Computing and Communications
- Editorial board of the Book Series in Intelligent Systems Engineering, Nova science Publishers, NY, USA
- Advisory board of the Book Series on Nature Inspired computing, Wiley & Sons, NY, USA
- Honorary Advisory Board of the International Journal on Mathematical Modeling and Numerical Optimization (IJMMNO)
- Editorial board of the Mediterranean Journal of Artificial Intelligence (MJAI)
- Editorial board of the International Journal of Data Mining, Modelling and Management (IJDMM)

9.1.6. Reviews

- Review of research projects:
  - Evaluation of a three-year project for the ANR (Agence Nationale pour la Recherche)
  - Evaluation of a JEI (Jeune Entreprise Innovante) and evaluation of a proposal for the CIR (Crédit Impôt recherche).
  - Evaluation of PEPS - PEPII for CNRS
  - Evaluation of national project fund by Luxembourg

- Review of journal papers:
  - Journal of Soft Computing
  - Journal of Discrete Applied Mathematics
  - COR: Computers & Operations Research (Elsevier)
  - Transportation Science(Inform)
  - European Journal of Operational Research (Elsevier)
  - Journal of Heuristics (Springer)
– KNOSYS: Knowledge-Based Systems (Elsevier)
– GENO: Engineering Optimization (Taylor & Francis)
– Journal of Parallel Computing
– Journal of Knowledge and Information Systems
– Journal of Memetic Computing
– International Journal of AI Tools
– Journal of Zhejiang University-SCIENCE B
– Journal of Parallel and Distributed Computing
– International Journal of Production Economics

9.1.7. Program committees

- EA 2011
- LION 6
- GECCO 2011
- IFORS 2011, Melbourne, 2011
- CPAIOR 2012, Nantes, 2012
- ROADEF 2011, "douzième congrès de la Société Française de Recherche Opérationnelle et d’Aide à la Décision"
- "Journée Polyèdre et Optimisation Combinatoire" (JPOC), Valenciennes, 2011
- ALEA 2011: Artificial Life and Evolutionary Algorithms, as a part of EPIA 2011, Lisbon, Portugal, 2011
- EMO 2011: 6th International Conference on Evolutionary Multi-criterion Optimization, Ouro Preto, Brazil, 2011

El-Ghazali Talbi was member of the program committee of the following conferences

- GECCO’2011, Dublin, Ireland.
- EA’2011, Angers, France.
- MIC’2011, Udine, Italy, July 2011.
- HAIS’2011 6th Int. Conf. on Hybrid Artificial Intelligence Systems”, Wroclaw, Poland, May 2011.
- IESM’2011 Int. Conf. on Industrial Engineering and Systems Management, Metz, France, May 2011.
- ICSI’2011 Int. Conf. On Swarm Intelligence, Cergy, France, June 2011.
- iCAST’2011: 3rd IEEE International Conference on Awareness Science and Technology, Dalian, China, Sept 2011.
- GreenITI’2011 Workshop on "GreenIT Evolutionary Computation" as part of GECCO’ 2011, Dublin, Ireland, July 2011.
9.1.8. Phd and HdR committees

El-ghazali Talbi was a jury member of the following Phd thesis:
- Semya Elaoud, "Genetic and exact methods to solve multi-objective optimization problems", University of Mons, Belgium.
- Juan Jose Durillo, "Metaheuristics for multi-objective optimization: design, analysis and applications", University of Malaga, Spain.
- Elisabeth Montero, "Calibration strategies for bio-inspired population-based algorithms that solve combinatorial optimization problems", University of Nice-Sophia Antipolis.

Clarisse Dhaenens was a jury member of the following PhD thesis:

Laetitia Jourdan was a jury member of the following Phd thesis:
- Mohammed Amir Esseghir, "Metaheuristiques pour le problème de la sélection d’attributs: approches mémétiques, adaptatives et particulaires".

9.1.9. Commission

- Presidence of the C2D commission of the Lille INRIA center (Commission Détachement Délégation).
- Participation to a selection committee (Position McF 484, Université Lille I).
- Participation to a selection committee (Position McF, Université de Valenciennes).
- Participation to a selection committee (Concours de Chargé de Recherche INRIA (CR1-CR2).
- Participation to a selection committee for chaire INRIA-Lille 3 (COS 2011)
- Participation to "Comité de Centre INRIA Lille Nord Europe"

9.2. Teaching

Initiation à la programmation, 54h ( L1) Université de Lille 1, France
Programmation orienté objet, 80h ( DUT informatique), Université de Lille 1, France
Méthodes mathématiques pour la modélisation, 64h, (DUT informatique), Université de Lille 1, France
Conception orientée objet, 48h (DUT informatique), Université de Lille 1, France
Systèmes d’exploitation, 48h (DUT informatique), Université de Lille 1, France
Algorithmique - 50 H eq TD (L3), Engineering school Polytech’Lille.
Graphs and combinatorics - 55 H eq TD (L3), Engineering school Polytech’Lille.
Operations Research - 70 H eq TD, Engineering school Polytech’Lille.
Fouille de données 25h (M1), L1, Université de Lille 1, France,
Informatique Décisionnelle 35h (M1), Université de Lille 1, France,
Mise à niveau en informatique décisionnelle et en recherche opérationnelle 25h (M1), Université de Lille 1, France
Algorithmique Avancée, Complexité, calculabilité, 32h (M1), Université de Lille 1, France
Operations Research - 70 H eq TD (M1), Engineering school Polytech’Lille.
Combinatorial Optimization, 35h (M2), Université de Lille 1, France
Grid Computing, 16h (M2), Université de Lille 1, France
Parallel and Distributed Programming, 12h (M1), Université de Lille 1, France
Advanced Object Programming, 52h (M1), Université de Lille 1, France
Design of Distributed Applications, 60h (M1), Université de Lille 1, France
Algorithms and Applications, 28h, Université de Lille 1, France

PhD soutenues :
PhD : Alexandre Huart, Optimisation de ressources en logistique urbaine, Université de Valenciennes, 9/12/2011, L. Brotocone and F. Semet.
PhD : Mostepha Khouadjia, Solving Dynamic Vehicle Routing Problems: From Single-Solution Based Metaheuristics to Parallel Population Based Metaheuristics, Université de Lille 1, 2/12/2011, L. Jourdan and E-G. Talbi
PhD : The-Van Luong, Parallel metaheuristics on GPU, Université de Lille 1, 01/12/2011, N. Melab and E-G. Talbi

PhD in progress :
  • Mathieu Djamai, Contributions in peer-to-peer systems for combinatorial optimization, October 2009, N. Melab and B. Derbel.
  • Trong-Tuan Vu, Robust distributed algorithms for large scale problem solving, October 2011, N. Melab and B. Derbel.
  • Francois Legillon, Ordonnancement d’applications dans les clouds hybrides, October 2011, E-G. Talbi and N. Melab.
  • Yacine Kessaci, Energy-aware scheduling in clouds, October 2009, E-G. Talbi and N. Melab.
  • Mustapha Diaby, Yield Management and Supply chain Management, September 2010, L. Brotocone and E-G. Talbi
  • Nadia Dahmani, Multi-objective packing problems, September 2010, F. Clautiaux and E-G. Talbi
  • Sezin Afsar, Bilevel approaches for energy pricing problems, October 2011, L. Brotocone
  • Khedidja Seridi, Métaheuristiques multiobjectives pour le biclustering, octobre 2010 L. Jourdan and E-G. Talbi
8. Dissemination

8.1. Animation of the scientific community

- H. Yahia is now a member of Elsevier’s Digital Signal Processing journal editorial board.
- H. Yahia has been an invited speaker at AGU (American Geophysical Union) Fall Meeting (San Francisco, December 5-9 2011). Section: Nonlinear Geophysics. Title of presentation: *High-resolution ocean dynamics from microcanonical formulations in nonlinear complex signal analysis.*
- H. Yahia has been an invited speaker for the Assyst Workshop on Mathematics in Network Science: Implications to Socially Coupled Systems, organized by ISI foundation at Torino (Italy) on November 23-21 2011. Title: *Local Predictability Exponents and universality classes in the framework of reconstructible complex systems*.
- H. Yahia has joined an official visit of INRIA CEO Michel Cosnard in India in September 2011, organized by INRIA Direction of International Relations. The mission in India consisted first in accompanying the Direction of International Relations for official visits to: Chennai Mathematical Institute, Institute of Mathematical Sciences (Chennai), International Institute of Information Technology (Hyderabad), University of Hyderabad (where a plaque has been inaugurated in the presence of M. Cosnard in the Institute of Sanskrit Studies about the collaboration with G. Huet), IIT Mumbai, Tata Institute of Fundamental Research (Mumbai), Indian Institute of Science (Bangaluru), and second, to participate to the Indo-French seminar Modelling and analysis of complex systems for communication, health and sustainable development organized by INRIA and CEFIPRA in Bangaluru on September 26-28, 2011. Titles of presentations: *Multiscale methods in the analysis of heartbeat data. Application to Atrial Fibrillation and nonlinear signal processing for Earth Observation. A case study for a physical approach to complex signals.*
- H. Yahia has given a presentation at CRTS and FSR, Rabat, during the first PHC Volubilis meeting, June 7, 2011. Title: *Analysis of complex signals: new trends in nonlinear approaches to complexity, and their application to specific classes of signals.*
- H. Yahia has given a presentation during a workshop organized by Meteofrance on October 18, at the Meteofrance centre in Toulouse. Title: *Evaluation de la dynamique océanique à haute résolution satellitaire SST par fusion de données à différentes échelles spatiales* (joint work with LEGOS partners J. Sudre, V. Garçon, and CNES partner C. Pottier).
- H. Yahia has been selected to give a presentation of the GEOSTAT research thematics during info days at the European Commission in Brussels, October 12, 2011.
- O. Pont gave a lecture at a meeting on CARDIOSENSE action, with ANUBIS team, GEOSTAT team, partners involved in CARDIOSENSE, and Prof. M Haissaguerre team. Title: *Analyse non-linéaire multiéchelle des signaux cardiaques*. January 7, 2011, at Bordeaux University.
- H. Yahia has given a presentation at CEA on November 15, 2001. Title: *Méthodes non-linéaires en analyse des signaux complexes: évaluation de la dynamique océanique à haute résolution spatiale.*
- O. Pont has given a presentation at CEA on November 15, 2001. Title: *Nonlinear analysis of heartbeat dynamics.*
- H. Yahia has presented the results of HIRESUBCOLOR contract and the presentation for a MULTI-CARO proposal at CNES DSP/LEGOS 2011 meeting on November 18 in Toulouse. Title: *Méthodes non-linéaires en analyse de la dynamique océanique et interaction océan/atmosphère: résultats de Hiresubcolor, perspectives de Multicaro et Oceanflux*.
- O. Pont gave a lecture at INRIA Bordeaux Sud-Ouest Unithé ou Café on January 21, 2011. Title: *L’ordre complexe qui émerge du chaos.*

1See [http://www.isi.it/events/assyst-workshop](http://www.isi.it/events/assyst-workshop).
8.2. Teaching

M2 : K. Daoudi, 10 hours, Speech processing, Master2 InfoTelecom, University of Rabat, Morocco.

