Activity Report 2013

Section Dissemination

ALGORITHMICS, PROGRAMMING, SOFTWARE AND ARCHITECTURE

APPLIED MATHEMATICS, COMPUTATION AND SIMULATION

DIGITAL HEALTH, BIOLOGY AND EARTH

NETWORKS, SYSTEMS AND SERVICES, DISTRIBUTED COMPUTING

PERCEPTION, COGNITION AND INTERACTION

LFANT Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Editorships

K. Belabas acts on the editorial board of *Journal de Théorie des Nombres de Bordeaux* since 2005 and of *Archiv der Mathematik* since 2006.

H. Cohen is an editorial board member of *Journal de Théorie des Nombres de Bordeaux*; he is an editor for the Springer book series *Algorithms and Computations in Mathematics (ACM)*.

J.-M. Couveignes is a member of the editorial board of the *Publications mathématiques de Besançon* since 2010.

A. Enge is an editor of *Designs, Codes and Cryptography* since 2004.

9.1.2. Invited talks

- J.-M. Couveignes attended the Sémestre Mathématique de Besançon in September 2013 and gave a talk on primality testing.
- J.-M. Couveignes attended GEOCRYPT 2013 in Papeete and gave a talk on genus two curves.
- A. Enge: "Class polynomials for dimension 2", Jahrestagung Computeralgebra, Konstanz, 18–22/03/2013
- A. Enge: "Class polynomials for abelian surfaces", Cryptography and Coding Theory at LIX, 20-21/06
- A. Enge: "Class polynomials for abelian surfaces", Number Theory, Geometry and Cryptography, Warwick, 01-05/07

9.1.3. Conference organisation and programme committees

The third atelier PARI/GP was held at IMB from January 14th to 18th, 2013: http://pari.math.u-bordeaux.fr/Events/PARI2013/. External speakers include Eduardo Friedman (Universidad de Chile), Xavier Roblot (Université Claude Bernard Lyon I), Jürgen Klüners (Universität Paderborn), Pascal Molin (Université Paris 7), Loïc Grenié (Università di Milano-Bicocca), Charles Boyd, Christophe Delaunay (Université de Franche-Comté), François Brunault (ENS Lyon), Philippe Elbaz-Vincent (Grenoble), Denis Simon (Caen).

A. Enge and D. Robert were programme committee members of the *Selected Area in Cryptography* 2013 conference.

9.1.4. Seminar

The following external speakers have given a presentation at the LFANT seminar, see
http://lfant.math.u-bordeaux1.fr/index.php?category=seminar
- Friedrich Panitz (Paderborn), "An algorithm to enumerate quartic fields, after Bhargava."
- Sinai Robins (Nanyang Technological University, Singapore) "Cone theta functions and what they tell us about the irrationality of spherical polytope volumes."
- Achill Schürmann (Universität Rostock) "Exploiting Symmetries in Polyhedral Computations."
- Maike Massierer (University of Basel) "Point Compression for the Trace Zero Variety."
- Christophe Ritzenthaler (Université Aix-Marseille) "Sur la distribution des traces des courbes de genre 3 sur les corps finis."
- David Lubicz (CELAR — Rennes) "Algèbre linéaire sur $\mathbb{Z}_p[[u]]$ et application au calcul de réseaux dans les représentations galoisiennes p-adiques."
- Marie-Françoise Roy (Rennes) "Algorithme diviser pour régner pour les cartes routières."
- Sorina Ionica (ENS Paris) "Algorithms for isogeny graphs".
- Philippe Jaming (imb) "Problème de la phase dans le cadre discret"

9.1.5. Research administration

K. Belabas is the head of the mathematics department of University Bordeaux 1. He also leads the computer science support service ("cellule informatique") of the Institute of Mathematics of Bordeaux and coordinates the participation of the institute in the regional computation cluster PlaFRIM.

He is a permanent invited member of the councils of both the math and computer science department (UFR) and the Math Institute (IMB).

J.-P. Cerri is an elected member of the scientific council of the Mathematics Institute of Bordeaux (IMB) and responsible for the bachelor programme in mathematics and informatics.

Since January 2011, J.-M. Couveignes is involved in the *GDR mathématiques et entreprises* and in the *Agence pour les mathématiques en interaction avec l'entreprise et la société*.

