CERMICS

mathématiques – informatique

SOMMAIRE

CERMICS

Laboratory of applied mathematics and scientific computing
(*Centre d'Enseignement et de Recherche en Mathématiques et Calcul Scientifique*)

UNIVERSITÉ PARIS-EST

École des Ponts ParisTech laboratory hosting joint project-teams with INRIA

CERMICS
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Director: Jean-François Delmas
Vice-Director: Alexandre Ern

STAFF

14 Researchers
4 Associate researchers
21 External collaborators
25 PhD students
2 Administrative assistants
10 Post-docs
5 Invited researchers
13 Internship students

QUALITATIVE RESULTS

CERMICS is a laboratory of École des Ponts ParisTech, hosting joint research teams with INRIA and University Paris-Est of Marne-la-Vallée (UPEMLV). It is located at École des Ponts ParisTech in Champs-sur-Marne. The scientific activity of CERMICS covers several domains in scientific computing, applied probability, modelling, and optimization. It has been evaluated A+ in 2008 by the AERES.

Three teams deal with modelling and scientific computing: the "Fluid Dynamics" team (leader: Alexandre Ern), which develops advanced numerical finite element methods applied to environmental flows and solids mechanics, the "Molecular and Multiscale Simulations" team (leader: Tony Lelièvre), which covers several connected fields such as electronic structure calculations, numerical statistical physics, multiscale simulation of materials, etc., and the "PDE and Materials" team (leader: Régis Monneau) devoted to the mathematical modelling of material behavior at the crystalline level. Two other teams cover several important domains of applied mathematics: the "Optimization and Systems" team (leader: Michel de Lara) involved in research about optimization (mostly in a stochastic setting), system simulation, and control, and the "Applied Probability" team (leader: Benjamin Jourdain) with applications of probability theory to modelling and numerical methods. All teams have their own research domains, and collaborate on specific topics, like, for example, Quantum Monte Carlo methods for the computation of the ground state energy of a Schrödinger Hamiltonian or domain decomposition and uncertainty propagation. It can be pointed out that two teams are joint project-teams with INRIA: the "Molecular and Multiscale Simulations" team hosts the INRIA Rocquencourt project-team MICMAC (leader: Claude Le Bris), and the "Applied Probability" team takes part to the UPEMLV-INRIA Rocquencourt project-team MATHFI (leader: Agnès Sulem).

KEY FACTS

Staff changes, missions, visits

The Molecular and Multiscale Simulations team hosted Professor Stefano Olla thanks to the INRIA project MIC-MAC.

In 2010, CERMICS received 14 post-doctoral students and had 22 PhD students, among them 6 defended their PhD in 2010. Furthermore 10 PhD programs started in 2010.

In 2010 the administrative assistant Martine Ouhanna leaved the Cermics and was replaced by Nathalie Quelleu.

Publications and prizes

The CERMICS laboratory has sustained a high scientific activity: more than forty five articles in international refereed journals and about ten chapters of books have been published. Also about sixty presentations in conferences have been made and 8 conferences or workshops have been organized by members of CERMICS.

The books «Free energy computations: a mathematical perspective» by Tony Lelièvre, Mathias Rousset and Gabriel Stoltz, and «Introductions aux probabilités et aux statistiques» by Jean-François Delmas have been published.

Claude Le Bris has been awarded the Charles Amick lecturer at the University of Chicago and has delivered a series of lecture there in October.

Tony Lelièvre has been awarded, jointly with Jean-Frédéric Gerbeau (INRIA) the "Grand Prix Alcan" by the French Academy of Sciences.

Alexandre Ern was invited as Matheon Lecturer to give a series of lectures on Discontinuous Galerkin methods in Berlin.

Sébastien Boyaval has been awarded in 2010 the "Prix de Thèse en Mathématiques et STIC" by the Université Paris-Est.

Industrial impact

The activities of industrial transfer in the laboratory are strongly linked to research activities. Scientific results are mostly obtained in collaboration with Research and Development Departments of large industrial firms through research contracts (CNES, CEA, Creditnext, EADS, EDF, IFP, Société Générale, Thalès-Alenia Space, US Air Force, US Navy, etc). Nine programs, which represent a significant part of our financial support, are granted by the «Agence Nationale de la Recherche» (ANR). The level of research contracts was very high in 2010, about 450 k€ for contracts signed by École des Ponts ParisTech.

Teaching

The members of CERMICS are strongly involved in teaching at École des Ponts ParisTech, École Polytechnique, École des Mines, ENSTA and in Masters in collaboration with Universities. Among them, École des Ponts Paristech has a strong partnership with the 2nd year Master program on Applied Mathematics and Mathematical Finance of UPEMLV, and the 2nd year Master program on Numerical Analysis and PDES of University Pierre and Marie Curie (Paris VI).

RESEARCH TEAMS

1. Applied probability

The Applied Probability team is mainly interested in the study of probabilistic numerical algorithms with applications going from mathematical finance to biology, quantum chemistry and molecular simulation. The other important research field is the probabilistic interpretation of PDEs, especially nonlinear ones.

Concerning mathematical finance, the team is part of the Mathfi project together with researchers from the UPEMLV and the INRIA and also takes part in the chair "Measure of Financial Risks" of the Risk Fundation together with the École Polytechnique and the Société Générale. In addition to the partnership with banks structured by the consortium supporting the development of the pricing, hedging and calibration library of numerical routines called Premia, the team takes advantage of contracts with Credinext and Eurostars to finance PhDs and postdocs. Concerning teaching, the team is strongly involved in the Master program in mathematical finance at UPEMLV-ENPC.

In continuation of the project ADAP'MC, the ANR project Big'MC started in 2009. It is aimed at collaborations with the statisticians from the ENST and the University Paris Dauphine to enhance Monte Carlo methods especially with adaptive variance reduction techniques.

The team hosts the ANR program A3 on Random Trees and Applications which focuses on branching processes. This activity is also connected to applications in biology.

In 2010, Raphael Roux has defended his PhD and two students have started new PhDs. The team received the visits of Michel Vellekoop (university of Amsterdam) and Arturo Kohatsu-Higa (university of Osaka). Both the Mathfi project and the chair "Measure of financial risks" will reach the end of their lifetimes by the end of 2011. The main present challenge of the team is to discuss new projects with its partners in the perspective of their renewal.

2. Fluid dynamics

The Fluid Dynamics team develops advanced numerical methods for environmental flows and solids in interaction. The main applications are underground waste storage, fluid-structure interaction, contact problems, crack propagation, hydraulics, and hydrology. Scientific activities cover modelling, numerical analysis, and simulation. A specific expertise concerns Discontinuous Galerkin methods. Uncertainty quantification is another important topic, in particular stochastic Galerkin methods and, more recently, non-parametric approaches for acoustics problems.

Most activities are developed in partnership and involve a PhD thesis.

A. Ern was invited as MATHEON Lecturer to give a series of lectures on Discontinuous Galerkin Methods in Berlin (October 2010).

3. Molecular and multiscale simulations

The scientific focus of the team (which is also part of the INRIA project-team MicMac) is to analyze and improve the numerical schemes used in the simulation of materials at the microscopic level (computational chemistry, molecular dynamics), and in simulations coupling this microscopic scale with larger macroscopic scales (solid mechanics, fluid mechanics). The main domains of application are: quantum chemistry, material science and molecular dynamics. Our work pursues a twofold goal: giving the models a sound mathematical grounding, and improving the numerical approaches.

More precisely, the main topics covered by the team are the following:
- computational quantum chemistry and approximation of the Schrödinger problem,
- molecular dynamics and computational statistical physics,
- free surface flow - micro-macro models for fluids,
- micro-macro models for solids and stochastic homogenization,
- quantum models for electrochemistry.

Let us also mention an emerging activity on uncertainty propagation and applications of greedy algorithms.

Over the years, the team has accumulated an increasingly solid expertise on such topics, which are traditionally not well known by the community in applied mathematics and scientific computing. One of the major achievements of the team is to have created a corpus of literature, authoring books and research monographs on the subject that other scientists may consult in order to enter the field. This year, the book "Free energy computation: a mathematical perspective" (Imperial College Press) just appeared. It covers a new topic we addressed over the past five years.

Among the main achievements in 2010, let us mention the following:
- Concerning electronic structure theory, the team has obtained mainly results along two lines: the modeling and simulation of local defects in periodic crystals, and the numerical analysis of variational approximations of nonlinear elliptic eigenvalue problems. In addition, results have been obtained on the prediction of the photo-electric properties of organic molecules and nano-particles. These results have potential applications in the modelling of semi-conductors and photovoltaic devices.
- Concerning molecular dynamics, new results have been obtained on efficient sampling algorithms, and on effective dynamics for coarse-grained quantities. We are now working actively in two directions: the efficient sampling of reactive paths ensembles, and the simulation of non-equilibrium systems. We are continuously discussing the practical counterparts of these methodological and theoretical results with practitioners (chemists and molecular biologists).
- Various results have been obtained in the field of multiscale modelling for solid materials and for fluids. One new subject which is now well developed in the team is stochastic homogenization for random materials. Many results have been obtained, in particular concerning efficient numerical strategies to compute effective properties of random materials.

E. Cancès, has been invited at Brown University, Providence, USA, July-August 2010.

S. Olla remains invited professor thanks to the INRIA team-project MICMAC.

C. Le Bris has been the Charles Amick lecturer 2010 at the University of Chicago, and has delivered a series of lectures there, in October 2010.

T. Lelièvre has been awarded, jointly with Jean-Frédéric Gerbeau (INRIA Rocquencourt) the "Grand Prix Alcan" by the French Academy of Sciences.

S. Boyaval has been awarded in 2010 the 2009 "Prix de thèse en Mathématiques et STIC" by the Université Paris Est.

The article by I. Dabo and coworkers A. Ferretti, N. Poilvert, Y. L. Li, N. Marzari, M. Cococcioni, has been awarded the label "Physical Review Editor's Suggestion", by the journal Physical Review B.