PhD in progress : V. Khanagha, Nonlinear methods for speech processing, beginning November 2009, supervisors: K. Daoudi, O. Pont, H. Yahia,

PhD in progress : S. Kumar Maji, Optimal wavelets for adaptive optics, beginning November 2010, supervisors: O. Pont, H. Yahia,

MISTIS Project-Team

7. Dissemination

7.1. Animation of the scientific community


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”).

Since September 2009, F. Forbes is also a member of the INRIA national committee, "Comité d’animation scientifique”, in charge of analyzing and motivating innovative activities in Applied Mathematics. In this context, she organized with R. Munos, B. Espiau and M. Thonnat an INRIA workshop on Statistical Learning in Paris (December).

F. Forbes is part of an INRA (French National Institute for Agricultural Research) Network (MSTGA) on spatial statistics. She is also part of an INRA committee (CSS MBIA) in charge of evaluating INRA researchers once a year.

S. Girard is a member of the committee (Comité de Sélection) in charge of examining applications to Faculty member positions at University Paris I.

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).

S. Girard was selected as an expert for

- the national fund for the scientific development of Chili (FONDECYT) to evaluate research proposals,
- evaluation of interdisciplinary and inter-institutes projects (PEPII) for the CNRS,
- the national fund for research of Québec - Nature and technology (FRQNT) to evaluate research proposals.

S. Girard was involved in the following PhD committees

- Mohammed El Anbari “Regularisation and variable selection using penalized likelihood”, Paris-Sud University and Cadi Ayyad University, december 2011.

F. Forbes was involved in the PhD committees of Flora Jay from TimB, Univ. Grenoble I. PhD title:“Méthodes bayésiennes pour la génétique des populations: relations entre structure génétique des populations et environnement” (October 2011).

F. Forbes was also involved in the HDR committee of Cécile Hardouin, assistant professor at Paris Ouest Nanterre La Défense University (July 2011). Title:“Quelques contributions à la modélisation et l’analyse statistique de processus spatiaux”.

F. Forbes was also involved in the Master committee of Arun Shivanandan from IBIS team(June 2011). Title: Stochastic modelling and indentification of arabinose uptake network in Escherichia coli.
7.2. Teaching

Stéphane Girard

Master : Statistique inférentielle avancée, 27h, M1, Ensimag (Grenoble INP), France.
Master : Statistique des valeurs extrêmes, 45h, M2, Université Grenoble I, France.

Florence Forbes

Master : Mixture models and EM algorithm, 12h, M2, UFR IM2A, Université Grenoble I, France.

L. Gardes and M.-J. Martinez are faculty members at Univ. Pierre Mendès France, Grenoble II.
J.-B. Durand is a faculty member at Ensimag, Grenoble INP.

PhD & HdR :

PhD : Lamiae Azizi, Champs aléatoires de Markov cachés pour la cartographie du risque en épidémiologie, Université Joseph Fourier, December 13, Florence Forbes and Myriam Garrido
PhD in progress : Jonathan El Methni, Différentes contributions à l’estimation des quantiles extrêmes, October, 2010, Stéphane Girard et Laurent Gardes
PhD in progress : Christine Bakhous, Problèmes de sélection de modèles en IRM fonctionnelle, November, 2010, Florence Forbes and Michel Dojat
PhD in progress : Gildas Mazo, Estimation de quantiles extrêmes spatiaux, October, 2011, Florence Forbes and Stéphane Girard
9. Dissemination

9.1. Animation of the scientific community

9.1.1. Editorial responsibilities

C. Biernacki belongs to the scientific committee of “Model mixtures and learning” in SFdS’11 (Gammarth, Tunisia) and to the program comity of ”Extraction et gestion des connaissances” in EGC’12 (Bordeaux, France). Since ’10, he is an Associate Editor of the journal “Case Studies in Business, Industry and Government Statistics” (CSBIGS) http://legacy.bentley.edu/csbigs/.

9.1.2. Invited conferences

- C. Biernacki and V. Vandewalle are invited speakers to one conference [19]
- C. Preda is an invited speaker in ’11 to three conferences [18], [20], [21]

9.1.3. Scientific animation

- Since ’09, C. Biernacki is a treasurer 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/. In ’11, he reviewed 3 PhD theses.
- Cristian Preda:
  - organized a session of applied statistics for the Statistics and Probability Society of Romania (Bucarest, April 2011)
  - was Scientific Supervisor for the statistical methodology developed in the PSIP FP7 European project http://psip-project.eu
  - performed research conferences and teaching on statistics at the University of Granada, University of Luxembourg and University of Bucharest
  - organized several conferences for the Seminar of Statistics and Informatics of the Faculty of Medicine, University Lille 2.
- Guillemette Marot organizes, in the context of the PPF bioinfo Lille 1, two scientific meetings:

9.2. Teaching

Christophe Biernacki (head of the M2 Ingénierie Statistique et Numérique http://mathematiques.univ-lille1.fr/Formation/):

Master: Mathematical statistics, 60h, coaching project, 10h, M1, U. Lille 1, France
Master: Data analysis, 97.5h, Analysis of variance and experimental design, 22.5h, coaching internship, 20h, M2, U. Lille 2, France
Alain Célisse:
  Master: Statistique Fondamentale, 45h, M2, U. Lille 1, France
  DUT: Mathématiques pour l’Informatique, 122h, L1, U. Lille 1, France
  DUT: Algèbre, 80h, L2, U. Lille 1, France

Serge Iovleff:
  DUT: Discrete mathematics, 72h, Modelization, 88h, Algebra & Geometry, 32h, Probability &
  statistics & analysis 64h, L1, U. Lille 1, France

Julien Jacques:
  Licence: Statistique Inférentielle, 50h, L3, École Polytechnique Universitaire de Lille, U. Lille 1,
  France
  Master: Modélisation Statistique, 30h, M1, École Polytechnique Universitaire de Lille, U. Lille 1,
  France
  Master: Séries Temporelles, 25h, M2, École Polytechnique Universitaire de Lille, U. Lille 1, France

Guillemette Marot:
  Licence: Biostatistique, 18h, L1, U. Lille 2, France
  Master: Biostatistique, 48h, M1, U. Lille 2, France

Cristian Preda:
  Licence: Probabilités, 36h, L3, École Polytechnique Universitaire de Lille, U. Lille 1, France
  Master: Statistique Exploratoire, 40h, M1, École Polytechnique Universitaire de Lille, U. Lille 1,
  France
  Master: Functional Data Analysis, 18h, M2, U. Lille 1, France
  Master: Functional Data Analysis, 10h, M2, Department of Statistics, University of Granada, Spain

Vincent Vandewalle:
  DUT STID: Linear algebra, 93h, Simulation Technics, 31.5h, Descriptives statistics, 36h, Basic
  mathematics, 12h, Probabilities, 108h, L1, U. Lille 2, France
  DUT STID: Analysis, 20h, L2, U. Lille 2, France

PhD: Alexandre Lourme, Contribution à la Classification par Modèles de Mélange & Classification
  Simultanée d’Echantillons d’Origines Multiples, U. Lille 1, June’11, Christophe Biernacki supervi-
  sors
PhD in progress : Alexandru Amarioarei, Statistics, Scan statistics and applications, started in 2010,
  Cristian Preda supervisor
PhD in progress : Michael Genin, Statistics, Scan statistics and epidemiology, started in 2010, Cristian
  Preda and Alain Duhamel (CEREM, U. Lille 2) supervisors
PhD in progress : Julie Hamon, Analysis of data from high throughput genotyping: cooperation
  between statistics and combinatorial optimization, started in 2010, Julien Jacques and Clarisse
  Dhaenens (DOLPHIN INRIA Lille team-project) supervisor
PhD in progress : Loïc Yengo, Simultaneous Variables Clustering and Selection in Regression
  Models, started in 2010, Christophe Biernacki and Julien Jacques supervisors
PhD in progress : Clément Thery, Classification supervisée ou semi-supervisée des bases de grande
  dimension, avec variables qualitatives et quantitatives, started in 2011, Christophe Biernacki super-
  visors
PhD in progress : Matthieu Marbac-Lourdelle, Generatives models taking into account the correla-
  tion between variables , started in 2011, Christophe Biernacki and Vincent Vandewalle supervisors
9. Dissemination

9.1. Animation of the scientific community

9.1.1. Organization of workshops

- Arnaud Pêcher has co-organized the 2011 Bordeaux Workshop on identifying code. Within the GDR Informatique Mathématique, he is co-responsible of the working group Graphes, since 2010.