Until October 2013, A. Enge was responsible for the international affairs of Inria–Bordeaux-Sud-Ouest. As such, he was a regular member of the COST-GTRI, the Inria body responsible for evaluating international partnerships. Since October 2013, he heads this committee.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: A. Page, Fondamentaux pour les mathématiques et l'informatique, cours et TD, 18h, L1, Université Bordeaux 1, France;

Licence: A. Page, CPBx Analyse 2, TD, 43h, L2, Université Bordeaux 1, France;

Licence: A. Page, Codes et cryptographie, TD, 13h, L1, Université Bordeaux 1, France;

Master: K. Belabas, Computer Algebra, 90h, M2, Université Bordeaux 1, France;

Licence: J.-P. Cerri, Algèbre 1, cours, 22h, L1, Université Bord eaux 1, France;

Licence: J.-P. Cerri, Algèbre 2, TD, 51h, L2, Université Bordeau x 1, France;

Licence: J.-P. Cerri, Cryptographie et Arithmétique, cours, 24h, L 3, Université Bordeaux 1, France;

Licence: J.-P. Cerri, Algèbre 4, TD, 51h, L3, Université Bordeau x 1, France;

Master: J.-P. Cerri, Arithmétique, cours, 36h, M1, Université Bo rdeaux 1, France;

Master: J.-M. Couveignes, Algorithms for public key cryptograph, 40h, M2, Université Bordeaux 1, France;

Master: J.-M. Couveignes, Algorithms for number fields, 40h, M2, Université Bordeaux 1, France;

Licence: P. Lezowski, Ouverture professionnelle (help to students to look for a suitable Master), 12h, L3, Université Bordeaux 1, France;

Licence : N. Mascot, cours intégré MOSE 1003, 27h, L1, Université Bordeaux 1, France;

Licence : N. Mascot, C2I, TD, 15h, L1, Université Bordeaux 1, France;

Summer school: A. Enge, Complex multiplication of elliptic curves, 6h, PhD, Number Theory for Cryptography, Warwick, 24-28/06;

Summer school: A. Enge, Complex multiplication of elliptic curves, 1.5h, PhD, ECC 2013, Leuven, 11-13/09;

Summer school: A. Enge, Pairings on elliptic curves, 1.5h, PhD, ECC 2013, Leuven, 11-13/09.

9.2.2. Supervision

- K. Belabas, A. Enge

    PhD Aurel Page, *Méthodes explicites pour les groupes arithmétiques*, University Bordeaux

- K. Belabas, J.-M. Couveignes

PhD Nicolas Mascot, *Calcul de représentations galoisiennes modulaires*, University Bordeaux

- K. Belabas, P. Stevenhagen

PhD Athanasios Angelakis, *Number fields sharing the same abelianized Galois group*, ALGANT, University Bordeaux and University Leiden

K. Belabas, T. Dokchitser, P. Stevenhagen

PhD Julio Brau, *Computing Galois representations attached to elliptic curves*, ALGANT, University Bordeaux and University Leiden

- A. Enge, D. Robert

PhD Enea Milio, *Isogénies entre surfaces abéliennes*, University Bordeaux

9.2.3. *Juries*

K. Belabas was a member of the committee for

Habilitation defense (and referee) of Emmanuel Hallouin in Toulouse (November 2013).

J.-M. Couveignes was amember of the committees for

Professor position at the Université of Rennes (April 2013).

Professor position at the Université of Papeete(April 2013).

PhD defense of Jean-Gabriel Kammerer in Rennes (May 2013).

PhD defense (and referee) of Razvan Barbulescu in Nancy (december 2013).

PhD defense (and referee) of Emmanuel Fouotsa in Rennes (december 2013).

PhD defense (and referee) of Yvan Boyer in Paris (december 2013).

A. Enge was a member of the committees for

evaluation AERES LIP6, 07–09 January 2013;

evaluation AERES PRISM, 03–04 December 2013.