4. Optimization and systems

In 2010, the Optimization and systems team comprises three full time researchers -- Jean-Philippe Chancelier, Guy Cohen, Michel De Lara - two PhD students – Pierre Girardeau, Eugénie Lioris - and four associated researchers - Pierre Carpentier (ENSTA), Laetitia Andrieu (EDF), Kengy Barty (EDF), Anes Dallagi (EDF).

* Numerical methods in stochastic control

This theme is a mainstream of our team research. Pierre Girardeau defended his PhD at the end of 2010 on Resolution of large-scale problems in stochastic dynamic optimization and feedback synthesis. His last year was devoted to the implementation of price decomposition for specially
structured large-scale problems under stochasticity. Michel De Lara supervises Jean-Christophe Alais in his doctorate on risk and optimization for the management of energies, in CIFRE convention with EDF.

* Risk Management and Probability Constraints

At the end of 2010, the three year collaboration with Thalès-Alenia-Space and CNES for planning space vehicle trajectories
taking into account the risk of engine failures has been almost completed by addressing the full-size problem (7-dimensional model) using the various techniques developed and tested earlier on simplified models.

* Transport

In the simulation study of collective taxis, Eugénie Lioris defended her thesis at the end of 2010. At this point, using the simulator set up in previous years, it has been possible to thoroughly investigate the optimization of real-time management policies in a decentralized mode of operation (without centralized dispatching), to study the optimal system sizing (number of taxis in service, taxi passenger capacity, etc.), and to demonstrate the influence of various factors (demand intensity and geometry) over the system performances. The more complex problem of centralized management is yet to be investigated.

* Mathematical methods for sustainable management of natural resources

Michel De Lara ended in 2010 an ECOS project with Chile. He obtained a new international STIC-AmSud project OVIMINE, Optimization and viability in mining, with Peru and Chile. Michel De Lara co-supervises, with Katheline Schubert of University Paris 1, Esther Régnier's thesis on Fishery economics, a key science for improving the management of halieutic resources.

* Scientific software NSP

This theme is driven by J.-P. Chancelier. NSP has evolved during the present year in many aspects by adding primitives and toolboxes in collaboration with Bruno Pinçon. The cooperation with the Premia team is going on. Most of our efforts were dedicated to the port of Scicos 4.4, a long task to be finished in 2011.

5. PDE and materials

The main subject studied by the PDE and Materials team is the dynamics of dislocation. This work concerns differents scales, from microscopic scales (simplified atomic models, like the Frenkel-Kontorova model), models of dislocation dynamics (curves of defects moving in crystals, and responsible of elasto-visco-plastic properties of metals), up to the macroscopic scale with dislocation densities. Simultaneously, we also work on different topics: models of nanotubes (PhD of D. El Kass), models of traffic (with INRETS laboratory), and we also have collaboration projects with the LAMA laboratory.

STAFF

Researchers (14)

ALFONSI Aurélien, Applied Probability team, Ecole des Ponts ParisTech, research scientist
CANCES Eric, Molecular and Multiscale Simulations team, Ecole des Ponts ParisTech, research scientist, HdR
CHANCELIER Jean-Philippe, Optimization and Systems team, Ecole des Ponts ParisTech, research scientist
COHEN Guy, Optimization and Systems team, Ecole des Ponts ParisTech, research scientist, HdR
DABO Ismaila, Molecular and Multiscale Simulations team, research scientist
DE LARA Michel, Optimization and Systems team, Ecole des Ponts ParisTech, research scientist, HdR
DELMAS Jean-François, Applied Probability team, Ecole des Ponts ParisTech, research scientist, HdR
ERN Alexandre, Fluid Dynamics team, Ecole des Ponts ParisTech, research scientist, HdR
JOURDAIN Benjamin, Applied Probability team, Ecole des Ponts ParisTech, research scientist, HdR
LAPEYRE Bernard, Applied Probability team, Ecole des Ponts ParisTech, research scientist, HdR
LE BRIS Claude, Molecular and Multiscale Simulations team, Ecole des Ponts ParisTech, research scientist, HdR
LELIEVRE Tony, Molecular and Multiscale Simulations team, Ecole des Ponts ParisTech, research scientist, HdR
MONNEAU Régis, PDE and Materials team, Ecole des Ponts ParisTech, research scientist, HdR
STOLTZ Gabriel, Molecular and Multiscale Simulations team, Ecole des Ponts ParisTech, research scientist

Associated researchers (4)

BOULEAU Nicolas, Applied Probability team, Ecole des Ponts ParisTech, research scientist, HdR
EL HAJJ Ahmad, PDE and Materials team, University of Compiègne, Assistant professor
IMBERT Cyril, PDE and Materials team, University Dauphine, Assistant professor, HdR
FORCADEL Nicolas, PDE and Materials team, University Dauphine, Assistant professor

External collaborators (21)

ANDRIEU Laetitia, Optimization and systems, EDF, Research
BARLES Guy, PDE and Materials, University of Tours, Research, HdR
BARTY Kengy, Optimization and systems, Research, EDF
BOUCHUT François, Fluid dynamics, UPEMLV, Research Director, HdR
CANNONE Marco, PDE and Materials, UPEMLV, Professor, HdR
CARDALIAGUET Pierre, PDE and Materials, University of Brest, Professor, HdR
CARLINI Elisabetta, PDE and Materials, University La Sapienza, Italia, Research
CARPENTIER Pierre, Optimization and systems, ENSTA, research scientist
DALLAGI Anes, Optimization and systems, EDF, Research
DA LIO Francesca, PDE and Materials, University of Padoue, Italia
BRIANI Ariela, PDE and Materials, University of Pise, Italia, Research,
FALCONE Maurizio, PDE and Materials, University La Sapienza, Italia, Professor
FOREST Samuel, PDE and Materials, ENSMP, Research director, HdR
FINEL Alphonse, PDE and Materials, ONERA, Research
HOCH Philippe, PDE and Materials, CEA, Research
LE BOUAR Yann, PDE and Materials, ONERA, Research
LE MAITRE Olivier, Fluid dynamics, LIMSI-CNRS, University of Orsay
LEY Olivier, PDE and Materials, University Tours, Professor, HdR
NDJINGA Michael, Fluid dynamics, CEA-Saclay, research scientist
ROUY Elisabeth, PDE and Materials, Ecole Centrale Lyon, Research, HdR
VOHRALIK Martin, Fluid dynamics, LJLL, UPMC-CNRS

Invited Researchers (5)

OLLA Stefano, University of Paris Dauphine, Professor, HdR, Invited Professor, "in delegation" at INRIA, until September 2010
GHORBEL Amine, invited research
RUSSO Francesco, University of Paris 13, Professor, HdR, Invited Professor, "in delegation" at INRIA, until September 2010
SUZUKI Atsushi, invited Professor INRIA until September 2010 HdR
ZANETTE Antonino, Udine University, Professor, invited professor.

Post-doctoral students (10)

DE MARCO Stefano, Post doctoral Applied Probability until november 2011
DICKSON Bradley, Molecular and Multiscale Simulations team, Post doctoral fellow, Financed by ANR, until february 2010
DOBSON Matthew, Molecular and Multiscale Simulations team, Post doctoral fellow, Financed by NSF
FRANCISCO Juliano, Post doctoral fellow, Financed by Brazilian government, from February 2010
GUIBERT David, Molecular and Multiscale Simulations team, "chargé de recherche" Financed by ANR, from November 2009
HAMDI Mustapha, Molecular and Multiscale Simulations team, Post doctoral fellow, Financed by INRIA, until September 2010
HUVENEERS François, Post doctoral fellow, Financed by ERC, from September 2010
LI Yanli, Molecular and Multiscale Simulations team, Post doctoral fellow, Financed by ANR,
LINDGREN Erik, PDE and Materials team, Ecole Polytechnique and Ecole des Ponts ParisTech, post-doctoral student, until august 2010
POMMIER David, Molecular and Multiscale Simulations team, Post doctoral fellow, Financed by ANR, until July 2010

Ph. D Students (25)

AHDIDA Abdelkoddousse, Applied Probability team, PhD student, ENPC fellowship, ED MSTIC
AL HAJ Mohammad, PDE and Materials team, PhD student, ENPC and Lebanon CNRS fellowship, ED MSTIC
ANANTHARAMAN Arnaud, Molecular and Multiscale Simulations team, PhD student, Civil engineer, ED MSTIC
BENOIT David, Molecular and Multiscale Simulations team, UPE fellowship, PhD student, ED MSTIC
CASENAVE Fabien, Fluid Dynamics team, PhD, Civil engineer, ED MSTIC
CHALHOUB Nancy, Fluid Dynamics team, PhD student, ENPC and Lebanon CNRS fellowship, ED MSTIC
COSTAOUEC Ronan, Molecular and Multiscale Simulations team, PhD student, ENPC fellowship, ED MSTIC
DOYEN David, Fluid Dynamics team, PhD student, CIFRE EDF R&D fellowship, ED MSTIC,
EL KASS Danny, PDE and Materials team, PhD student, MESR fellowship, ED MSTIC
EHRLACHER Virginie, Molecular and Multiscale Simulations team, PhD student, Civil engineer, ED MSTIC
GIRARDEAU Pierre, Optimization and systems, EDF fellowship, ED MSTIC,
HENARD Olivier, Applied Probability team,