9.1.2. Invitations to conferences

- Arnaud Pêcher was invited by the National Taiwan University, Taipei for the 2011 Workshop on Graph Theory. His presentation was entitled "The circular chromatic number of circular-perfect graphs is polytime".
- Gautier Stauffer was invited to give a talk at the NII Shonan meeting on Graph Algorithm and Combinatorial Optimization (http://www.nii.ac.jp/shonan/seminar01/). His presentation was entitled "An algorithmic decomposition of claw-free graphs leading to an O(n^3)-algorithm for the weighted stable set problem".
- Gautier Stauffer was invited speaker at the and at SODA 2011 (http://www.siam.org/meetings/da11/). His presentation was entitled "A Simple and Fast 2-approximation for the One-warehouse Multi-retailers Problem".
- Gautier Stauffer was invited to give a plenary session at LAGOS 2011 (http://www-2.dc.uba.ar/lagos2011/). His presentation was entitled "A history of the stable set polytope of claw-free graphs".
- François Vanderbeck was invited speaker at the workshop in Mixed Integer Programming MIP2011, University of Waterloo, Canada, June 2011 (http://www.math.uwaterloo.ca/~mip2011/). His presentation was entitled "Column Generation for Extended Formulations: experimental report".
- François Vanderbeck was invited speaker at the workshop on Integer Programming Down & Under, NewCastle University, Australia, July 2011 (http://carma.newcastle.edu.au/nuor/ipdu/). His presentation was entitled "Column Generation for Extended Formulations: stabilization by column recombinations".

9.1.3. Teaching

Licence “DUT Informatique”, University of Bordeaux, France:
- “Système Unix”, 36h, L2 (Arnaud Pêcher)
- “Algorithmmmique”, 12h, L2 (Arnaud Pêcher)
- “Programmation Objet”, 32h, L2 (Arnaud Pêcher)
- “Java Avancé”, 16h, L2 (Arnaud Pêcher)
- “Programmation Objet”, 68h, L1 (Arnaud Pêcher)

Licence of mathematics, University of Bordeaux, France:
- “modèles et méthodes d’optimisation”, 15 htd, L2, (Cédric Joncour)
Master “Ingénierie Mathématique, Statistiques, et Economic”: “Optimisation dans les graphes”, University of Bordeaux, France.

“Modèles de Flot et Combinatoire”, 45 hetd, M1 (Gautier Stauffer)
“Optimisation dans les graphes”, 15h, M1, (Arnaud Pécher)
“optimisation combinatoire”, 30 hetd, M1, ((Andrew Miller, Francois Vanderbeck)
“outils et logiciels d’optimisation”, 14 hetd, M1, (Andrew Miller)
“Programmation linéaire”, 60 hetd, M1, (Andrew Miller, Pierre Pesneau)
“Programmation entière”, 40 hetd, M2, (Francois Vanderbeck)
“Gestion des Opérations et planification de la production”, 30 hetd, M1, (Andrew Miller)
“Programmation Orientée Objet”, 30 hetd, M2, (Pierre Pesneau)
“Introduction à la Programmation par Contraaintes”, 30 HETD, M2, (Ruslan Sadykov).

Other Masters:

Master “MIAGE”: “Services Web”, 27h, M2, University of Bordeaux, France (Arnaud Pécher)
Enseirb, Computer Sciences: “Recherche Opérationnelle”, 30 hetd, 2eme année, Institut Polytechnique de Bordeaux, France (Pierre Pesneau, Francois Vanderbeck)
CNAM Aquitaine, "Modélisation, optimisation, complexite et algorithmes” I et II, 25 hetd (niveau II) + 34 HETD (niveau I), M1, France (Ruslan Sadykov).

PhD & HdR :

PhD in progress: Nastaran Rahmani, "Planning and Routing via decomposition approaches", April 2011, R. Sadykov, F. Vanderbeck

9.1.4. Administrative Responsibilities

Each member of the team is quite involved in teaching in the thematic specialties of the project, including in the research track of the Masters in applied mathematics or computer science and an Operations Research Track in the computer science department of the Engineering school ENSEIRB-MATMECA. Moreover, we are largely implied in the organization of the curriculum:

- Arnaud Pécher was the head of IUT Computer Science’s special year, since 2010.
- Andrew Miller was the head of Applied Mathematics Department, since 2010.
- Francois Vanderbeck has succeeded to Andrew Miller as the head of the Master Speciality in Operations Research.
SELECT Project-Team

9. Dissemination

9.1. Scientific Community animation

9.1.1. Editorial responsibilities

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

- Gilles Celeux is Editor-in-Chief of Statistics and Computing. He is Associate Editor of CSBISGS and La Revue Modulad.
- Jean-Michel Poggi is Associated Editor of Journal of Statistical Software, Journal de la SFdS and CSBISGS.

9.1.2. Invited conferences

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

- Gilles Celeux was invited speaker to IFCS 2011 in Frankfurt, to the mixture session of JSM2011 in Miami, to StatSeq 2011 in Toulouse, to the statistical seminar of the Economics department of Vienna University and to the Summer Model-Based Clustering working group in Glasgow.

9.1.3. Scientific animation

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

- Gilles Celeux is member of the CSS of INRA.
- Gilles Celeux was Chair of the Chikio Hayashi Awards Committee.
- Erwan Le Pennec is a member of the Board of the MAS group of the SMAI (french SIAM).
- 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 Superieure de Paris.
- Pascal Massart was a member of the scientific committee of the European Meeting of Staticians in Piraeus.
- Jean-Michel Poggi is Cochair seminar of Probability and Statistics of the "laboratoire de Mathématiques d’Orsay”, seminar ECAIS (Extraction de connaissances : approches informatiques et statistiques) of IUT de Paris 5 Descartes and of "Séminaire Parisien de Statistique".
- Jean-Michel Poggi is Chair of the Program Commitee of the "Journées de Statistique de la SFdS", Tunis, mai 2011
- Jean-Michel Poggi is President of the French statistical society (SFdS).
- Jean-Michel Poggi is member of the Board of the "Environment group" of the French statistical society (SFdS).
9.2. 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, Méthodes d’ondelettes, 24h, Mé, 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.

PhD & HdR :

PhD in progress: Vincent Brault, 2011, Gille Celeux and Christine Keribin
PhD in progress: Claire Caillerie, 2008, Pascal Massart and Frédéric Chazal
PhD in progress: Rémi Fouchereau, 2011, Gille Celeux
PhD in progress: Shuai Fu, 2010, Gille Celeux
PhD in progress: Clément Levrard, 2009, Pascal Massart and Gérard Biau (UPMC)
PhD in progress: Caroline Meynet, 2009, Pascal Massart
PhD in progress: Lucie Montuelle, Sélection de modèles et mélange de gaussiennes en imagerie hyperspectrale, 01/10/2011, Erwan Le Pennec
PhD in progress: Nelo Molter Magalães, 2011, Pascal Massart
9. Dissemination

9.1. Animation of the scientific community

9.1.1. Awards

Sébastien Bubeck received the second prize for the best French Ph.D in Artificial Intelligence (AI prize 2011).

9.1.2. Tutorials


9.1.3. Workshops and Schools

- **R. Munos** co-organized the *Machine Learning Summer School 2011* (MLSS’11) in Bordeaux (2 weeks of lectures for about 80 international students), with François Caron, Manuel Davy, Pierre Del Moral, Pierrick Legrand, Manuel Lopes.

- **R. Munos** co-organized (with Florence Forbes, Bernard Espiau et Monique Thonnat) the *Journées INRIA autour de l’apprentissage statistique*, Décembre 2011.

9.1.4. Invited Talks


- **M. Ghavamzadeh**, University of Liège - Systems & Modeling Research Unit, Host: Prof. Damien Ernst (June 2011).

- **M. Ghavamzadeh**, University of Waterloo - School of Computer Science, Host: Prof. Pascal Poupart (November 2010).

- **M. Ghavamzadeh**, McGill University - School of Computer Science, Host: Prof. Joelle Pineau (November 2010).

- **M. Ghavamzadeh**, University of Alberta - AI Seminar, Host: Prof. Csaba Szepesvári (November 2010).

- **A. Lazaric**, University of Liège - Systems & Modeling Research Unit, Host: Prof. Damien Ernst (October 2011).

- **R. Munos**, University of Liège, Department of Electrical Engineering, February 2011.

- **R. Munos**, ICAPS, workshop Monte-Carlo Tree Search, Freiburg, June 2011


9.1.5. Review Activities

- Participation to the program committees of international conferences
  - E. Duflos and P. Vanheeghe were members of the Fusion’2011 International Program Committee
- P. Vanheeghe is reviewing papers for the journal: IEEE Transaction on Signal Processing.
- D. Ryabko: UAI 2011.
- M. Ghavamzadeh: International Joint Conference on Artificial Intelligence (IJCAI 2011), European Workshop on Reinforcement Learning (EWRL 2011), International Conference on Artificial Neural Networks (ICANN 2011), National Conference on Artificial Intelligence (AAAI 2011).

- **International journal and conference reviewing activities** (in addition to the conferences in which we belong to the PC)
  - M. Ghavamzadeh is Editorial Board Member of the Machine Learning Journal (MLJ, 2011-2014).

### 9.1.6. Evaluation activities, expertise

- **Emmanuel Duflos** was appointed Director of Research of the Ecole Centrale in Lille. He has also reviewed proposals for the ANR programs.
- **M. Ghavamzadeh** is a grant proposal reviewer for the Natural Sciences and Engineering Research Council of Canada (NSERC).
- **J. Mary** is expert for the “Ministère de l’Enseignement Supérieur et de la Recherche” on control of “Crédit Impôt Recherche”, member of the COS at Lille 3 for one assistant professor in computer science, member of the COS at 3 for one assistant professor un computer science at École Centrale de Lille for one assistant professor in computer science.
- **R. Munos** project evaluation for Research Foundation Flanders (FWO), Belgique, 2011, member of the evaluation committee for the Machine Learning, Université Libre de Bruxelles (ULB). Member of the Comité de sélection Professeur 27ème section for Polytech Paris-Sud, 2011.
- **P. Preux**: reviewer for the CNRS program PEPPi biology-mathematics-computer science, reviewer for the ANR program CONTINT, and the ANR program “blanc”, president of the committee of selection (COS) at the University of Lille 3 for one assistant professor in computer science, member of the committee of selection (COS) at the École Centrale de Lille for one assistant professor in computer science.
- **D. Ryabko** is a member of COST-GRI evaluation committee.
• Philippe Vanheeghe has reviewed proposals for Discovery Grant applications of the Natural Sciences and Engineering Research Council of Canada (NSERRC - CRSNG), as well as for the ANR.