9.3. Popularisation

P. Lezowski has given a presentation on cryptology to high school students during "Fête de la science".

ALEA Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Editorial Board

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

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

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

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

9.1.2. Responsibilities

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

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

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

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

9.1.3. Organization of Conferences

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

9.1.4. Reviewing

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

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence :

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

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

Master :

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

Other:

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

9.2.2. Supervision

PhD:

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

PhD in progress:

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

9.2.3. Juries

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

BACCHUS Team

8. Dissemination

8.1. Scientific Animation

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

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

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

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

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

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

8.2.2. Supervision

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

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

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

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

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

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

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

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

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

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

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

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

8.2.3. Juries

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

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

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

PhD: H. Lundt, Relaxation models for two-phase flow with applications to CO_2 transport, NTNU, Trondheim, Norway, R. Abgrall: referee

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

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

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

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

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

CAGIRE Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Review activity

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

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

8.1.2. Participation in Congress organising committees

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

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

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

8.2.2. Supervision

- PhD : Simon Delmas, Simulation d'écoulements pariétaux génériques à bas nombre de Mach pour l'amélioration du refroidissement des chambres de combustion : développement et mise en œuvre de schémas de type Galerkine discontinu adaptés, University of Pau, started January 2013, Dir.:[PB] and Co-dir.: [VP].

- PhD : Juan-Luis Florenciano Merino, Étude de la réponse d'un écoulement avec transfert pariétal de masse à un forçage acoustique, University of Pau, defended on July 12, 2013, Dir.:[PB] and Co-dir.:[TK]

- PhD : Jean-François Wald, Modélisation de la turbulence avec traitement adaptatif des parois prenant en compte la thermique active ou passive, started October 2013, Dir.: [RM]

- PhD : Nurtoleu Shakhan, Modelling and simulation of coal combustion, University of Almaty (Kazakhstan), started October 2013, Dir.:Altyn Naïmanova and Co-dir.:[PB]

- PhD : Tran Thanh Tinh, Développement d'une méthode hybride RANS-LES temporelle pour la simulation de sillages d'obstacles cylindriques, University of Poitiers, 28 March 2013, Dir.: [RM]

8.2.3. *Juries*

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

+ PhD : Julien Apeloig, Étude expérimentale de la phase liquide dans les instabilités thermo-acoustiques agissant au sein des turbomachines diphasiques, University of Toulouse, 13 September 2013, [PB, referee]

+ PhD : Guillaume Cottin, Contribution à la modélisation thermique d'une paroi multiperforée, University of Toulouse, 18 October 2013,[PB, referee]

+ PhD : Mario Falese, A study of the effects of bifurcations in swirling flows using large-eddy simulations and mesh adaptation, University of Toulouse, October 7, 2013, [PB]

+ PhD : David Vanpouille, Développement de modèles de turbulence adaptés à la simulation des écoulements de convection naturelle à haut nombre de Rayleigh, University of Toulouse, December 6, 2013 [RM, referee]

+ HdR : Mathieu Fénot, Refroidissement aérothermique, University of Poitiers, 29 November 2013 [PB]

8.3. Popularization

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

CONCHA Project-Team

9. Dissemination

9.1. Scientific Animation

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

9.2.2. Supervision

9.2.3. Juries

9.3. Popularization

CQFD Project-Team

9. Dissemination

9.1. Scientific Animation

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

J. Saracco is member of the council of ENSC

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

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

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

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

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

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

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

9.2.2. Supervision

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

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

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

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

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

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

PhD in progress : Karim Claudio, Un outil d'aide à la maîtrise des pertes dans les réseaux d'eau potable : mise en place d'un modèle de fuite multi-état en secteur hydraulique instrumenté , supervised by J. Saracco and V. Couallier.

PhD in progress : Amaury Labenne, Approche Statistique du diagnostic territorial par la notion de qualité de vie, supervised by M. Chavent, J. Saracco and V. Kuentz.

PhD in progress : Adrien Todeschini, Elaboration et validation d'un système de recommandation bayésien, supervised by F. Caron and M. Chavent.

PhD in progress : Isabelle Charlier, Optimal quantization applied to conditional quantile estimation, University of Bordeaux 1 and Université Libre de Bruxelle, supervised by J. Saracco and D. Paindaveine.