PhD student, ENPC and ANR fellowship, ED MSTIC,
HOSCHEIT Patrick, Applied Probability team, PhD student, ENS fellowship, ED MSTIC,
INFANTE ACEVEDO, José Arturo, Applied Probability team, PhD student, Axa fundation fellowship, ED MSTIC
JEUNESSE Maxence, Applied Probability team, PhD student, Risk fundation fellowship, ED MSTIC
JOUBAUD Rémi, Fluid dynamics team, PhD student, ANDRA fellowship, ED MISTIC
LAHBABI Salma Molecular and Multiscale Simulations team, PhD student, CNRS fellowship, ED MSTIC
LE GUILCHER Arnaud, PDE and Materials team, PhD student, Civil engineer, ED MSTIC
LIORIS Eugénie, Optimization and Systems team ENPC, PhD student, fellowship INRIA, ED MSTIC,
LUSSO Christelle, Fluid Dynamics team, PhD student, ENPC fellowship, ED MSTIC
MONASSE Laurent, Fluid Dynamics team, PhD student, Civil engineer, ED MSTIC
MINOUKADEH Kimiya, Molecular and multiscale simulations, PhD student, ENPC fellowship, ED MSTIC
ROUSSEAU Marie, Fluid Dynamics team, PhD student, ENPC fellowship, ED MSTIC
ROUX Raphaël, Applied Probability team, PhD student, ENS fellowship, ED MSTIC
TRYOEN Julie, Fluid Dynamics team, PhD student, ENPC fellowship, ED MSTIC

Internship students (13)

AMORY Marie, Applied Probability
ARONIO DE ROMBLAY Sixtie, Optimization and Systems team,
BENOIT David, Molecular and Multiscale Simulations
COEFFIC Florent, Optimization and Systems
CORMIER-DURAND Julia, Optimization and Systems
GRUNER Robin, Optimization and Systems
HAMZA Elhassani, Materials team
LAHBABI Salma, Molecular and Multiscale Simulations team
LECLERE Vincent, Optimization and Systems
LUSSO Christelle, Fluid Dynamics team
MARJOLLET Marie, Optimization and Systems team,
REYGNER Julien, Applied Probability
SMADI Charline, Applied Probability

Administrative Assistants (2)

BACCAERT Catherine, Ecole des Ponts ParisTech
OUHANNA Martine, Ecole des Ponts ParisTech Until August 2010
QUELLEU Nathalie, Ecole des Ponts ParisTech Since September 2010

QUANTITATIVE RESULTS

KNOWLEDGE PRODUCTION

PUBLICATIONS

Scientific books

J-F. DELMAS : Introduction aux Probabilités et aux Statistiques. Presse de l'ENSTA, 2010. ISBN 978-2-7225-0922-1

T. KOMOWSKI , C. LANDIM, S. OLLA:. Fluctuations in Markov Processes, Grundlehren der mathematischen Wissenschaften, Springer, 2010, Final version in preparation.

T. LELIEVRE, M. ROUSSET and G. STOLTZ Free energy computations: a mathematical perspective, Imperical College Press, 2010, ISBN 978-1-84816-247-1.

Publications in a international journals Journals with review committee

R. ABRAHAM and J.-F. DELMAS and G. VOISIN

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S. BOYAVAL , C. LE BRIS , T. LELIEVRE , Y. MADAY, N. NGUYEN, A. PATERA, Reduced basis methods for stochastic problems, in "Archives of Computational Methods in Engineering: State of the Art Reviews", 17(4), 435-454, 2010. http://dx.doi.org/10.1007/s11831-010-9056-z

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L. DOYEN, M. DE LARA. Stochastic viability and dynamic programming.
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D. DOYEN, A. ERN and S. PIPERNO
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contact problems with cohesive forces,
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Evaluation of Management Procedures: Application to Chilean Jack
Mackerel Fishery,
IIFET 2010 Montpellier Proceedings
``Economics of fish resources and aquatic ecosystems: balancing uses,
balancing costs'' conference in Montpellier, 13-16 July 2010,
International Institute of Fisheries Economics and Trade,

M. DE LARA, E. OCANA, R. OLIVEIRA and J. TAM,
Ecosystem Sustainable Yields,
IIFET 2010 Montpellier Proceedings
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E. LIORIS, G. COHEN, A. DE LA FORTELLE. Overview of a Dynamic Evaluation of Collective Taxi Systems Providing an Optimal Performance.
2010 Intelligent Vehicles Symposium of the IEEE Intelligent Transportation Systems Society, San Diego, CA, 21-24 June 2010

E. LIORIS, G. COHEN, A. DE LA FORTELLE, Evaluation of Collective Taxi Systems by Discrete-Event Simulation. ITE Western District 2010 Annual Meeting, San Francisco, CA, 27-30 June 2010

L. MONASSE, V. DARU, C. MARIOTTI and S. PIPERNO,
"A conservative coupling algorithm for Fluid-Structure interaction in the compressible case",

6th Int. Conf. on Computational Fluid Dynamics (ICCFD'6),
St Petersburg, Russia, July 2010

J. TRYOEN, O. LE MAITRE, and A. ERN,
"Adaptive anisotropic stochastic discretization schemes for uncertain
conservation laws", ASME 2010, FEDSM, Montreal, Canada, August 2010

Invited talk in international conference

A. ALFONSI,
IMS conference, Gothenburg (11th of August).

A. ALFONSI,
"Efficient simulation schemes for some multidimensional stochastic volatility models", International Research Forum, 15-17 December, Hong Kong.

A. ANANTHARAMAN, SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, May 23-26, 2010,

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E. CANCES,
Annual DMV meeting, Munich (Germany), March 2010, E. Cancès, Final symposium of the german-wide priority program 1145 "Modern and Universal
First-Principles Methods for Many-Electron Systems in Chemistry and Physics" of the german science foundation (DFG), Bad Herrenalb, March 2010,

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E. CANCES,
GDR Chant Summer School, Vienna, August 2010,

E. CANCES,
Workshop on the numerical analysis of orbital-free and Kohn-Sham models, Paris, September 2010,

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E. CANCES,
New Approaches in Many-Electron Theory - NAMET workshop, Mainz, September 2010,

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E. CANCES,
Fifth international conference on multiscale material modelling (MMM 2010), Freiburg, October 2010,

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E. CANCES,
CWB 2010, Curitiba, August 2010,

E. CANCES,
Pacifichem 2010 international congress, Honolulu, December 2010,

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R. COSTAOUEC,
SIAM Conference on Mathematical Aspects of Materials Science, Philadelphie, May 2010,

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R. COSTAOUEC,
European Conference on Computational Mechanics, Paris, May 2010,

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I. DABO,
Electronic-structure Challenges in Materials Modeling and Applications Workshop, CECAM Lausanne, June 2010,

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I. DABO,
Ab Initio Electrochemistry Workshop, CECAM Lausanne, July 2010,

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I. DABO,
Psi-k Conference, FU Berlin, September 2010,

I. DABO,
Pacifichem International Chemical Congress, Honolulu Convention Center, December 2010,

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M. DE LARA,
Preferences Yielding the Precautionary Effect, SIAM Minisymposium on Economics and Sustainability,
San Francisco, January 13, 2010,

M. DE LARA,

Risk and Sustainability: is Viability that far from Optimality?,
Colloque "Gérer le Changement Climatique" du Collège de France,
organisé par le Pr Nicholas STERN chaire Développement durable et Environnement, Energie et Société
et le Pr Roger GUESNERIE chaire Théorie économique et organisation sociale,
Paris, 7 juin 2010

M. DE LARA,
Viability methods: application to fishery management,
ICCOPT 2010 Winter School, Saturday July 24 2010

M. DE LARA,
Programación dinámica para el problema de extracción de minas en tajo abierto,
8° CONMINERÍA, 8th National Mining Congress, Trujillo, Peru,
19-22 October 2010

M. DE LARA,
Discrete-Time Viability Methods For Sustainable Management,
ICAMI 2010, International Conference on Applied Mathematics and Informatics,
San Andres, Colombia, November 28 - December 3, 2010

J-F. DELMAS,
7th workshop on Markov Processes, Beijing(China), Jully 2010

J-F. DELMAS,
Paris-Bath, Branching Structures meeting, Bath(England), September 2010: MRCA and bottleneck in a simple size-varying population model.

M. DOBSON,
SIAM Mathematical Aspects of Materials Science, Philadelphia, May 2010,

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M. DOBSON,
Highly Oscillatory Problems: Computation, Theory and Application, Cambridge University, September 2010,

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V. EHRLACHER,
ASME 2010 3rd Joint US-European Fluids Engineering Summer Meeting, Montreal, Canada, August 1st-5th, 2010,

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A. ERN,
"Explicit Runge--Kutta schemes and finite elements with symmetric stabilization for first-order linear PDE systems", Int. Conf. on Numerical Methods and Applications, August 2010, Borovets, Bulgaria

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C. LE BRIS,
(plenary lecture) Seventh International Congress of Computational Physics, Beijing, May 17 - 20, 2010,

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C. LE BRIS,
One-day workshop on Computational Chemistry, Peking University, Beijing, January 2010.

C. LE BRIS,
"Stress Tensor Effects on Compressible Flows" Workshop, Morningside Institute Beijing, January 2010.

C. LE BRIS,
Inhomogeneous Random Systems workshop, Institut Henri Poincaré (Paris), January 26-27, 2010.

C. LE BRIS,
"Stochastic Partial Differential Equations and their Applications" Workshop, Isaac Newton Institute, Cambridge, March 29 April 1, 2010.