9.1.7. Participation to PhD and HDR juries

• D. Ryabko is an examiner of the Ph.D. of K. Eltysheva.
• R. Munos examiner of the Ph.D. of Louis Dorard (University College of London), Raphael Fonteneau (University of Liège), and member of PhD juries for Lei Yu (University Cergy Pontoise) and Wassim Jouini (Supelec Rennes).
• R. Munos is member of HDR Committee for Daniil Ryabko (INRIA Lille - Nord Europe) and Aurélien Garivier (Télécom ParisTech), 2011.
• P. Preux is member of the Ph.D. juries of Halem Benhabiles and Manuel Loth (Université de Lille 1)
• E. Duflos was rapporteur for the for PhD thesis of Michele Pace (INRIA Bordeaux), Pierre Neri (ENAC - University of Toulouse), Frédéric Faurie (University of Bordeaux), Sébastien Rougerie (University of Toulouse) and the Habilitation à Diriger des Recherche of Frédéric Dambreville.

9.1.8. Other Scientific Activities

• R. Munos is Vice Président du Comité des Projets at INRIA Lille-Nord Europe since September 2011.
• R. Munos is member of the Commission d’Evaluation INRIA.
• R. Munos is Président du jury d’admissibilité CR1-CR2 INRIA Lille - Nord Europe.
• R. Munos is member of the jury d’admission DR2 INRIA en 2011.

9.2. Teaching

9.2.1. Courses

• J. Mary, Master : “Programmation web avancée et design pattern”, 32h eq TD, M2, Université de Lille 3, France.
• J. Mary, Master : “Introduction à la Programmation R”, 32h eq TD, M1, Université de Lille 3, France.
• J. Mary, Master : “Programmation R avancée”, 32h eq TD, M1, Université de Lille 3, France.
• P. Chainais, Master: “Ondelettes et Applications”, 24h, niveau M1, Ecole Centrale de Lille, 2ème année.
• P. Chainais, Master : “Décision et Apprentissage”, 24h, niveau M2, Ecole Centrale de Lille, 3ème année.
• P. Preux, Master : “Mathématiques, Informatique, Modélisation”, 72h, niveau M1 psychologie, Lille 3.
• E. Duflos, Master : “Modélisation et Inférence Bayesienne”, 40h, niveau M2, Ecole Centrale de Lille, 3ème année.
• P. Vanheeghe, Master : “Estimation, Identification, Observation”, 32h, niveau M2, Ecole Centrale de Lille, 3ème année.

9.2.2. PhD and HdR
- HdR: Daniil Ryabko, Learnability in Problems of Sequential Inference, Université de Lille 1, December 19, 2011, [3].
- PhD: Manuel Loth, Active Set Algorithms for the LASSO, Université de Lille 1, July 8, 2011, Philippe Preux, [1].
- PhD: Odalric Maillard, Active Set Algorithms for the LASSO, Université de Lille 1 / Université de Toulouse, October 3, 2011, Rémi Munos and Philippe Berthet, [2].
- PhD: Nicolas Viandier, June 2011 (see section 10, [4]) : encadrement Emmanuel Duflos, Juliette Marais (IFSTTAR).
- PhD in progress: Olivier Nicol, “Apprentissage par renforcement sous contrainte de ressources finies, dans un environnement non stationnaire, face à des flux de données massifs”, Nov. 2010, encadrement : J. Mary, Ph. Preux.
SIERRA Project-Team

8. Dissemination

8.1. Animation of the scientific community

8.1.1. Conference and workshop organization


8.1.2. 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: SIAM Journal on Imaging Science, Associate Editor

8.1.3. Area chairs

- J.-Y. Audibert: International Joint Conference on Artificial Intelligence (IJCAI), 2011
- F. Bach: International Conference on Machine Learning, 2011, Area chair, Workshop co-chair
- F. Bach: International Conference on Computer Vision, 2011, Area chair
- G. Obozinski: Fifteenth International Conference on Artificial Intelligence and Statistics

8.1.4. Reviewing

- International conferences: AISTATS, ALT, ICML, ICPRAM, NIPS

8.1.5. PhD and HDR thesis committee

- Pierre Connault, University Paris-Sud, 2011 (S. Arlot)
- Rodolphe Jenatton, ENS Cachan, 2011 (J.-Y. Audibert, F. Bach, G. Obozinski)
- Jean-Baptiste Monnier, Université Paris 7, 2011 (J.-Y. Audibert, F. Bach)
- Novi Quadrianto, Australian National University (F. Bach)
- Gilles Meyer, Université de Liège (F. Bach)
8.1.6. Other

- S. Arlot is member of the board for the entrance exam in École Normale Supérieure (mathematics, voie B/L)

8.2. Prizes and awards

- CNRS Prime d’excellence scientifique (S. Arlot)
- T. Hocking: Best Student Poster at useR 2011 in Warwick, England for “Adding direct labels to plots”
- M. Schmidt: NSERC postdoctoral fellowship

8.3. Invited presentations

- S. Arlot, “Data-driven calibration of linear estimators with minimal penalties, with an application to multi-task regression”, Seminar, Statistics Laboratory, University of Cambridge, 2011.
- F. Bach, Small Workshop on Sparse Dictionary Learning (invited talk) - Queen Mary University, London - January 2011
- F. Bach, Statlearn workshop on Challenging problems in Statistical Learning (invited talk) - Grenoble - March 2011
- F. Bach, Congrès SMAI 2011 (invited talk in special session) - Lorient - May 2011
- F. Bach, Université de Lille (seminar) - June 2011
- F. Bach, Conference on Foundations of Computational Mathematics (two invited talks) - Budapest - July 2011
- F. Bach, Université de Liège (seminar) - September 2011
- F. Bach, IMA Workshop on High Dimensional Phenomena (invited tutorial) - Minneapolis - September 2011
- F. Bach, University of California, Berkeley (two seminars) - October 2011
• F. Bach, Machine Learning for NeuroImaging Workshop (invited talk) - November 2011
• F. Bach, Rencontres de Statistique Mathématique (invited talk) - Luminy - December 2011
• F. Bach, NIPS workshop on Discrete Optimization (invited talk) - Granada - December 2011
• F. Bach, NIPS workshop on Deep Learning (invited talk) - Granada - December 2011
• G. Obozinski, “Introduction to Statistical Learning”, tutorial talk, GDR Mascot-Num session "Statistical learning for computer experiments", Institut Henri Poincaré, May 2011

8.4. Teaching

Licence:

Master:
• S. Arlot, “Leçons de Mathématiques: Classification”, 9h, M1, École Normale Supérieure (Paris), France.
• S. Arlot and Francis Bach, “Statistical learning”, 24h, M2, Université Paris-Sud, France.
• J.-Y. Audibert, “Machine Learning and applications”, 30h, M2, École des Ponts ParisTech and Université Paris-Est Marne-la-Vallée, France
• J.-Y. Audibert, “Prédiction séquentielle”,14h, M2, Université Paris 7, France
• F. Bach and G. Obozinski, “Probabilistic Graphical Models”, 30h, M2, Mastère MVA, ENS Cachan, France.
• N. Le Roux, “Neural Networks and Optimization Methods”, 3h, M2, Mastère MVA, ENS Cachan, France.
• G. Obozinski, Enseignement spécialisé “Apprentissage Artificiel”, 3h, M1 (Graduate 1st year level), Mines de Paris, April 29th 2011.

Doctorat:
- S. Arlot, “Sélection de modèles et sélection d’estimateurs pour l’Apprentissage statistique”, 8h, Collège de France, France
- S. Arlot, “Model selection and estimator selection for statistical learning”, 10h, Scuola Normale Superiore di Pisa, Italy
- G. Obozinski, Summer school on Sparsity and Model Selection, 10h, Centro de Matematica Montevideo Uruguay, Montevideo, Uruguay, Feb. 28 - March 4, 2011.

PhD & HdR:


PhD in progress:

- Louise Benoît, 2009, F. Bach and J. Ponce
- Florent Couzinie-Devy, 2010, F. Bach and J. Ponce
- Edouard Grave, 2010, F. Bach and G. Obozinski
- Toby Hocking, 2009, F. Bach and Jean-Philippe Vert (Ecole des Mines de Paris)
- Armand Joulin, 2009, F. Bach and J. Ponce
- Augustin Lefèvre, 2009, F. Bach and Cédric Févotte (Telecom Paristech)
- Anil Nelakanti, 2010, Cédric Archambeau (Xerox) and F. Bach
- Fabian Pedregosa, 2011, F. Bach and Alexandre Gramfort (INRIA Saclay)
- Matthieu Solnon, Multi-task learning, September 2010, S. Arlot and F. Bach
9. Dissemination

9.1. Animation of the scientific community

- **Anne Auger**
  - THRaSH, *Theory of Randomized Search Heuristics workshop*, member of Steering Committee;
  - Editorial Board of *Evolutionary Computation*, MIT Press;
  - Olivier Teytaud: Committee at EvoStar, ICML, Lion, Advances in Computer Games.

- **Nicolas Bredeche**
  - PC member at GECCO 2011, RIVF 2011, EuroGP 2011
  - Co-organizer of DevLeaNN workshop, a two-day workshop on Development and Learning in Artificial Neural Networks, Paris, France (http://devleann.iscpif.fr).
  - New Horizons in Evolutionary Robotics. co-editor, Springer [75].