9.2.3. *Juries*

B. de Saporta was a member of the PhD jury of Camille Baysse. B. de Saporta is an elected member of CNU 26.

9.3. Popularization

B. de Saporta took part in a speed mediation event at Inria Bordeaux Sud Ouest (dec. 2013).

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

8. Dissemination

8.1. Scientific Animation

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

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

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

8.2.2. Supervision

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

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

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

8.2.3. Juries

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

8.3. Popularization

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

<div align="center">**MC2 Project-Team**</div>

9. Dissemination

9.1. Scientific Animation

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

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

Angelo Iollo has managed the national ANR research project Carpeinter.

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

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

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

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

All Professors and Associate Professors teach 192 hours per year.

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

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

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

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

9.2.2. Supervision

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REALOPT Project-Team

9. Dissemination

9.1. Scientific Animation

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

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

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

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

9.2.2. Supervision

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

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

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

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

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

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

9.2.3. Juries

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

CARMEN Team

9. Dissemination

9.1. Scientific Animation

- The members of the team are regular reviewers for international journals and conferences in applied mathematics, biomedical engineering, cardiac electrophysiology, and electrocardiography.

- N. Zemzemi was a member of the Inria delegation at the India-France technology summit, New delhi, October 23-24th, 2013.

- Y. Coudière did participate to the organization of the First Scientific Workshop of the LIRYC, October, 24-25th, 2014.

- Y. Coudière is a member of the Scientific Committee of the international conference on « Finite Volume for Complex Application », to be held in Berlin, June, 2014, www.wias-berlin.de/workshops/fvca7.

- Y. Coudière is a member of CAIMS, The Canadian Applied and Industrial Mathematics Society, and presented the work of Carmen during the CAIMS conference in Québec, June, 2013.

- Y. Coudière is the scientific coordinator of the ANR research project HR-CEM.

- S. Labarthe presented the work of Carmen based on HPC solvers at the PlaRim day, April, 2014, LABRI, Bordeaux.

- S. Labarthe presented his work at the « Printemps de la Cardiologie », the national conference of the French Cardioolgist Society, held in April 2013 in Marseille, and was invited to the symposium "AF: Clinical challenges for biophysical modelling" in London, June, 2013.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : S. Labarthe, *Probabilities and statistics, introduction to databases*, 64 h eqTD, IUT HSE U Bordeaux 1.

Engineering school: S. Labarthe, *Scientific computing with Fortran 90*, 96h eqTD, ENSEIRB-MATMECA, IPB.

Engineering school: N. Zemzemi, *Scientific computing project: finite elements method application to cardiac electrophysiology*, 2nd year, 28h eqTD, ENSEIRB-MATMECA, IPB.

Engineering school: F. Caro, *TER* 2nd year, 6h eqTD, ENSEIRB-MATMECA, IPB.

Engineering school: F. Caro, *Finite elements, variational formulation and Sobolev spaces*, 36h eqTD, Institut Galilée, Univ. Paris 13.

Engineering school: Y. Coudière, *TER* 2nd year, 6h eqTD, ENSEIRB-MATMECA, IPB.

Cursus Ingénieur: Y. Coudière, *project in scientific computing, F90* 1st year, 16h eqTD, ENSEIRB-MATMECA, IPB.

Master : Y. Coudière, « *Analyse numérique approfondie* », 36h eqTD, M2, Univ. Bordeaux 1.

9.2.2. Supervision

PhD : S. Labarthe, « Modélisation de l'activité électrique des oreillettes et des veines pulmonaires », Université Bordeaux Segalen, December, 13th, 2013, supervised by Y. Coudière and J. Henry.

PhD in progress : A. Davidovic, Modelling the cardiac ventricular structural heterogeneities, started on October 2012, supervised by Y. Coudière and C. Poignard.

PhD in progress : G. Ravon, An inverse problem for cardiac optical mapping, started on October 2012, supervised by Y. Coudière and A. Iollo.

PhD in progress : J. Lassoued, « Construction de methodes de reduction de modèle pour le problème d'estimation de parametres en electrophysiologie cardiaque », co-supervized by N. Zemzemi with Moncef Mahjoub, École Nationale d'Ingénieur de Tunis (Tunisia).