C. LE BRIS,
International conference "Dynamical Analysis of Molecular Systems", Edinburgh, June 28-July 3, 2010.

C. LE BRIS,
International conference STAMM 2010, Berlin, September 2010,

C. LE BRIS,
International Workshop on "New Theoretical Paths in Many-Electron Problems: Basic Physical Principles and Mathematical Rigor", Mainz, September 20-24, 2010,

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C. LE BRIS,
Second symposium on Engineering of advanced materials, Erlangen-Nurnberg University, November 16-18, 2010,

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C. LE BRIS,
International Workshop on Multi-Scale Methods in Computational Engineering at Technische Universität Darmstadt on December 9-10, 2010,

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C. LE BRIS,
Institute of Computational mathematics of the Chinese Academy of Science, January 2010 and May 2010,

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C. LE BRIS,
Colloquium Beijing University, May 2010,

C. LE BRIS,
Colloquium IRM Montreal, October 2010,

T. LELIEVRE,
Workshop on Mathematical problems of computational chemistry, Beijing, January 2010,

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T. LELIEVRE,
European Conference on Computational Mechanics (ECCM 2010), Paris, May 2010

T. LELIEVRE,
Workshop Multiscale Molecular Modelling, Edinburgh, June 2010,

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T. LELIEVRE,
(plenary lecture) ESF conference on Highly Oscillatory Problems: From Theory to Applications, Cambridge, September 2010,

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T. LELIEVRE,
Workshop on Large Scale Stochastic Dynamics, Oberwolfach, November 2010,

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K. MINOUKADEH,
SIAM: Emerging Topics in Dynamical Systems and PDEs, Barcelona, May 31-June 4, 2010,

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K. MINOUKADEH,
Multiscale Molecular Modelling 2010, Edinburgh, June 30 - July 3, 2010,

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K. MINOUKADEH,
Simulation of hybrid dynamical systems, IHP, Paris, September 27-30, 2010,

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R. MONNEAU,
April 2010: Pring school CIMPA: ``Mathematics, Images and Applications'', (Tripoli, Liban).

R. MONNEAU,
May 2010: Workshop ``Nonlocal aspects in PDEs and Applications'', (Besançon).

R. MONNEAU,
June 2010: Nonlocal operators and partial differential equations, (Bedlewo, Pologne)

S. OLLA,
WIMCS Colloquium, Swansea, UK, 26 March 2010,

S. OLLA,
Pacific Rim Conference, Stanford, USA, June 28-July 2 2010,

G. STOLTZ,
Multiscale Molecular Modelling workshop, Edinburgh (United-Kingdom), June 2010,

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G. STOLTZ,
Workshop Large Scale Stochastic Dynamics, Oberwolfach (Germany), November 2010.

Invited talk in national conference

A. ALFONSI,
"Optimal execution and price manipulations in limit order
book models", Colloque Paris-Dauphine "Markets with Frictions: Transaction Costs and Liquidity Risk" (16th of September).

S. CACASE (Post-doct),

"A posteriori error estimates for the effective Hamiltonian of
dislocation dynamics", short talk at "Motions of Interfaces and
Nonlinear PDEs - Final Conference of the ANR MICA Project", Tours
(France), February 1-4, 2010

R. COSTAOUEC,
Congrès National d'Analyse Numérique, Carcans-Maubuisson, June 2010,

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M. DE LARA,
Théorie du contrôle et viabilité pour la gestion des ressources
naturelles, Control Theory and Viability For Management of Natural Resources,
conférence annuelle du GDR MOA (Mathématiques de l'Optimisation et Applications), Institut Henri Poincaré, 19 octobre 2010

M. DOBSON,
CANUM, Carcans-Maubuisson, June 2010,

V. EHRLACHER,
40e Congrès National d'Analyse Numérique, Carcans-Maubuisson, May 31st - June 4th, 2010,

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V. EHRLACHER,
Journées Fiabilité des Matériaux et des Structures, INSA Toulouse, March 24th-26th, 2010,

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V. EHRLACHER,
Journées MAS, Bordeaux, August 31st - September 3rd, 2010,

V. EHRLACHER,
Journées du GdR MoMaS, IHP, October 6th, 2010,

C. LE BRIS,
Ecole Homogénéisation numérique Workshop, INRIA, December 2010.

T. LELIEVRE,
Journées scientifiques CSMA, Nantes, September 2010.

Platform presentation/presentation in international conference

P. CARPENTIER, J.-P. CHANCELIER,
G. COHEN,
Optimal control under probability constraint.
24th European Conference on Operational Research, Lisbon, Portugal, 11-14 july 2010

M. DE LARA, ELADIO OCANA, R. OLIVEIRA and J. TAM,
Ecosystem Sustainable Yields,
Economics of fish resources and aquatic eco-systems: balancing uses,
balancing costs'' conference in Montpellier, 13-16 July 2010,
International Institute of Fisheries Economics and Trade, IIFET 2010

A. ERN,
"Discontinuous Galerkin methods for the incompressible Navier--Stokes equations", Nonstandard Discretizations for Fluid Flows, November 2010, Banff, Canada

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A. ERN,
"Discontinuous Galerkin approximation of two-phase flows in heterogeneous porous media with discontinuous capillary pressures", Computational Methods for Water Resources, June 2010, Barcelona, Spain

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A. ERN,
"A posteriori error estimation based on potential and flux reconstruction for the heat equation", INDAM Workshop on Adaptive Finite Elements and Domain Decomposition Methods, June 2010, Milano, Italy

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E. LIORIS, G. COHEN, A. DE LA FORTELLE,
Collective taxis in cities:
a simulation tool for optimal real time operation and design. 24th European Conference on Operational Research, Lisbon, Portugal, 11-14 july 2010

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A Simulation Tool for Optimal Real Time Operation and Design. Taxi Research Network

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L. MONASSE V. DARU, C. MARIOTTI, S. PIPERNO,
"Conservative coupling of an immersed Boundary method with a discrete element method for fluid-structure interaction", ECCM'4, May 2010, Paris, France

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L. MONASSE V. DARU, C. MARIOTTI, S. PIPERNO,
"A conservative Immersed Boundary Method for the interaction of compressible inviscid flows with elastic structures", WCCM/APCOM 2010, July 2010, Sydney, Australia

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J. TRYOEN,
"Roe Solver and Entropy Corrector for Hyperbolic Systems with Uncertain Coefficients", ECCM'4, May 2010, Paris, France

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J. TRYOEN,
"Adaptive anisotropic stochastic discretization schemes for uncertain conservation laws", ASME, FEDSM, August 2010, Montreal, Canada

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"A Galerkin method for uncertain hyperbolic systems: Roe solver and Entropy corrector", INDAM Workshop on Stochastic PDEs, May 2010, Torino, Italy

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I. DABO, A. FERRETTI, N. POILVERT Y. L. LI., N. MARZARI, M. COCOCCIONI,
Non-Koopmans self-interactions correction to density-functional approximations, Psi-k Conference, Berlin, September 201

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M. DE LARA, E. OCANA, R. OLIVEIRA and J. TAM,
Ecosystem Sustainable Yields, The International Conference on Continuous Optimization (ICCOPT 2010),
July 26-29, 2010, Santiago de Chile

Platform presentation/presentation in national conference

M. DE LARA,
Productions soutenables pour écosystèmes exploités, ECOLOGIE 2010, Montpellier, 2-4 september 2010

D. DOYEN, A. ERN and S. PIPERNO,
"Modified mass method for dynamic contact problems with friction", IV European Conference on Computational Mechanics, May 2010, Paris, France

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"Discontinuous Galerkin approximation of two-phase flows in heterogeneous porous media with discontinuous capillary pressures", Joint GNR PARIS/EDF/ANDRA Workshop, December 2010, Paris

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"Implicit-explicit Runge--Kutta methods for advection-diffusion equations", Discretization Methods for Viscous Flows,
September 2010, Carry-le-Rouet, France

R. JOUBAUD,
"Shear viscosity computations by molecular simulations", Workshop MOMAS on Electrokinetics, University Lyon 1, November 2010

B. JOURDAIN,
workshop on numerical methods in finance at Bordeaux university, 1-2 june, Regularity of the Exercise Boundary for American Put Options on Assets with Discrete Dividends.

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Poster in international conference

I. DABO,
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L. MONASSE, V. DARU, C. MARIOTTI, S. PIPERNO,
"Interaction d'un écoulement compressible avec une structure déformable", CANUM 2010, June 2010, Carcans-Maubuisson, France

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R. ABRAHAM and J-F DELMAS. and H. HE, Pruning Galton-Watson Trees and Tree-valued Markov Processes http://hal.archives-ouvertes.fr/hal-00497035/fr/

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Exact and high order discretization schemes for Wishart processes and their affine extensions, http://hal.archives-ouvertes.fr/docs/00/49/13/71/PDF/Wishart_Simulation.pdf

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A numerical approach related to defect-type theories for some weakly random problems in homogenization, in "SIAM Multiscale Modeling & Simulation", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00487759/fr/.

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Elements of mathematical foundations for a numerical approach for weakly random homogenization problems, in "Communications in Computational Physics", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00487762/fr/.

V. BALLY and S. DE MARCO.
Some estimates in extended Stochastic Volatility models of Heston type, 2010
http://arxiv.org/abs/1006.3337

K. BARTY, P. CARPENTIER, G. COHEN, P. GIRARDEAU,
Price decomposition
in large-scale stochastic optimal control.
http://arxiv.org/abs/1012.2092v2, December 2010

E. BURMAN, A. ERN,
Implicit-Explicit Runge-Kutta schemes and finite elements with
symmetric stabilization for advection-diffusion equations,
hal-00530378, October 2010

E. CANCÈS , R. CHAKIR , Y. MADAY. Numerical analysis of the planewave discretization of some orbital-free and Kohn-Sham models, in "M2AN", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00471938.

E. CANCÈS , V. EHRLACHER.
Local defects are always neutral in the Thomas-Fermi-von Weiszäcker theory of crystals, in "Arch. Ration. Mech. Anal.", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00471938/.

P. CARPENTIER, J-P CHANCELIER,
G. COHEN, M. DE LARA, P. GIRARDEAU,
Dynamic consistency for Stochastic Optimal Control problems, arXiv, 17/05/2010, 13 pages

A. CHAMBOLLE, E. LINDGREN, R. MONNEAU,
The Hölder infinite Laplacian and Hölder extensions
[hal-00488915 - version 2] (07/07/2010) http://hal.archives-ouvertes.fr/hal-00488915/fr/

Y. T. CHEN AND J-F. DELMAS,
Smaller population size at the MRCA time for stationary branching processes http://hal.archives-ouvertes.fr/hal-00515090/fr/

C. CHIPOT, T. LELIÈVRE .
Enhanced sampling of multidimensional free-energy landscapes using adaptive biasing forces, in "SIAM Journal on Applied Mathematics", 2010, submitted, http://hal.archives-ouvertes.fr/ hal-00510981/fr/.