- **Philippe Caillou**
  - PC member at EPIA 2011, V2CS 2011
  - Coordinator of the SimTools Network (RNSC Network)

- **Nikolaus Hansen**
  - Member of ACM-SIGEVO Executive since 2003 (Special Interest Group on Evolutionary Computation (was the International Society on Genetic and Evolutionary Algorithms before 2006); member of ACM-GECCO Business Committee (2012-2013).
  - Parallel Problem Solving from Nature, Member of Steering Committee (since 1998);
  - Co-chair with Youssef Hamadi (MSR Cambridge) of the LION’6 conference (Learning and Intelligent Optimization) in Paris, January 2012.
  - “Invited Speaker co-Chair” of IEEE-CEC (Congress on Evolutionary Computation) 2011, New-Orleans, USA.
  - PC member of all important conferences in the area of Evolutionary Computation

- **Michèle Sebag**
  - Member of the European Machine Learning and Knowledge Discovery from Databases Steering Committee since 2010; ECCAI Fellow since 2011;
  - Workshop Chair of ECAI 2012 (Montpellier, August 2012);
  - Co-organization with Einoshin Suzuki of the International Workshop on LEarning and data Mining for Robots (LEMIR) at IEEE-Int. Conf. on Data Mining, Vancouver dec. 2011;
  - Area chair ICML11, Area chair ECML11;
- PC member of ILP11, GECCO11, reviewer on 3PhDs and 1 HdR; reviewer for ERC, CNRS, INRIA-Lille applications; member of LRI CCSU;
- Member of the CoNRS; Senior Advisory Board CHIST-ERA; member of the CSFRS (Conseil Supérieur de la Formation et Recherche Stratégique);
- Pattern Analysis, Statistical Learning and Computational Modelling NoE, Member of Steering Committee (PASCAL 2004-2008; PASCAL2, 2008-);
- Editorial Board of Machine Learning Journal, Springer Verlag; Genetic Programming and Evolvable Machines, Springer Verlag.

- Cécile Germain-Renaud
  - Member (elected) of the baord of the Faculty of Science (Conseil d’UFR) and University scientific board (Conseil Scientifique de l’Université).

9.2. Invited talks

- Marc Schoenauer: EVOLVE, Luxembourg (May).
- Michèle Sebag: KAUST, Saudi Arabia (Feb.); U. Zurich, Switzerland (March); U. York, UK (Nov.); NeuroComp; ML@INRIA.

9.3. Teaching

Nicolas Bredeche

  Licence: approx. 80h (Artificial Life), L2, Univ. Paris-Sud, France.
  Master: approx. 120h (Evolutionary Computation, Artificial Intelligence), L2, Univ. Paris-Sud, France. Including 15h Evolutionary Robotics, M2R.

Philippe Caillou

  Licence: approx. 192h (Computer science for managers), L1, IUT Sceaux, Univ. Paris-Sud, France.
  Master: approx. 27h (Multi-Agents Systems), M2R, Univ. Paris-Sud, France.
  Master: 3h (Multi-Agent Based Simulation), M2R, Univ. Paris-Dauphine, France.

Cécile Germain-Renaud

  Licence: approx. 120h (Computer Architecture, head of Licence) L2, L3, Polytech, Univ. Paris-Sud, France.
  Master: approx. 50h (Parallelism), M1 Computer Science, Univ. Paris-Sud, France.
  Master: 3h (Multi-Agent Based Simulation), M2R, Univ. Paris-Dauphine, France.

Michèle Sebag

  Master: 18h (Machine Learning), M2R, Univ. Paris-Sud, France.
PhD & HdR

HdR: O. Teytaud, *Artificial Intelligence and Optimization with Parallelism*, Université Paris-Sud, April 22. 2011 [3]


PhDs in progress

R. Akrour, *Autonomous Robotics based on Information Theory*, Université Paris-Sud, Nov. 02., 2010, M. Sebag

L. Arnold, *Architectures Profondes pour la Vision Computationnelle*, Université Paris-Sud, Jan. 01., 2010, H. Pauvam-Moisy and Ph. Tarroux (LIMSI)


Z. Bouzarkouna, *Optimisation de Puits Non Conventionnels : Type, Position et Trajectoire*, Université Paris-Sud, Dec. 01., 2008, M. Schoenauer

A. Chotard, *Enhancement and Analysis of Evolution Strategies*, Université Paris-Sud, Oct. 01., 2011, A. Auger and N. Hansen

A. Couëtoux *Monte-Carlo Tree Search and other Reinforcement Learning methods for Energy Management Applications*, Université Paris-Sud, Sept. 01., 2010, O. Teytaud

F. Dawei *Détection et diagnostic d’anomalies dans les systèmes globalisés à grande échelle*, Université Paris-Sud, Oct. 01., 2010, C. Germain

J. Decock *Comparison and Combination of Control and Reinforcement Learning methods for Energy Management Applications*, Université Paris-Sud, Oct. 03., 2011, O. Teytaud

N. Galichet *Integrity Preserving Policy Learning*, Université Paris-Sud, Oct. 01., 2011, M. Sebag


J.-B. Hooock, *Goal Planning with Massive Sets of Heuristics*, Université Paris-Sud, Nov. 01., 2009, O Teytaud

Y. Isaac, *Apprentissage Génératif pour les Interfaces Cerveau-Machine*, Université Paris-Sud, Oct. 03., 2011, C. Gouy-Pallier (CEA) and M. Sebag


G. Marceau-Caron, *Optimisation Globale du Trafic Aérien*, Université Paris-Sud, May 11., 2011, A. Hadjaz (Thalès Air Systems), P. Savéant (Thalès R&D) and M. Schoenauer


8. Dissemination

8.1. Animation of the scientific community

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

- **Chief editor**: ESAIM: Proceedings since 2006.
- **Associate editor**: Applied Mathematics and Optimization since 2009.
- **Associate editor**: Revista de Matemática: Teoría y Aplicaciones, since 2009.
- **Associate editor**: Stochastic Analysis and Applications since 2001.

P. Del Moral partipated to the following committees

- Responsible with Xavier Warin (EDF R&D Clamart) of the theme *modélisation stochastique et incertitude*, of the strategic action EDF-INRIA since 2010.

P. Del Moral co-organized an interdisciplinary *workshop on stochastic models and Bayesian inference in epidemiology* in Bordeaux.

B. Bercu is responsible of the thematic group **MAS** (Modélisation Aléatoire et Statistique) at SMAI.

B. Bercu is an assistant director of the Institut de Mathématiques de Bordeaux (IMB). He is also a member of the IMB council and the UFR council of the University of Bordeaux. 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.

F. Caron, P. Legrand and P. Del Moral co-organized the **Machine Learning Summer School 2011**, organized near Bordeaux in September 4-17, 2011.

F. Caron gave a practical session on parametric and nonparametric Bayesian clustering at the **Machine Learning Summer School 2011** in Bordeaux.

F. Caron was in the senior program committee of the Fourteenth International Conference on Artificial Intelligence and Statistics (AISTATS 2011).

F. Caron was in the program committee of the **NIPS workshop on Choice Models and Preference Learning**.


P. Legrand was a reviewer for the following international conferences and journals this year: Signal Processing, Evolve 2011, EA 2011.

P. Legrand and P. Del Moral were in the organizing committee of the international conference **Evolve 2011**.

P. Legrand was in the organizing committee of the French summer school **EA 2011** and the international conference **EA 2011**.
8.2. Teaching

B. Bercu is teaching the following courses (142 hours)

- Licence: Mathématiques générales, Analyse et Algèbre SVE, 36h, L1, University of Bordeaux, France
- Master: Séries Chronologiques, 48h, M2, University of Bordeaux, France
- Master: Processus aléatoires à temps discret, Martingales, 30h, M1, University of Bordeaux, France
- Master: Probabilités, 30h, L3, University of Bordeaux, France

F. Caron is teaching the following courses (50 hours)

- Master: Unsupervised Learning, 25 hours, M2, University of Bordeaux, France
- Master: Bayesian Methods, 13 hours, M2, University of Bordeaux, France
- Master: Projet Informatique, 12 hours, M2, University of Bordeaux, France

P. Del Moral gives the following courses

- Since september 2011: Professeur chargé de cours Polytechnique, CMAP (58h).

P. Legrand is teaching the following courses (244 hours)

- Licence: Analyse, 32h, L1, University of Bordeaux, France
- Licence: Mathématiques générales, 72h, L1, University of Bordeaux, France
- Licence: Informatique pour les mathématiques, 72h, L1, University of Bordeaux, France
- Licence: Complément d’algèbre, 72h, L2, University of Bordeaux, France

A. Richou is teaching the following courses (128 hours)

- Master: Probabilité, 32h, M1, University of Bordeaux 1, France
- Licence: Probabilités et Statistiques, 32h, L3, University of Bordeaux 1, France
- Licence: Probabilité et Statistiques, L3, 32h, University of Bordeaux 1, France
- Licence: Probabilité et Statistiques, L1, 32h, University of Bordeaux 1, France

PhD & HdR:

- PhD: Michele Pace, Stochastic models and methods for multi-object tracking [1], University of Bordeaux, July 13, 2011, supervised by P. Del Moral and F. Caron
7. Dissemination

7.1. Scientific animation

Jointly with the team Processus Stochastiques of IRMAR, ASPI organizes a working group on the Frei- dlin–Wentzell theory and its applications. One of the main goals of these talks is to study the theory of large deviations which describe how a metastable diffusion process evolves. Moreover, several talks are dedicated to simulation algorithms and applications (molecular dynamics, turbulence modelling).

François Le Gland has been a member of the committee for the PhD theses of Xuan–Binh Lam (université de Rennes 1, advisor: Laurent Mevel) and Christophe Avenel (université de Rennes 1, advisor: Étienne Mémin) and for the habilitation thesis of Frédéric Dambreville (université de Bretagne Occidentale).

François Le Gland is a member of the “conseil d’UFR” of the department of mathematics of université de Rennes 1.

Florent Malrieu is a member of the “conseil” of IRMAR (institut de recherche mathématiques de Rennes, UMR 6625).

Valérie Monbet is the director of the master on statistics and econometry at université de Rennes 1.

7.2. 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 master SISEA (signal, image, systèmes embarqués, automatique, école doctorale MATISSE), 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, 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 gives a course on Markov models at université de Rennes 1, within the probability and statistics track of the master on mathematics and applications.

Valérie Monbet gives several courses on data analysis, on time series and hidden Markov models, and on mathematical statistics, all at université de Rennes 1 within the master on statistics and econometry.

7.3. PhD and Habilitation Theses

Arnaud Guyader has defended his habilitation thesis [10], Contributions to nonparametric estimation and rare event simulation, at université de Rennes 2 in December 2011.