PhD in progress : W. Mbarki, « Etudes thérique et numérique du couplage purkinje-myocarde en electrophysiologie cardiaque », co-supervised by N. Zemzemi with Saloua Aouadi, Faculté des sciences de Tunis (Tunisia).

9.2.3. *Juries*

- Y. Coudière was a member of the jury for defense of the PhD of V. Desveaux, « Contribution à l'approximation numérique des systèmes hyperboliques », Université de Nantes, November 26th, 2013.
- Y. Coudière was a member of the jury for defense of the PhD of S. Labarthe, « Modélisation de l'activité électrique des oreillettes et des veines pulmonaires », Université Bordeaux Segalen, December, 13th, 2013

9.3. Popularization

- S. Labarthe, Forum Emploi Maths 2013, invited for an intervention to the round table « Témoignages : métiers du secteur santé », 01/2013, Paris.
- S. Labarthe and G. Ravon welcomed two secondary school pupils for a week dedicated to the observation of research work in our team and the Inria research center.
- N. Zemzemi, recieved 4 groups of pupils in final year of high school, that were following a special option on computer, numerical sciences. He animated a workshop on modelling for health sciences.
- The team was represented by N. Zemzemi at the « Rencontre Inria-Industrie » (meeting Inria – Industry) on: Modelling, simulation, and high-performance computing, Paris, June 11th, 2013.
- A. Davidovic presented herself and her work during a meeting with the public called « Visages de sciences », organized at « Cap Sciences », Bordeaux, Spring 2013.

<div align="center">**MAGIQUE-3D Project-Team**</div>

9. Dissemination

9.1. Scientific Animation

9.1.1. Administrative Activities

- Mohamed Amara is President of the Université de Pau et des Pays de l'Adour.

- Hélène Barucq is vice-chair of the Inria evaluation committee. She participated to the national jury of Inria competitive selection for Senior Researchers (DR2) and to the local jury of Inria competitive selection for Young Graduate Scientists (CR2) in Bordeaux. She participated to the selection committee for Research (Grant and Senior) Positions. She participated to the selection committee for a Professor position at the University of Rouen and at the University of Pau. She is member of the direction team of the Research Center of Bordeaux. She is member of the board of the Laboratory of Mathematics of Pau and of the research federation IPRA which are both under the administrative supervision of CNRS. She is the scientific head of the project DIP.

- Julien Diaz is elected member of the Inria evaluation committee. He participated to the local juries for Young Graduate Scientists (CR2) in Saclay and Sophia. He is elected member of the CLHSCT (Comité Local Hygiène et Sécurité) of Inria Bordeaux Sud-Ouest and appointed member of the CDT (Commission de Développement Technologique), of the CUMI (Commission des Utilisateurs des Moyens Informatiques) and of the Center Committee of Inria Bordeaux Sud-Ouest.

- Victor Péron is appointed member of the CJC (Commission Jeunes Chercheurs) of Inria Bordeaux Sud-Ouest. He was member of the committee to evaluate posters of PhD Students (in 2nd year), at Scientific School Doctoral 211 (Univ. of Pau), July 2013.

- Sébastien Tordeux is elected member of the 26th section of the CNU (Conseil National des Universités). He is also responsible of the first year of the Master of Applied Mathematics of Pau University.

9.1.2. Conferences

- Hélène Barucq and Julien Diaz were members of the scientific committee of Waves 2013 (http://www.lamsin.tn/waves13/)

- Hélène Barucq was member of the scientific committee of JSA 2013 (http://jsa2013.sciencesconf.org/)

- Julien Diaz was member of the organizing committee of the "Journée Ondes et problèmes inverses en géophysique " (http://www.ensta-paristech.fr/~chaillat/MPT2013.html).

- Sébastien Tordeux was member of the scientific committee of the Fifth International Scientific Conference and Young Scientists School "Theory and Computational Methods for Inverse and Ill-posed Problems"the (http://conf.nsc.ru/tcmiip2013)

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: Victor Péron, Mathématiques pour les Sciences de la Matière, 19,5 Eq. TD, L2, UPPA, France,

Master: Victor Péron, Analyse numérique fondamentale, 75 Eq. TD, M1, UPPA, France,

Master: Victor Péron, Analyse, 28 Eq. TD, M1, UPPA, France,

Master : Sébastien Tordeux, Analyse numérique fondamentale, 36 Eq. TD, M1, UPPA, France.