N. CHOPIN, T. LELIÈVRE , G. STOLTZ .
Free energy methods for efficient exploration of mixture posterior densities, in "Statistics and Computing", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00460914/fr/.

I . DABO, E. CANCÈS , Y. L. LI , N. MARZARI .
Towards first-principles electrochemistry, in "Physical Chemistry and Chemical Physics", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00537281.

M. DE LARA, M-E MARJOLLET,
Viable control of an epidemiological SIR model, 2010-09-17, 14 pages

M. DE LARA, V. MARTINET, L. DOYEN,
Risque et durabilité : La viabilité est-elle si loin de l'optimalité ?,
Cahiers de recherche 2010/02, Thiverval-Grignon : INRA SAE2, 2010. 21 p.
RePEc et IDEAS

S. DE MARCO and C. MARTINI.
The Term Structure of Implied Volatility in Symmetric Models, 2010
http://ssrn.com/abstract=1622828

V. DESJARDINS AND D. CHAUVEAU AND J. FOKI AND J-F. DELMAS
Statistical Analysis of Mother-infant (3 to 9 months) Perceptive System Communication
http://hal.archives-ouvertes.fr/hal-00474646/fr/

D. DI PIETRO, A. ERN,
Analysis of a discontinuous Galerkin method for heterogeneous
diffusion problems with low-regularity solutions,
hal-00514387, September 2010

M. DOBSON, C. LE BRIS , F. LEGOLL .
Symplectic schemes for highly oscillatory Hamiltonian systems: the homogenization approach beyond the constant frequency case, in "IMA Journal of Numerical Analysis", 2010, submitted, http://hal.inria.fr/hal-00524814.

M. DOBSON, C. ORTNER , A. SHAPEEV.
The spectrum of the force-based Quasicontinuum operator for a homogeneous periodic chain, 2010, http://arxiv.org/abs/1004.3435.

D. DOYEN, A. ERN,
Analysis of the modified mass method for the dynamic Signorini
problem with Coulomb friction,
hal-00473809, April 2010

A. EL HAJJ, R. MONNEAU,
Some uniqueness results for diagonal hyperbolic systems with large and monotone data
[hal-00534134 - version 2] (13/12/2010) http://hal.archives-ouvertes.fr/docs/00/54/58/79/PDF/EHM-2-081110.pdf

A. ERN, R. JOUBAUD, T. LELIEVRE,

Numerical study of a thin liquid film flowing down an inclined wavy plane,
hal-00533000, November 2010

A. ERN, R. JOUBAUD, T. LELIÈVRE.
Numerical study of a thin liquid film flowing down an inclined wavy plane, in "Physica D: Nonlinear Phenomena", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00533000/.

N. EVEN, S. OLLA.
Hydrodynamic Limit for an Hamiltonian System with Boundary Conditions and Conservative Noise, 2010, http://hal.archives-ouvertes.fr/hal-00518081/en/.

A. FINO, H. IBRAHIM, R. MONNEAU,
The Peierls-Nabarro model as a limit of a Frenkel-Kontorova model
[hal-00523488 - version 1] (05/10/2010)
http://hal.archives-ouvertes.fr/docs/00/52/34/88/PDF/FIhM-02102010.pdf

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N. FORCADEL, C. IMBERT, R. MONNEAU,
Spirals moving by mean curvature. Part I: a comparison rinciple
[hal-00452241 - version 2] (12/07/2010)
http://hal.archives-ouvertes.fr/hal-00452241/fr/

B. JOURDAIN, B. LAPEYRE, P. SABINO, Convenient Multiple Directions of Stratification, Preprint HAL-00477403, http://hal.archives-ouvertes.fr/hal-00477403/

B. JOURDAIN, R. ROUX, Convergence of a stochastic particle approximation for fractional scalar conservation laws, Preprint HAL-00493773, http://hal.archives-ouvertes.fr/hal-00493773/fr/

T. LELIÈVRE , M. ROUSSET, G. STOLTZ .
Langevin dynamics with constraints and computation of free energy differences, in "Mathematics of Computation", 2010, submitted, http://hal.archives-ouvertes.fr/hal-00495517/fr/.

C. LIVERANI , S. OLLA.
Toward the Fourier law for a weakly interacting anharmonic crystal, 2010, http://hal.archives-ouvertes.fr/hal-00492016/en/.

L. MONASSE, V. DARU, C. MARIOTTI, S. PIPERNO, C. TENAUD,
An Embedded Boundary method for the conservative coupling of a
compressible flow and a rigid body,
hal-00550849, December 2010

R. MONNEAU,
Introduction to the Fast Marching Method
[hal-00530910 - version 1] (31/10/2010)
http://hal.archives-ouvertes.fr/docs/00/53/09/10/PDF/cimpa-tripoli-150910.pdf

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R. MONNEAU, S. PATRIZI,
Homogenization of the Peierls-Nabarro model for dislocation dynamics and
the Orowan's law
[hal-00504598 - version 1] (20/07/2010)
http://hal.archives-ouvertes.fr/hal-00504598/fr/

R. MONNEAU, M. GONZALEZ,
Slow motion of particle systems as a limit of a reaction-diffusion equation with half-Laplacian in dimension one
[hal-00497492 - version 1] (05/07/2010)
http://hal.archives-ouvertes.fr/hal-00497492/fr/

J. TRYOEN, O. LE MAITRE, M. NDJINGA, A. ERN,
Roe Solver with Entropy Corrector for Uncertain Hyperbolic Systems,
hal-00444845, January 2010

EDITORIAL BOARDS/ACTIVITY

C. LE BRIS is :
- co-Editor-in-chief (with A.T. Patera, MIT) (2005-) of Mathematical Modeling and Numerical Analysis
- Editor-in-chief of Applied Mathematics Research Express (2003-)
- a member of the editorial boards of Archive for Rational Mechanics and Analysis (2004-), COCV (Control, Optimization and Calculus of Variations) (2003-), Mathematics in Action (2008-), Mathematics Applied in Science and Technology (2006-), Networks and Heterogeneous Media (2005-), Nonlinearity (2005-), Review of Mathematical Science (2006-), Journal de Mathématiques Pures et Appliquées (2009-).
- a member of the editorial board of the monograph series Mathématiques et Applications, Series, Springer (2008-), and Modeling, Simulations and Applications, Series, Springer (2009-).

E. CANCES is :
- co-Editor in chief (with P. Del Moral and J.-F. Gerbeau) (2005-) of ESAIM Proc.
- a member of the editorial boards of Mathematical Modelling and Numerical Analysis (2006-) and of SIAM Journal of Scientific Computing (2008-).

M. DE LARA is :
Environmental Modeling and Assessment (Springer), associate editor (2007-)

A. ERN is :
referee for M2AN, SIAM J. Numer. Anal., Numer. Math., IJNME,
JCAM, CMAME, NMPDE, J. Sci. Comput.

L. MONASSE is :
referee for IJNME

S. OLLA is :
a member of the editorial board of The Annals of Probability (2009-2010)

MEMBERS OF SCIENTIFIC COMMITTEES

C. LE BRIS has been a member of :
- the Scientific Committee of the Fifth European Conference on Computational Fluid Dynamics
(ECCOMAS CFD 2010), Lisbon, 14-17 June 2010,
- the organizing committee of the international conference "Dynamical Analysis of Molecular Systems", Edinburgh, June 28-July 2, 2010,
- the scientific committee (as Co-chair) of the ESF-EMS international conference on "Highly Oscillatory Problems", 13-17 September 2010, Isaac Newton Institute for Mathematical Sciences,Cambridge.

C. LE BRIS is a member of :
- the Scientific Program Committee of ICIAM 2011, Vancouver, Canada,
- 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.

M. DE LARA is :
Outside member invited in the jury of the competitive entrance examination of the researchers (CR2) of INRIA Saclay

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A. ERN, ANDRA Scientific Committee

B. JOURDAIN, member of the scientific comittee of the conference Modeling and managing financial risks, Paris 10-13 january 2011

B. JOURDAIN, member of two recruiting comittees at the university of Rennes

B. JOURDAIN,
deputy head of the doctoral school MSTIC, university Paris-Est

T. LELIEVRE was a member of Comité de Sélection at the University of Paris 7 (poste de maître de conférence).

S. OLLA is a Member of the Scientific Board of the agreement GREFI-MEFI between CNRS and INDAM (Instituto NAzionale di Alta Matematica, Italy).

CONFERENCES/SEMINARS

Conferences/participation

International conferences Communications

A. AHDIDA : Quantitative methods in Finance confernce 2010 Australia Sydney http://www.qfrc.uts.edu.au/qmf/qmf2011.pdf

Other scientific Conferences/participation

International seminar

A. ALFONSI,
"Exact and High order discretization schemes for Wishart processes and their affine extensions", Talks in Financial and Insurance Mathematics, ETH Zürich.

E. CANCES,
weekly seminar of the chemistry department, University of Pisa, June 2010,

E. CANCES,
weekly seminar of the mathematics department, Princeton University, October 2010,

P. CARPENTIER, P-PH. CHANCELIER, G. COHEN, M. DE LARA, P. GIRARDEAU,
Dynamical consistency for stochastic Optimal control problems, 12th International conference on stochastic programming (Halifax) August 2010.