François Le Gland is currently supervising four PhD students

- Rudy Pastel, title: Estimation of rare event probabilities and extreme quantiles. Applications in the aerospace domain, started in October 2008, expected defense in February 2012, funding: ONERA grant, co–direction: Jérôme Morio (ONERA, Palaiseau).
- Alexandre Lepoutre, provisional title: Monte Carlo methods for dim target tracking, started in October 2010, funding: ONERA grant, co–direction: Olivier Rabaste (ONERA, Palaiseau).
- Damien Jacquemart, provisional title: Rare event methods for the estimation of collision risk, started in October 2011, funding: DGA / ONERA grant, co–direction: Jérôme Morio (ONERA, Palaiseau).
7.4. Participation in workshops, seminars, lectures, etc.

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

Arnaud Guyader has given a talk on multilevel Monte Carlo for extreme quantiles and probabilities at the SIAM Conference on Computational Science and Engineering, held in Reno in March 2011. He has also been invited by Nicolas Hengartner to visit Los Alamos National Laboratories in April 2011.

Frédéric Cerou has been invited to give a talk on smoothed splitting methods for counting at the 16th INFORMS Applied Probability Conference, held in Stockholm in July 2011.

Florient Malrieu has been invited to give seminar talks on non–uniqueness of equilibrium states for McKean–Vlasov equations in Toulouse in March 2011, on long time behavior of McKean–Vlasov equations in Pau in March 2011, on Markov modulated ordinary differential equations in Bordeaux in March 2011, on functional inequalities for mixtures in Grenoble in March 2011, on functional inequalities and concentration inequalities for mixtures in Vannes in June 2011, on ergodicity of piecewise deterministic Markov processes in Paris in June 2011. He has also been invited to give a three hours lecture on uniform (in time) propagation of chaos for a class of McKean–Vlasov equations, at the workshop on Mean Field Limit, held at IHP (institut Henri Poincaré) Paris in March 2011.

François Le Gland has been invited to give a talk on marginalization for rare event simulation in switching diffusions, at the workshop on Numerical Methods for Filtering and for Parabolic PDE’s, held at Imperial College in September 2011. He has also presented a poster on information fusion for indoor navigation, at the DGA seminar on Information Fusion and Planning for Surveillance and Intelligence, held at ENSTA ParisTech in June 2011.

Paul Bui–Quang has been invited to give seminar talks on importance sampling in high–dimension via the Laplace method at the seminar of the BigMC ANR project in April 2011 and on the Laplace method for particle filtering at the ENSAI seminar for PhD students in May 2011.

Rudy Pastel has given talks on splitting methods for the evaluation of satellite vs. debris collision probabilities at the 3rd IEEE International Conference on Computer Modeling and Simulation (ICCMS), held in Mumbai in January 2011 and at the European Conference for Aero–Space Sciences (EUCASS), held in St. Petersburg in July 2011.
CQFD Project-Team

9. Dissemination

9.1. Editorial activities

M. Chavent is member of the scientific committee of SFC’11.
F. Dufour is associate editor of the journal: SIAM Journal of Control and Optimization since 2009.
All the member of the team are regular reviewers for the most important journals in applied probability and statistics.

9.2. Scientific responsibilities

M. Chavent has been elected to National Council of the Universities (CNU).
B. de Saporta is in charge of the "Tache 3" of the ANR project FAUTOCEOS.
F. Dufour is the leader of the ANR project FAUTOCEOS.
F. Dufour is member of the IFAC Technical Committee TC 1.4 Stochastic Systems, term Period 2008-2011.

9.3. Organization of workshops and conferences

The team CQFD will organize the first french-speaking meeting on the software R in July 2012.

9.4. Administration of the universities and research institutes

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.
B. de Saporta is president of the "Congress and Colloquium" commission of the INRIA Bordeaux Sud-Ouest.
B. de Saporta is a member of the editorial board of SO News, the journal of INRIA Bordeaux Sud-Ouest.
B. de Saporta is correspondant of the cursus Ingénierie Economique of the master MIMSE Ingénierie Mathématique, Statistique et Economique of the University of Bordeaux.
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 an elected (deputy) member of the CNU 26.
F. Dufour is member of the scientific council of the engineering school ENSEIRB-MATMECA.
F. Dufour is now vice-president of the INRIA Project Comity.
J. Saracco is member of the commission INRIA "Jeunes Chercheurs”.
A. Gégout-Petit is member of the CEVU (Conseil des Etudes et de la Vie Universitaire) of the Bordeaux Segalen University.
A. Gégout-Petit is member of the Council of the Institut de Mathématiques de Bordeaux.
J. Saracco is the leader of the team "Statistics and Probability” of the Institute of Mathematics of Bordeaux (IMB). J. Saracco is an elected (deputy) member of the CNU 26.
H. Zhang is director of the cursus Ingénierie Mathématique of the Licence de Mathématiques of the University of Bordeaux.

9.5. Administration of the learned societies

M. Chavent was an elected member of the administration council of the SFdS until June 2011.
B. de Saporta belongs to the board of SMAI-MAS group. She was webmaster of the website until september 2011.

A. Gégout-Petit is an elected member of the administration council of the SFdS (Société Française de Statistique); she was vice-secretary of the SFDS until may 2010 and is now general secretary of the association.

A. Gégout-Petit is in the board team of the web-domain emath.fr. In this function, she manages the project "carte des masters" a web site which gathers together the informations on all the french masters in mathematics.

A. Gégout-Petit is in the organization committee of the "1er Forum Emploi Mathématiques" that will take place in Paris in January 2012

9.6. Promotion, dissemination of the science

B de Saporta is a member of the "Cellule Grand Public" of the SMAI.

A. Gégout-Petit is in charge for the promotion of "Licence MASS" (Applied mathematics degree) of the University of Bordeaux 2 to the secondary school pupils.

9.7. Teaching

Marie Chavent:

Licence : Statistique descriptive, 36 ETD, L1, university Bordeaux Segalen, France
Master : Analyse des données 1, 43 ETD, niveau M1, university Bordeaux Segalen, France
Master : Modèle de régression, 29 ETD, niveau M1, university Bordeaux Segalen, France
Master : Logiciels de statistique, 12 ETD, niveau M1, university Bordeaux Segalen, France
Master : Analyse des données 2, 25 ETD, niveau M2, university Bordeaux Segalen, France
Master : Projet Informatique, 10 ETD, niveau M2, university Bordeaux Segalen, France
Master : Scoring, 21 ETD, niveau M2, university Montesquieu Bordeaux 4, France
PhD : Laurent Vezard, "Classification de signaux EEG et synthèse de paramètres musicaux par algorithme évolutionnaire", University of Bordeaux 1 (co-supervised with P. Legrand).

Benoîte de Saporta:

Licence: Mathématiques pour l’économie, 45h ETD, L3, Univ. Montesquieu Bordeaux IV, France.
Master: Processus Aléatoires en finance, 30h ETD, M1, Univ. Montesquieu Bordeaux IV, France,
Master: Processus à espace d’états discret, 25h ETD, M2, Univ. Segalen Bordeaux 2, France,
Master: Finance en temps discret, 29h ETD, M2, Univ. Bordeaux 1, France,
Master: Finance en temps continu, 10h ETD, M2, Univ. Montesquieu Bordeaux IV, France.
PhD : Adrien Brandejsky, Contribution à l’étude des processus Markoviens déterministes par morceaux, University of Bordeaux 1 (co-supervised with F. Dufour and C. Elegbede).

Anne Gégout-Petit

Licence Mathématiques Appliquées et Sciences Sociales, L3, Etudes de cas en statistique, 30h ETD
Licence Mathématiques Appliquées et Sciences Sociales, Econométrie et séries chronologiques, 36h ETD, Univ. Bordeaux Segalen, France.
Master Modélisation, Ingénierie Mathématique, Statistique et Economique M1 : Analyse de variance, 25h ETD.
PhD: Romain Azaïs, Méthodes d’estimation pour les Processus Markoviens Déterministes par Morceaux, University of Bordeaux 1 (co-supervised with F. Dufour).
PhD: Camille Baysse, Analyse et optimisation de la fiabilité d’un équipement opto-électronique équipé de HUMS, University of Bordeaux 1 (co-supervised with J. Saracco).
François Dufour:

Licence: Probabilités et statistiques, 16 heures, niveau L3, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France. Probabilités, 10,6 heures, niveau L3, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France.

Master: Méthodes numériques pour la fiabilité, 24 heures, niveau M1, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France. Probabilités, 20 heures, niveau M1, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France.

PhD: Romain Azaïs, Méthodes d’estimation pour les Processus Markoviens Déterministes par morceaux, University of Bordeaux 1 (co-supervised with A. Gégout-Petit).

PhD: Adrien Brandejsky, Contribution à l’étude des processus Markoviens déterministes par morceaux, University of Bordeaux 1 (co-supervised with B. de Saporta and C. Elegbede).

Jérôme Saracco teaches mathematics, statistics and statistical modeling at the engineering school ENSC (Ecole Nationale Supérieure de Cognitique, a school of Cognitive Science Engineering) which is one of the six engineering schools of the Bordeaux Institute of Technology (IPB). He also teaches sampling techniques and experimental designs in the cursus “Statistical and stochastic modeling” of the Master “Ingénierie Mathématique, Statistique et Economique” at the University of Bordeaux. More precisely,

Licence: Descriptive statistics, 10.5h, L3, First year of ENSC, France
Licence: Mathematical statistics, 20h, L3, First year of ENSC, France
Licence: Data analysis (multidimensional statistics), 20h, L3, First year of ENSC, France
Licence: Mathematics (complement of linear algebra), 20h, L3, First year of ENSC, France
Master: Mathematics (complement of linear algebra and analysis), 20h, M1, First year of ENSC, France
Master: Statistical modeling, 20h, M1, Second year of ENSC, France
Master: training project, 20h, M1, Second year of ENSC, France
Master: Sampling techniques and experimental designs, 25h, M2, Master “Ingénierie Mathématique, Statistique et Economique”, the University of Bordeaux, France
PhD: Camille Baysse, Analyse et optimisation de la fiabilité d’un équipement opto-électronique équipé de HUMS, University of Bordeaux 1 (co-supervised with A. Gégout-Petit)
PhD: Raphaël Coudret, Modélisation statistique de données acquises à haute fréquence : application en environnement et génétique, University of Bordeaux 1 (co-supervised with G. Durrieu, Université de Bretagne Sud)

Huailing Zhang

Licence Mathématiques, L1, Mathématiques de Base 89 heure, Université Bordeaux 1, France
Master Modélisation, Ingénierie Mathématique, Statistique et Economique M1: Outils de simulation I, 29 heures. Files d’attente, 29 heures, Projet tutoré 10 heures, Université Bordeaux 1, France
Licence: Intégration et Probabilités, 26 heures, Institut Polytechnique de Bordeaux, école ENSEIRB-MATMECA, France
9. Dissemination

9.1. Animation of the scientific community

L. Mevel is part of the IOMAC organisation committee. He is also reviewer for numerous journals and conference boards.

9.2. Teaching

PhD: Michael Döhler, Subspace based system identification and fault detection: Algorithms for large systems and application to structural vibration analysis, Université de Rennes 1, 10/10/11, L. Mevel [11].