M. DE LARA :
Metodos de Viabilidad para el Manejo de Recursos Naturales,
Department of Mathematics, Universidad San Marcos, Lima, Peru,
Thursday 4 February 2010

M. DE LARA :
Programacion dinamica y viabilidad estocastica: aplicaciones al problema de extraccion de minas en tajo abierto y al manejo de la pesca bajo incertidumbre,
CENTRUM, Pontificia Universidad Católica del Perú, Lima, Peru,
Monday 5 April 2010

M. DE LARA :
Heuristicas y sesgos en ambientes riesgosos,
CENTRUM, Pontificia Universidad Católica del Perú, Lima, Peru, Tuesday 6 April 2010

M. DE LARA :
Programacion dinamica para el problema de extraccion de minas en tajo abierto,
Universidad Nacional de Ingeneria, Lima, Peru, MOMARE seminar
21 august 2010

M. DE LARA :
Metodos de Viabilidad para el Manejo de Recursos Naturales,
Universidad, Tandil, Argentina, MOMARE workshop,
9-11 September 2010

M. DE LARA :

Modelos y Métodos Cuantitativos para el Manejo Sostenible de Recursos
Naturales,
evento Dias de la Ciencia Aplicada EAFIT, Medellin, Colombia,
29 September - 1 October 2010

M. DE LARA :
Métodos de viabilidad para el manejo sostenible de recursos naturales,
Universidad popular del Cesar, Valledupar, Colombia,
Wednesday 6 and Thursday 7 October 2010

M. DE LARA :
Métodos de viabilidad para el manejo sostenible de recursos naturales,
Universidad del Norte, Barranquilla, Colombia,
Friday 8 October 2010

M. DE LARA :
Control theory in mine planning and management:
algorithms for the open pit mine optimal scheduling,
Facultad de Ciencias, UNI, Lima, Peru,
Friday 29 October 2010

M. DE LARA :
Programacion dinamica para el problema de extraccion de minas en tajo abierto,
Seccion Matematicas, Pontificia Universidad Católica del Perú, Lima, Peru,
Friday 5 November 2010

J-F DELMAS,
Rhein-Main-Stochastics Kolloquium, Frankfurt, (Allemagne), February 2010: MRCA and bottleneck in a simple size-varying population model.

S. DE MARCO,
Center for the Study of Finance and Insurance, Graduate School of Engineering Sciences, University of Osaka (7 mars)
Talk: Smoothness and asymptotic estimates of densities for SDEs with locally smooth coefficients

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A. ERN,
"Discontinuous Galerkin Methods", University of Udine, June 2010,
Udine, Italy

A. ERN,
"Discontinuous Galerkin Methods", MATHEON Lectures, October 2010, Berlin, Germany

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A. ERN,
"Spectral stochastic methods for uncertain hyperbolic systems",
Federal University Santa Catarina, April 2010, Brasil

A. ERN,
"Implicit-explicit Runge--Kutta methods with stabilized finite
elements for advection-diffusion equations",
University of Maryland, November 2010, Washington, USA

B. JOURDAIN,
Stochastic particle approximation for fraction-al scalar conservation laws, 18 november,
Oberseminar Stochastic, university of Bonn

C. LE BRIS,
Probability Seminar of the University of Minnesota, February 2010,

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T. LELIEVRE,
Seminar at the Institute of Computational Mathematics (CAS), January 2010,

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T. LELIEVRE,
Seminar at Cornell University (CEE), February 2010.

T. LELIEVRE,
Analysis seminar, MPI Leipzig, October 2010,

K. MINOUKADEH,
Seminar at the Department of Computer Science, K.U. Leuven, December 2010,

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S. OLLA,
Math-Phys Seminar, Rutgers University, NJ, USA, 14 October 2010

S. OLLA,
Math-Phys Seminar, Princeton University, NJ, USA, 20 October 2010

S. OLLA,

Probability Seminar, Technical University, Budapest, Hungary, december 2010,

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National seminar

A. ALFONSI :
"Optimal execution and price manipulations in limit order book models", GT MSF, Marne-la-Vallée.

A. ALFONSI :
"Exact and High order discretization schemes for Wishart processes and their affine extensions", Seminaire de la Chaire Risques financiers X-Ponts-SG.

E. CANCES,
CANUM 2010 (plenary lecture), Carcans-Maubuisson, June 2010,

E. CANCES,
weekly seminar of the mathematics department, University of Villetaneuse, April 2010,

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M.DE LARA,
Control theory for sustainable natural ressources, Projet MERE INRA-INRIA, Montpellier, 22 december 2010

J-F DELMAS:
Ecole Polytechnique, Chaire ModélisationMathématique et Biodiversité,(France), January 2010: MRCA and bottleneck in a simple size-varying population model.

J-F DELMAS:
Colloquium de l'Université Paris 5, (France), January 2010: Aging for E. coli cells and Bifurcating Markov Chains.

J-F DELMAS:
Univ. Paris 13, (France), March 2010: MRCA and bottleneck in a simple size-varying population model.

S. DE MARCO:
Séminaire de Probabilités Numériques et Finance, LPMA, Paris VI-VII (6 janv)
Talk: Symmetric Implied Volatility and Gatheral's SVI model

S. DE MARCO :
Séminaire de Probabilités et Statistiques du Laboratoire J. A. Dieudonné, Université de Nice (21 oct)
Talk: Processus d'Ito autour de courbes déterministes et applications aux modèles d'évaluation d'options

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D. DOYEN,
"Numerical methods for dynamic contact problems", Working Group "Numerical Methods", UPMC, June 2010

D. DOYEN,
"Numerical methods for dynamic contact problems", LMA (UPR CNRS), Marseille, June 2010

D. DOYEN,
"Numerical methods for dynamic contact problems", LaMSID (UMR EDF/CNRS/CEA), Clamart, July 2010

D. DOYEN,
"Numerical methods for dynamic contact problems", Working Group "Numerical Methods", University Paris-Sud, October 2010

V. EHRLACHER,
PhD students seminar at Laboratoire Jacques-Louis Lions, Université Paris VI, June 8th, 2010,

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A. ERN,
"Spectral stochastic methods for uncertain hyperbolic problems",
Compiegne University, May 2010

A. ERN,
"Discontinuous Galerkin approximation of two-phase flows in heterogeneous porous media with discontinuous capillary pressures",
French Institute for Petroleum and New Energies, November 2010

A. ERN,
"Discontinuous Galerkin methods for the transport equation",
Marseille, February 2010

R. JOUBAUD,
"Direct numerical simulation of free-surface flows over wavy planes", Phd students weekly seminar, UPMC, March 2010

R. JOUBAUD,
"Numerical study of instability of liquid film flowing over wavy planes", ANR METHODE meeting, IHP, May 2010

B. JOURDAIN, seminar of the credit chair at Évry university, 4 march, Regularity of the Exercise Boundary for American Put Options on Assets with Discrete Dividends.

B. JOURDAIN, Bachelier seminar, 16 april, Regularity of the Exercise Boundary for American Put Options on Assets with Discrete Dividends.

C. LE BRIS,
Seminar of the Department of Mathematics, Université d'Orsay, September 2010,

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C. LE BRIS,
Seminar of Laboratoire de Mécanique des solides de l'Ecole Polytechnique, October 2010,

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J. TRYOEN,
"Stochastic Spectral Methods with Upwinding for Uncertain Hyperbolic Systems", CMLA Seminar, ENS Cachan, France, January 2010

J. TRYOEN,
"Multiresolution scheme for parametric uncertainty propagation in hyperbolic models", SISMA Seminar, CEA/DAM, Bruyères le Châtel, France, November 2010

T. LELIEVRE,
Séminaire Equations aux dérivées partielles et applications, Collège de France, January 2010,

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T. LELIEVRE,
Groupe de Travail Probabilités, Statistique, et applications, Université de Marne-la-Vallée, February 2010,

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T. LELIEVRE,
Séminaire de probabilités, Rennes, March 2010,

T. LELIEVRE,
Séminaire équations aux dérivées partielles et applications, ENS Lyon, March 2010,

---

T. LELIEVRE,
Séminaire de probabilités, Nancy, April 2010,

T. LELIEVRE,
Séminaire Laboratoire Jacques-Louis Lions, June 2010,

K. MINOUKADEH,
PhD students seminar, CEREMADE, University Paris-Dauphine, Paris, May 20, 2010,

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K. MINOUKADEH,
PhD students seminar, AGM, Université de Cergy-Pontoise, November 15, 2010,

---

S. OLLA,
Groupe de Travail Hors Equilibre, IHP, Paris, 4 November 2010,

---

R. MONNEAU,
May 2010: talk in the working group ``Commands'', CMAP, Ecole Polytechnique.

Conference organization

E. CANCES has co-organized the Minisymposium on electronic structure (SIAM MS10, Philadelphia, May 2010),

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E. CANCES has co-organized the Workshop on the numerical analysis of orbital-free and Kohn-Sham models (Paris, September 2010),

---

E. CANCES has organized the CEA-EDF-INRIA Winter School on homogenization (Rocquencourt, December 2010).

T. LELIEVRE has co-organized a mini-symposium on "Coarse-graining and effective dynamics in molecular simulation" during the Multiscale Molecular Modelling conference (June 30 - July 3, 2010, Edinburgh).

T. LELIEVRE and G. STOLTZ have co-organized the CEA-EDF-INRIA school "Simulation of hybrid dynamical systems and applications to molecular dynamics" (IHP, Paris, 27-30 september 2010).
http://
Cermics.enpc.fr/~stoltz/Hybrid2010/hybrid_workshop.html

T. LELIEVRE has co-organized a mini-symposium on "Uncertainty propagation" at Journées MAS (Bordeaux, september 2010).

S. OLLA has co-organized the workshop "Large Scale Dynamics" (Oberwolfach, Nov. 8-12 2010).

Seminar organization

A. ALFONSI,
Stochastic methods and Finance : semonar from the team project MATHFI, with UPEMLV and INRIA.

P. CARPENTIER, J.-PH. CHANCELIER, G. COHEN, M. DE LARA and
P. GIRARDEAU.
Dynamic consistency for stochastic optimization problems.
Working seminar of FiME Laboratory
Institut Henri Poincaré, Paris octobre 2010.

P. CARPENTIER, J.-PH. CHANCELIER, G. COHEN, M. DE LARA and
P. GIRARDEAU.
Dynamic consistency for stochastic optimization problems in discrete
time.
MODE 2010 : SMAI conference on optimization and control. March 2010.

I. DABO and A. LEGUILCHER
CERMICS seminar of scientific computing, bymonthly generalist seminar
http://cermics.enpc.fr/seminaires/cs/seminaire.html

M. DE LARA :
ECOLOGIE 2010, Montpellier, 2-4 septembre 2010,
co-organizer of the session
"Aide à la décision pour la gestion et la conservation des ressources et
patrimoines écologiques" / " Decision-making support for the management
and the preservation of the ecological resources".

V. EHRLACHER and K. MINOUKADEH
PhD student seminar.
http://cermics.enpc.fr/seminaires/sd/sd2010.html

Other scientific animation

J.-F. DELMAS
Until 08/2010, in charge of the MAS group (Stochastics Models and Statistics) at the french applied mathematic society SMAI (Sociétés de Mathématiques Appliquées et Industrielles)

M. DE LARA,
Animation of international programs and national networks:
* Viable control of discrete time systems and applications,program ECOS, France-Chile, responsible
* MOMARE, Modelamiento Matematico por Manejo de Recursos Naturales,
regional cooperation program STIC-AmSud,
responsable of the sub-theme
``Fisheries, forestry, land-use, mines''
* Réseau M3D, Mathématiques et décision pour le développement durable

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M. DE LARA,
Organizer of the week on "Economics of Ecosystem Services and Management
of Biodiversity" (20-24 September 2010)

A. ERN, Director of GNR MOMAS (annual budget 250kE, task force approx.

25 men.year spread in 20 Laboratories nationwide)

Scientific expertise

M. DE LARA : Invited to « Commission Prise en compte du risque dans le calcul socioéconomique » from the Centre d'analyse stratégique (directed by Christian Gollier).

EDUCATION ACTIVITIES

SUPERVISION ACTIVITY

HdR defended

Theses defended

A. ANANTHARAMAN,
« Mathematical analysis of some models in electronic structure calculations and homogenization" Dir. E. CANCES et G. ALLAIRE, University Paris Est, Ecole des Ponts ParisTech, 2010, Ph. D. Thesis.

D. DOYEN, "Numerical methods for dynamic contact and fracture problems", dir. A. Ern and S. Piperno, ED MSTIC

P. GIRARDEAU, "Resolution of large-scale problems in stochastic dynamic optimization and feedback synthesis", École des Ponts ParisTech, 17 December 2010, ED MSTIC, dir. G. Cohen

E. LIORIS, "Evaluation and optimization of systems of collective taxis in simulation", École des Ponts ParisTech, 17 December 2010, ED MSTIC, dir. G. Cohen

K.MINOUKADEH. « Deterministic and stochastic methods for molecular simulation » Dir. E. CANCES et T. LELIEVRE, University Paris-Est, Ecole des Ponts ParisTech, 2010, Ph. D. Thesis.

Raphael ROUX, Probabilistic study of interacting particle systems.
Applications to molecular simulation, Benjamin JOURDAIN and Tony LELIÈVRE, university Paris-Est, ED MSTIC

Ongoing theses

A. AHDIDA,
Pricing and Hedging cerdit derivatives, ED MSTIC, dir . A Alfonsi.

J-C. ALAIS thesis (CIFRE) supervision.
Risk and Optimization for the management of energies, ED MSTIC, dir. M. De Lara.

D. BENOIT,
Numerical methods for the simulation of non-newtonian
fluids with applications to debris flows, Ecole des Ponts ParisTech,
Ecole Doctorale MSTIC. PhD advisors: C. LE BRIS and T. LELIEVRE.

F. CASENAVE,
Non-parametric uncertainties in aeroacoustics and vibroacoustics problems, dir A. Ern and T. Lelièvre, UPE, ED MSTIC

N. CHALHOUB,
A posteriori error analysis for finite volume approximations of unsteady transport problems, dir. A. Ern and T. Sayah, UPE, ED MSTIC

R. COSTAOUEC,

Numerical methods for homogenization : applications to random media and highly oscillatory equations, Ecole des Ponts ParisTech, Ecole Doctorale MSTIC. PhD advisors: C. LE BRIS and F. LEGOLL.

V. EHRLACHER ,
Modelisation and simulation of photo-electrical phenomena and Uncertainty quantification in contact problems, Ecole des Ponts ParisTech, Ecole Doctorale MSTIC. PhD advisors: E. CANCES and T. LELIEVRE.

O. HENARD,
(Etude des arbres multitypes, DELMAS Jean-François , ENPC, ED MSTIC)

J. INFANTE ACEVEDO, Méthodes numériques et modèles pour le risque de marché et l'évaluation financière, Ecole Doctorale MSTIC. PhD advisors: A. ALFONSI and T. LELIEVRE.

R. JOUBAUD,
Multiscale modeling of clays, dir A. Ern and T. Lelièvre, UPE, ED MSTIC

S. LAHBABI,
Mathematical study of quatum material with random defaults, Université de Cergy Pontoise, ED EM2C, dir. E. CANCES and M. LEWIN.

C. LUSSO,
Effective vertical velocity profiles
in gravitational flows, dir. F. Bouchut and A. Ern, UPE, ED MSTIC

J. MINT MOUSTAPHA,
Study and characterization of vehicles pla-toon on heavy traffic roads, dir. B. JOURDAIN and D. DAUCHER, LCPC, ED MSTIC

L. MONASSE,
Analysis of a discrete Element method and coupling with a compressible fluid flow method, dir. S. Piperno, UPE, ED MSTIC

M. ROUSSEAU,
Uncertainties in overland flow and erosion modeling,
dir. A. Ern, ED MSTIC

F. THOMINES,
Multi-scale numerical approaches : Application to homogenization of random materials and discrete-to-continuum coupling methods, Ecole Doctorale MSTIC. PhD advisors: C. LE BRIS and F. LEGOLL.

J. TRYOEN,
Adaptive stochastic Galerkin methods for parametric uncertainty propagation in hyperbolic systems, dir. A. Ern and
O. Le Maitre (LIMSI), UPE, ED MSTIC

TEACHING ACTIVITIES

Courses at ENPC

A. AHDIDA,
Probabilistic utilities for fiance 2nd year.

E. CANCES (professor), V. EHRACHER, L. MONASSE, R. MONNEAU,
Analysis, 1st year.

J-PH CHANCELIER (professor),
Optimization and control, 2nd year.

J-PH CHANCELIER (professor),
Hazard Modelling, 2nd year.

J-PH CHANCELIER, M. DE LARA (professor)
Training in Scientific software Scilab.

M. DE LARA (professor),
Modelling for the Sustainable Management of Natural Resources, 2nd year.

M. DE LARA (professor),
Economics of Risk, Climate Change and Biod-iversity, 2nd year.

J.-F. DELMAS and B. JOURDAIN (professors)
Jump processes with applications to energy markets, 3rd year ENPC and Master Recherche Mathématiques et Application, university Paris-Est Marne-la-Vallée

A. ERN (professor), I. DABO, G. STOLTZ
Scientific Computing (First Year)

R. JOUBAUD,
Linux/Emacs/Scilab/Latex (1st year)

B. JOURDAIN (professor), A. AHDIDA, A. ALFONSI, O. HÉNARD, M. JEUNESSE,
Probability theory and statistics, first year.

B. JOURDAIN and B. LAPEYRE (professors)
Monte-Carlo methods in finance, 3rd year ENPC and Master Recherche Mathématiques et Application, university Paris-Est Marne-la-Vallée

T. LELIEVRE (professor),
Deterministic methods in mathematical finance.

T. LELIEVRE (professor), A. ALFONSI (professor), I. DABO,
Modeling coding and simulation.

G. STOLTZ (professor),
Spectral analysis, 2 nd year.

I. DABO
Introduction to statistical physics and quantum physics, 2nd year.

Courses at UPE

A. ALFONSI
Satistics and calibration for financial data. Master Recherche Mathématiques et Application, university Paris-Est Marne-la-Vallée

A. ALFONSI
Risk measure. Master Recherche, University Paris-Est Marne-la-Vallée and University Paris 6.

A. AHDIDA,
TD Monte Carlo applied in finance,M2.

I. DABO,
Introduction to scientific computing, TP at Université Paris-Est

R. MONNEAU,

Doctoral school MSTIC : "Viscosity solutions and stochastic process"

G. STOLTZ,
Computational Statistical Physics, Master SMCD, Ecole des Ponts ParisTech

Courses at Paris Tech

A. ALFONSI
Calibration, local and stochastic volatility.

E. CANCES,
Professeur chargé de cours at l'École Polytechnique

J.-F. DELMAS,
Professeur chargé de cours at l'École Polytechnique

J.-F. DELMAS (professor), A. AHDIDA, O. HENARD, P. HOSCHEIT,
Introduction to probabilities and statistics (ENSTA, 1A)

A. ERN,
Professeur chargé de cours at l'École Polytechnique.

B. JOURDAIN,
Professeur chargé de cours at l'École Poly-technique

C. LE BRIS
Professeur chargé de cours at l'École Polytechnique

J. TRYOEN,
Practical course teaching for "Introduction to Scientific
computing", ENSMP C1003, MINES ParisTech

J. TRYOEN,
Supervisor for FreeFem++ projects for the "Finite Element" course, ENSMP S3733/5, MINES ParisTech

Other courses

E. CANCES, M. LEWIN,
Molecula simulation, M2 course, Université Paris 6

J-PH. CHANCELIER,
Stochastic control, Master MMMEF Paris 1 University.

R. COSTAOUEC,
Linear optimization, Université Paris 6:

M. DE LARA,
Sustainable Management of Natural Resources, ESSEC

M. DE LARA,
Mathematical Models for the Sustainable Management of Natural Resources,
Master EDDEE

M. DE LARA,
Mathematical Models for the Sustainable Management of Natural Resources,
Université Paris-Dauphine

M. DE LARA,
Modelling for the Sustainable Management of Natural Resources,
Master Mathématiques, Informatique et Applications, université Paris 1.