PhD: Xuan-Binh Lam, Uncertainty quantification for Subspace methods, Université de Rennes 1, 26/10/11, L. Mevel [12].

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: Algorithms for monitoring and localization of damage, Luciano Marin, since October 2010, L. Mevel and D. Bernal (University of NorthEastern, Boston, USA)

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

8.1. Animation of the scientific community

- A. Alfonsi: Co-organizer of the working group seminar of MATHFI “Méthodes stochastiques et finance”.
- V. Bally: Member of the scientific committee of the congress of SMAI 2011, du 23 au 27 mai 2011.
- B. Jourdain:
  1. Deputy head of the doctoral school ICMS, university Paris-Est
  2. report on the PhD dissertation “Some aspects of optimal quantization and applications to finance” by Sylvain Corlay
  3. report on the PhD dissertation “Non-parametric calibration of some financial models” by Rémi Tachet des Combes
- D. Lamberton:
  1. "Associate Editor" of Mathematical Finance, co-editor of ESAIM P&S.
  2. In charge of the master program "Mathématiques et Applications" (Universities of Marne-la-Vallée, Créteil and Evry, and Ecole Nationale des Ponts et Chaussées).
  3. Directeur de l’UFR de mathématiques, Université Paris-Est Marne-la-Vallée.
- A. Sulem:
  Associate editor of:
  - SIAM Journal on Financial Mathematics (SIFIN) (since its creation in 2008)
  - International Journal of Stochastic Analysis (IJSA) (since 2009)
  - Journal of Mathematical Analysis and Applications (JMAA)(since 2011)
Examinor of the thesis of Paul Gassiat, December 2011, Université Paris Diderot.

8.2. Teaching

- A. Alfonsi:
  1. “Modéliser, Programmer et Simuler”, second year course at the Ecole des Ponts.
  3. “Traitement des données de marché : aspects statistiques et calibration”, lecture for the Master at UPEMLV.
  4. “Mesures de risque”, Master course of UPEMLV and Paris VI.
- V. Bally:
  1. Master 2 of the University Marne la Vallée:
     - Malliavin Calculus and numerical applications in finance
     - Probabilistic methods for risk analysis.
     - Taux d’intérêt
• B. Jourdain:
  1. Course "Probability theory and statistics", first year ENPC
  2. Course "Introduction to probability theory", 1st year, Ecole Polytechnique
  3. Course "Stochastic numerical methods", 3rd year, Ecole Polytechnique
  4. 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:
  1. Second year of Licence de mathématiques (probability), Université Paris-Est Marne-la-Vallée.

• A. Sulem:
  1. Master Course, Université Paris IX-Dauphine, Département MIDO (Mathématiques et Informatique de la Décision et des Organisations), Master MASEF, (21 h) Finite difference methods in Finance

8.3. PhD

8.3.1. PhD defense

• Sidi Mohamed Ould Aly, Exotic options and stochastic volatility models. Thesis defense was on June 16th, 2011, Université Paris-Est Marne-la-Vallée. Adviser: D. Lamberton.


• Andreea Minca, Modélisation mathématique de la contagion de défaillance ; Mathematical modeling of financial contagion. Adviser: A. Sulem (30%) and Rama Cont, (Bourse Fondation Natixis): Thesis defense was at Université Pierre et Marie Curie (Paris 6) September 5, 2011. Actual Position: Assistant Professor, School of Operations Research and Information Engineering, Cornell University.

8.3.2. PhD in progress

• José Infante Acevedo (from Oct. 2009). Liquidity risk and limit order books modelling, ENPC. Adviser: A. Alfonsi

• Lokmane Abbas Turki (3rd year, started in March 2009). Modelling of correlation in high dimensions and numerical methods. This thesis is funded by Credinext. Université Paris-Est Marne-la-Vallée Advisers: D. Lamberton and B. Lapeyre.

• Ayech Bouselmi (3rd year, started in October 2009). Lévy processes and multi-dimensional models in finance. Allocataire de recherche, Université Paris-Est Marne-la-Vallée. Adviser: D. Lamberton

• Jing Chen, Non linear expectations and Backward SDEs, (Shandong University grant, INRIA. Adviser: A. Sulem (started September 2011).

• Maxence Jeunesse: Study of some numerical methods in finance Adviser: B. Jourdain

• Victor Rabiet, Malliavin calculus for jump diffusions. (3rd year, started in October 2009), ENS Cachant, Adviser: V. Bally
REGULARITY Team

9. Dissemination

9.1. Animation of the scientific community

- Paul Balança attended to the conference *Journées de Probabilités 2011* at Nancy and made a presentation on 2-microlocal analysis, mainly focused on results from [15].
- Alexandre Richard attended to the conference *Journées de Probabilités 2011* at Nancy and made a presentation on Hölder regularity for set indexed-processes, mainly focused on results from [25].
- Joachim Lebovits was invited to give a lecture in the mathematical department of University of Vienna (Austria). He made a presentation at the 35th Stochastic Process and their Applications congress in Oaxaca (Mexico).
- Jacques Lévy Véhel gave an invited lecture at EPFL (Switzerland).
- Erick Herbin was invited to the Israel Mathematical Union 2011 Annual Meeting (Bar-Ilan University, Israel). Talk: "Some recent advances on stochastic 2-microlocal analysis for stochastic processes".
- Erick Herbin was invited to the Geometric Functional Analysis & Probability Seminar (Weizmann Institute of Science, Israel) in July, 2011. Talk: "Several characterisations of the set-indexed Lévy processes".

9.1.1. Organisation committees

Erick Herbin is member of the IMdR Work Group "Uncertainty and industry".
Erick Herbin is member of the CNRS Research Group GDR Mascot Num, devoted to stochastic analysis methods for codes and numerical treatment.

9.1.2. Editorial board

Erick Herbin is reviewer for Mathematical Reviews (AMS).
Jacques Lévy Véhel is associate editor of the journal Fractals.

9.2. Teaching

- Erick Herbin is Director of the Mathematics Department at Ecole Centrale Paris.
- Erick Herbin is in charge of the Probability Course at Ecole Centrale Paris (20h).
- Erick Herbin is in charge of the Random Modeling Course at Ecole Centrale Paris (30h).
- Erick Herbin and Jacques Lévy Véhel are in charge of the Brownian Motion and Stochastic Calculus Course at Ecole Centrale Paris (30h).
- Jacques Lévy Véhel gives a course on wavelets and fractals at Ecole Centrale Nantes (8h).
- Erick Herbin gives travaux dirigés on Real and Complex Analysis at Ecole Centrale Paris (10h).
- Erick Herbin is in charge of the Numerical Simulation Program in the Applied Mathematics option of Ecole Centrale Paris.
- Erick Herbin is supervisor of several student’s research projects in the field of Mathematics at Ecole Centrale Paris.
- Paul Balança gives travaux dirigés on Probability (L3) at Ecole Centrale Paris (9h).
• Paul Balança gives travaux dirigés on Real and Complex Analysis (L3) at Ecole Centrale Paris (9h).
• Paul Balança gives travaux dirigés on Random Modeling (M1) at Ecole Centrale Paris (20h).
• Joachim Lebovits gives travaux dirigés on Real and Complex Analysis (L3) at Ecole Centrale Paris (9h).
• Joachim Lebovits gives travaux dirigés on Probability (L3) at Ecole Centrale Paris (9h).
• Joachim Lebovits gives travaux dirigés on financial mathematics (M1) at Ecole Centrale Paris (15h).
• Joachim Lebovits gives travaux dirigés on stochastic calculus (M2) at Ecole Centrale Paris (15h).
• Joachim Lebovits supervises students research projects on financial mathematics at Ecole Centrale Paris.
• Alexandre Richard gives travaux dirigés on Probability (L3) at Ecole Centrale Paris (9h).
• Alexandre Richard gives travaux dirigés on Statistics (L3) at Ecole Centrale Paris (9h).
• Alexandre Richard gives travaux dirigés on Random Modeling (M1) at Ecole Centrale Paris (20h).
• Alexandre Richard supervises students research projects on probability at Ecole Centrale Paris (approx. 10h).
• Alexandre Richard supervises students research projects on economic modelling of the cost and efficiency of a technique of hips resurfacing at Ecole Centrale Paris (approx. 15h).
• Benjamin Arras gives travaux dirigés on Probability (L3) at Ecole Centrale Paris (9h).
• Benjamin Arras gives travaux dirigés on Real and Complex Analysis (L3) at Ecole Centrale Paris (9h).
• Benjamin Arras gives travaux dirigés on stochastic calculus (M2) at Ecole Centrale Paris (15h).
TOSCA Project-Team