M. DE LARA,
Mathematics, Economics and Risk Psychology, M2 Ingénierie du Risque : Finance et Assurances, University Paris 1

I. DABO :
Informatique, TP en CPGE Jean-Baptiste Say,

A. ERN and D. DI PIETRO, Discontinuous Galerkin methods,
Master M2R Mathematics and Applications, ANEDP, UPMC

R. JOUBAUD,
Assistant for Vectorial Analysis (LM256),
Licence 2 in Mathematics, UPMC

S. LAHBABI,
TD Mathematics for biologists for second year undergraduate students, Université de Cergy Pontoise.

C. LE BRIS,
Lectures on Navier-Stokes type equations and related problems, i- MATH School on Coupled PDE in Multiphysics and Industrial Applications, Centro Internacional de Encuentros Matematicos, Castro Urdiales (Spain), June 14-25, 2010,

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C. LE BRIS,
Lectures on Stochastic Homogenization: An introduction to some recent variants and to numerical approaches, International workshop Viscosity methods and nonlinear PDEs, Sapporo, Japan, 20-23 July 2010,

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C. LE BRIS,
Lectures on A selection of mathematical topics in multiscale sciences, French-Spanish Jacques-Louis Lions school, La Corona (Spain), 6- 10 September 2010,

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C. LE BRIS,
Lectures Charles Amick memorial Lectures, University of Chicago, October 2010.

T. LELIEVRE,
Lectures (4h30) on Multiscale modelling of complex fluids : a mathematical initiation, in Workshop stress tensor effects on fluid mechanics, Morningside Institute, Beijing, January 2010,

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T. LELIEVRE,
Lectures (4h) on Free Energy Computations, Cornell University (School of Civil and Environmental Engineering), February 2010,

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T. LELIEVRE,
Lectures (3h) on Stochastic processes, PDEs and molecular dynamics, Université de Lille, September 2010,

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T. LELIEVRE,

Stochastic numerical methods, M2 course, Université Paris 6

K. MINOUKADEH,
Object Oriented Progamming: C++, cours de M1 and M2, Université Paris 1 Panthéon-Sorbonne

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K. MINOUKADEH,
Numerical analysis and Optimization, course at ISBS:.

S. OLLA
Non-equilibrium macroscopic dynamics of chains of anharmonic oscillators, CERMICS, January-February 2010.

INDUSTRIAL PARTNERSHIPS/PUBLIC PROGRAMS

CONTRACTS

New industrial contracts

A. ERN and T. LELIEVRE,
Non-parametric uncertainties in aeroacoustics and vibroacoustics problems, EADS

M. DE LARA,
Risk and Optimization for the management of energies, EDF

T. LELIEVRE,
Research contracts with MICHELIN.

Ongoing industrial contracts

A. ALFONSI, J.-F. DELMAS, B. JOURDAIN, B. LAPEYRE : chair financial risks of the risk fundation with Ecole Polytechnique and Société Générale

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P. CARPENTIER, J.-P. CHANCELIER, G. C0HEN.
Robust interplanetary trajectories, Thalès-Alenia-CNES.

A. ERN, Multiscale modeling of clays, ANDRA

C. LEBRIS,
Research contract with office of Naval Research (US Navy)

C. LEBRIS
Research contract with European Office of Aerospace Research and Development (US Air Force)

S. PIPERNO and L. MONASSE, Coupling discrete element methods with
Eulerian flows, CEA/DASE and LIMSI

New public contracts

A. ALFONSI, J.-F. DELMAS, B. JOURDAIN, B. LAPEYRE, T. LELIÈVRE, G.
STOLTZ : ANR program BIG'MC with University Paris-Dauphine and group of Telecommunications schools

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M. BLANCHARD, ANR CRIMIN, Universite Paris6
E. CANCES, ANR MANIF, Universite Paris-Est

S. OLLA has been awarded an ERC advanced grant No 246953, Malady (Microscopic Laws and Dynamical System, 2010-2015). He is the CoPI with Carlangelo Liverani.

Ongoing public contracts

ANR-08-BLAN-0190 A3 (Random trees and applications), Parteners: Univ. Nancy, Univ. Orléans and Univ. Bordeaux. Head: J.-F. DELMAS.

ANR MEGAS Numerical simulation and sampling methods): INRIA project IPSO in Rennes, INRIA project SIMPAF in Lille, eDAM team in Nancy (chemistry), and Molecular Simulation team. Head: T. Lelièvre.

ANR BIGMC (Monte Carlo methods for high dimensional problems): Institut TELECOM, CEREMADE, University Paris Dauphine, and University Paris Est (including CERMICS). Head: G. Fort (TELECOM).

ANR METHODE (Hydrological modeling): universite d'Orleans, INRA, BRGM, INRIA and CERMICS. Head: S. Cordier (Université d'Orléans).

ANR PARMAT (Parallelization for material simulation): EDF, CEA, CNRS, CERMICS. Head: G. Bencteux (EDF).

ANR SIRE "Calcul intensif et grilles de calcul" LN3M CEA, CERMICS, Univ. Lyon, Univ. Orsay. Head: F. Jollet (CEA-DAM).

- S. OLLA is the local coordinator of the project ANR LHMSHE (programme blanc 2007, renewed 2010), Hydrodynamic limits and non-equilibrium statistical mécanic.

ARC Hybrid (theoretical models and numerical methods mixing deterministic and stochastic aspects in the context of molecular simulation): INRIA teams from Rennes (IPSO), Lille (SIMPAF), Sofia-Antiopolis (TOSCA) and CERMICS.

GdR Quantum dynamics: interdisciplinary research network on physical and mathematical problems related to the time evolution of quantum systems (transport problems, nonequilibrium systems, etc).

M. DE LARA (Head):
Viable control of discrete time systems and applications, French-Chilean action supported by the program ECOS, French Ministry of Foreign Affairs

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R. MONNEAU :
ANR MICA 2006-2010, "Mouvement d'Interfaces, Calcul et Applications"

VALORIZATION

Software

A. AHDIDA, A. ALFONSI, B. JOURDAIN, B. LAPEYRE : Participation in the development of the PREMIA software

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ELECTROEMB (solvent models and electrochemistry; http://qe-forge.org/projects/electroemb/):The objective of the project is to develop computational tools for the description of quantum systems in aqueous environments in the PW code. We will also implement electrostatic countercharge methods for the elimination of periodic-image errors.

Participants: I. DABO, N. BONNET, O. ANDREUSSI

NKC-SIC (non-Koopmans self-interaction correction; http://qe-forge.org/projects/nkc/) This project is aimed to the development and testing of a new self-interaction scheme.

Participants: I. DABO, A. FERRETTI, D. CERESOLI, E. LI, M. COCOCCIONI, N. POILVERT, X. QIAN

P. GIANNOZZI, S. BARONI, N. BONINI, M. CALANDRA, R. CAR , C. CAVAZZONI, D. CERESOLI, G. L CHIAROTTI; M. COCOCCIONI, I. DABO, A. DAL CORSO, S. FABRIS, G. FRATESI, S. DE CIRONONCOLI, R. GEBAUER, U. GOUGOUSSIS, A. KOKALI, M. LAZZERI, L. MARTIN-SAMOS, N. MARZARI, F. MAURI, R. MAZZARELLO, S. PAOLINI, A. PASQUARELLO, L. PAULATTO, C. SBRACCIA, S. SCANDOLO, G. SCLAUZERO, A. P. SEITSONEN, A. SMOGUNOV, P. UMARI, R. M. WENTZCOVITCH

Quantum-Espress: Software for quantum simulations of materials Personal contributions: development of electrostatic solvers, development of solvation models, development of quantum-mechanical calculation methods.
Contact:q-e-developers@qe-forge.org

J-PH . CHANCELIER, B. PINCON: Nsp
http://cermics.enpc.fr/~jpc/nsp-tiddly/mine.html
Scicoslab version 4.4.1
http://cermics.enpc.fr/~jpc/scilab-gtk-tiddly/mine.html

ACRONYMS

AERES	**Agence d'évaluation de la recherche et de l'enseignement supérieur**
ANDRA	**Agence Nationale pour la gestion des Déchets Radioactifs**
ANR	**Agence Nationale de la Recherche**
BRGM	**Bureau des Recherches Géologiques et Minières**
CEA	**Commissariat à l'Energie Atomique**
CETMEF	**Centre d'Etudes Techniques Maritimes et Fluviales**
CNES	**Centre National des Etudes Spatiales**
CNRS	**Centre National de la Recherche Scientifique**
CIFRE	**Convention Industrielle de Formation par la Recherche**
DRAST	**Direction de la Recherche et des Affaires scientifiques et Techniques**
EADS	**European Aeronautic Defense and Space Company**
EDF	**Electricité de France**
ENSTA	**Ecole Normale Supérieure de Techniques Avancées**
ESPCI	**École Supérieure de Physique et Chimie Industrielles**
GNR	**Groupement National de Recherches sur la MOdélisation MAthématique**
IFP	**Institut Français du Pétrole**
INRIA	**Institut National de Recherche en Informatique et Automatique**
INSERM	**Institut Nationale de la Santé et de la Recherche Médicale**
IRSN	**Institut de Radioprotection et de Sûreté Nucléaire**
LCPC	**Laboratoire Central des Ponts et Chaussées**
LIMSI	**Laboratoire d'Informatique pour la Mécanique et les Sciences de l'Ingénieur**
MOMAS	**et les Simulations numériques liées à la gestion des déchets nucléaires**
ONERA	**Office National d'Etudes et Recherches Aérospatiales**
SMAI	**Société de Mathématiques Appliquées et Industrielles**
UPEMLV	**Université Paris-Est Marne-La-Vallée**