9. Dissemination

9.1. Animation of the scientific community

- 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 an elected member of the INRIA Evaluation Board, a member of the Suivi Doctoral Committee of INRIA Sophia Antipolis – Méditerranée, a member of the NICE Committee of INRIA Sophia Antipolis – Méditerranée.
- M. Bossy was a member of the hiring committee for Junior Researchers (Maîtres de Conférence) in the Centre de Mathématiques Appliquées at Mines ParisTech, Sophia Antipolis.
- N. Champagnat was an elected member of the Comité de Centre of INRIA Sophia Antipolis – Méditerranée until July.
- N. Champagnat was the coordinator of the Spring School Modèles Aléatoires en écologie, génétique et évolution of the ANR MANEGE in June in Agay http://www.cmap.polytechnique.fr/~anr-manege/StRaphael2011.html .
- N. Champagnat was a member of two hiring committees for Junior Researchers (Maîtres de Conférence) in Univ. de Nice – Sophia Antipolis and Univ. Lyon 1.
- N. Champagnat was a member of the PhD. committee of M. Salamat (Aix-Marseille Université, supervisor: E. Pardoux) in March and of M. Richard (Univ. Paris 6, supervisor: A. Lambert) in December.
- M. Deaconu is a member of the COST-GTAI (Groupe de Travail Actions Incitatives) of INRIA, of Comité des Projets and Commission des Développements Technologiques at INRIA Nancy, Grand-Est.
- M. Deaconu is a member of the Conseil de Laboratoire at Elie Cartan Institute in Nancy.
- S. Herrmann was a member of the Conseil Scientifique of the INPL University (Institut National Polytechnique de Lorraine).
- P.-E. Jabin organized the Summer School Modèles Mathématiques de la dynamique des populations in Ecole Polytechnique of Tunis, Tunisia.
- P.-E. Jabin was coordinator in Nice of the Erasmus Mundus Master Mathmods.
- A. Lejay has coordinated the organizing committee of the Journées de Probabilités 2011 in Nancy in June 2011 and was also a member of the scientific committee of this conference.
- A. Lejay is one of the three co-editors of the Séminaire de Probabilités published yearly in the Lecture Note in Mathematics series by Springer-Verlag [26]. http://hal.inria.fr/inria-00541922/en .
- A. Lejay is General Secretary of the Société des Mathématiques Appliquées et Industrielles (SMAI).
- A. Lejay is a member of the COMIPERS of INRIA Nancy Grand-Est, since 2011.
- D. Talay served as the Scientific Deputy of INRIA Sophia Antipolis — Méditerranée.

• D. Talay is serving as a member of the Advisory Board of the Centro de Mathematica da Universidade do Porto (Portugal).

• D. Talay served as a member of the Scientific Committee of the 11th Colloque Franco–Roumain.

• D. Talay reported on Émmanuelle Clément’s ‘Habilitation à Diriger des Recherches’ (Paris–Est University) and on several Ph.D. theses: Julia Charrier (University of Rennes I), Laurent Mertz (Paris 6 University), Xiaolu Tan (École Polytechnique), Denis Villemonais (École Polytechnique). He participated to other Ph.D. committees: Paul Gassiat (Paris 7 University), Julie Troyen (Paris–Est University).

• D. Talay participated to a junior position recruitment committee at Paris Dauphine University.

### 9.2. Teaching

**Master:** Continuous Probabilistic Models with Applications in Finance, 30h, M2 IMAFA (*Informatique et Mathématiques Appliquées à la Finance et à l’Assurance*), Ecole Polytechnique Universitaire, Univ. Nice – Sophia Antipolis, France (Mireille Bossy).

**Master:** Risk management on energetic financial markets, 9h, Master Ingénierie et Gestion de l’Energie, École des Mines de Paris) at Sophia-Antipolis, France (Mireille Bossy).

**Master:** Stochastic Particle Methods, 12h, M2 Probabilités et Modèles Aléatoires at Université Paris 6, France (Mireille Bossy).

**Master:** Introduction to Quantitative Finance, 9h, M1, Ecole des Mines de Nancy, France (Nicolas Champagnat).

**Master:** Introduction to Quantitative Finance, 18h, M1, ICN Business School Nancy-Metz, France (Nicolas Champagnat).

**Master:** Introduction to Quantitative Finance, 9h, M2, Ecole des Mines de Nancy, France (Nicolas Champagnat).

**Master:** Population Genetics and Random Genealogies, 30h, M2, Univ. Henri Poincaré, France (Nicolas Champagnat).

**Licence:** Evaluation des méthodes d’analyse appliquées aux sciences de la vie et de la santé, 27h, L1, Univ. Henri Poincaré, France (Paul Charton)

**Licence:** Outils théoriques : probabilités statistiques, 37h, L3, Univ. Henri Poincaré, France (Paul Charton)

**Licence:** Colles de mathématiques, 24h, L1, Univ. Henri Poincaré, France (Paul Charton)

**Master:** Stochastic modeling, 30h, M2, Université Henri Poincaré, France (Madalina Deaconu).

**Master:** Probabilistic methods in simulation, 30h, M1, Ecole des Mines de Nancy, France (Madalina Deaconu).

**Licence:** Statistiques pour la Psychologie, 50h, L2, Université de Bourgogne (Samuel Herrmann).

**Licence:** Analyse, 25h, L2, Université de Bourgogne (Samuel Herrmann).

**Master:** Probabilités pour les mathématiques financières, 45h, M1, Ecole des Mines de Nancy (Samuel Herrmann).

**Master:** Modélisation et prévision, 30h, M1, Ecole des Mines de Nancy (Samuel Herrmann).
Master: Numerical methods, 15h, M2, Université Henri Poincaré, France (Antoine Lejay).
Licence: Probabilités et Statistiques, 36 h, L2 MASS, Université de Nice – Sophia Antipolis, France (Nicolas Perrin).
Licence: Probabilités, 30 h, L2 BIM, Université de Nice – Sophia Antipolis, France (Nicolas Perrin).
Master: Stochastic Numerical Methods, École Polytechnique (up to August, Denis Talay had a part time position of Professor in this elite institution).
Master: Stochastic Flows, 12h, M2 Probabilités et Applications and M2 Probabilités et Finance at Université Paris 6, France (Denis Talay).
Master: Advanced numerics for Computational Finance, 40 h, M2, UNSA (Mathmodes Erasmus Mundus), France (Etienne Tanré).
Master: Numerical Probability in Finance, 20 h, M2, Ecole PolytechNice (IMAFA), France (Etienne Tanré).
Master: Numerical Methods in Finance, two sessions with 18 h, M2, ULB (University Certificates in Financial and Insurance Risk Modelling And Quantitative Methods in Finance), Belgium (Etienne Tanré).
Master: Continuous Probabilistic Models with Applications in Finance (exercice classes), 20h, M2 IMAFA (Informatique et Mathématiques Appliquées à la Finance et à l’Assurance), Ecole Polytechnique Universitaire, Univ. Nice, France (Laurent Violeau).
PhD in progress: Paul Charton, Hedging strategies for wind energy prices, September 2010, Madalina Deaconu and Antoine Lejay.
PhD in progress: Julien Claissse, Stochastic control of population dynamics, September 2010, N. Champagnat, D. Talay.
PhD in progress: Dalia Ibrahim, Mathematical modelling for technical analysis techniques, November 2009, D. Talay and E. Tanré.
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: Laurent Violeau, Stochastic Lagrangian Models and Applications to Downscaling in Fluid Dynamics, October 2010, M. Bossy and A. Rousseau.

9.3. Participation to congresses, conferences, invitations...

- M. Bossy gave talks at the Séminaire du CMA, in January at École des Mines de Paris, an invited session talk at ICIAM, Vancouver in July, an invited lecture at the Forum des jeunes mathématiciens, at IMT Toulouse.
- N. Champagnat gave a 4h lecture on Modèles stochastiques individu-centrés en dynamique adaptative et étude du branchement évolutif at the Summer School and Workshop Modèles mathématiques de la dynamique des populations in April at the Ecole Polytechnique of Tunis, Tunisia.
- J. Charrier gave seminar talks in Warwick and Poitiers in November.
J. Claisse gave a talk at the ANR MANEGE Spring School in Agay, France in June.

M. Deaconu was invited to give a talk in the International Conference on Stochastic Analysis and Applications, Hammamet, October 10-15, 2011, Tunisia. M. Deaconu also gave a talk in The Seventh Congress of Romanian Mathematicians, June 29 - July 5, 2011, Brașov, Romania, and several talks at the Institute of Mathematics of the Romanian Academy in December 2011.

S. Herrmann gave several seminar talks in Dijon, Lyon (ISFA and Institut Camille Jordan), Nancy and gave talks in the IMPACT-Workshop in honour of Peter Imkeller's 60th birthday in Berlin, and in the 5th International conference of stochastic analysis and its application (Bonn, Germany).

S. Herrmann and E. Tanré participate to the Workshop on Mean-field methods and multiscale analysis of neuronal populations at CIRM (Marseille) in October 2011.

S. Herrmann and E. Tanré gave a 12 hours talk/course during the Semester on Theoretical, Mathematical and Computational Neuroscience http://www-sop.inria.fr/manifestations/SemesterCirm/ on Stochastic models and simulations in neuroscience.

D. Ibrahim gave talks at the Fourth European Summer School in Financial Mathematics in Zürich, in September 2011.

P.-E. Jabin gave talks at the SIAM Conference on Analysis of Partial Differential Equations (PD11), San Diego, USA, at the Vlasov Models in Kinetic Theory Semester Workshop, Brown University, USA, at the Conference on Continuum and kinetic methods in the theory of shocks, fronts, dislocations and interfaces, in honor of C. Dafermos, Crete, at the Workshop Perspectives in Mathematics and Life Sciences as a part of the school BIOMAT 2011, Granada, Spain, at the Summer School M3D, Porquerolles, France, at the 2011 Annual Kinetic FRG Meeting, Madison, Wisconsin, USA, and at the Conference on Applied Mathematics from Waves to Fluids, in honor C. Bardos, Nice.

N. Perrin gave a talk at the Mini-symposium on Méthodes numériques en simulation moléculaire of the SMAI Congress 2011 in Guidel, France in May.

D. Talay gave a series of Minerva Foundation Lectures at Columbia University and a seminar at the Courant Institute in September. He also gave an invited lecture at the 6th International Symposium on Backward Stochastic Differential Equations at USC, Los Angeles, in June.

E. Tanré gave talks at the Probability Seminar of Univ. of Nice – Sophia Antipolis in September, and at the Groupe de travail en mathématiques et neurosciences at Institut Henri Poincaré, Paris, in January.

### 9.3.1. Invitations

M. Deaconu was invited one week by Lucian Beznea at the Institute of Mathematics of the Romanian Academy in December 2011.

S. Herrmann was invited one week in Bielefeld university, Germany.

P.-E. Jabin spent 3 weeks at the University of Crete, Greece.

D. Talay spent two weeks at Columbia University.