Master : Julien Diaz : Transformées, Fourth-year engineering students at ESTIA (Ecole Supérieure des Technologies Industrielles Avancées), 16 Eq. TD.

Master: Julien Diaz and Sébastien Tordeux, Introduction aux phénomènes de propagation d'ondes, 55 Eq TD, M2, UPPA, France.

ISAE (http://www.isae.fr/): Hélène Barucq, Introduction à la simulation numérique des ondes, 5h Eq TD, Toulouse.

Master : Marc Duruflé, Algorithmique numérique, 60 Eq. TD, Enseirb-Matmeca, France.

Master : Marc Duruflé, Algorithmique et programmation, 32 Eq. TD, Enseirb-Matmeca, France.

Master : Marc Duruflé, Mini-projets de programmation, 28 Eq. TD, Enseirb-Matmeca, France.

Master : Marc Duruflé. Outils informatiques pour le calcul scientifique, 80 Eq. TD, Enseirb-Matmeca, France.

9.2.2. Supervision

PhD : Élodie Estécahandy, Contribution à l'analyse mathématique et à la résolution numérique d'un problème inverse de scattering élasto-acoustique, September 19th 2013, Hélène Barucq and Rabia Djellouli.

PhD in progress : Julen Alvarez, hp-adaptive inversion of magnetotelluric measurements, October 2011, Hélène Barucq and David Pardo.

PhD in progress : Lionel Boillot, Propagateurs optimisés pour les ondes élastiques en milieux anisotropes, May 2011, Hélène Barucq and Julien Diaz.

PhD in progress : Marie Bonnasse-Gahot, Simulation de la propagation d'ondes élastiques et visco-élastiques en régime harmonique par des méthodes Galerkin discontinues d'ordre élevé en maillage non-structuré adaptées au calcul haute performance, October 2012, Julien Diaz and Stéphane Lantéri (EPI Nachos, Inria Sophia Antipolis-Méditerranée).

PhD in progress : Théophile Chaumont-Frélet, October 2012, Hélène Barucq and Christian Gout.

PhD in progress : Aralar Erdozain, Fast inversion of 3D Borehole Resistivity Measurements using Model Reduction Techniques based on 1D Semi-Analytical Solutions, October 2013, Hélène Barucq, David Pardo and Victor Péron.

PhD in progress : Jérôme Luquel, RTM en milieu hétérogène par équations d'ondes élastiques, November 2011, Hélène Barucq and Julien Diaz.

PhD in progress : Vanessa Mattesi, Détection des hétérogénéitées en acoustique et élastodynamique, October 2011, Hélène Barucq and Sébastien Tordeux.

PhD in progress : Vincent Popie, Sebtember 2012, Investigation numérique et expérimentale du comportement acoustique de plaques perforées en vue de développement de modèles homogénéisés, Sébastien Tordeux and Estelle Piot

PhD in progress : Florent Ventimiglia, Schémas d'ordre élevé et pas de temps local pour les ondes élastiques en milieux hétérogènes, November 2010, Hélène Barucq and Julien Diaz.

9.2.3. Juries

- Hélène Barucq was referee for the PhD thesis defended by Rafael Lago at the Institut National Polytechnique de Toulouse, June 3th 2013, entitled "A study on block flexible iterative solvers with applications to Earth imaging problem in geophysics".
- Julien Diaz :
  - Jean-Baptiste Laurent (Université de Toulouse) "Raffinements locaux auto-adaptatifs dans une méthode Galerkine discontinue pour la résolution des équations de Maxwell", July 10th 2013.
  - Axel Modave (Université de Liège, Belgium) "Absorbing Layers for Wave-Like Time-Dependent Problems - Design, Discretization and Optimization", October 7th 2013.

– Ludovic Moya (Université de Nice), Ludovic Moya, "Discontinuous Galerkin time domain method for electromagnetic wave propagation in biological tissues", December 16th 2013.

9.3. Popularization

- The short movie "Probing the invisible, from the earthquake to the model" realized by MAGIQUE-3D in 2010, has been presented at Unesco during the day "Mathematics for Planet Earth", on March 5th 2013 http://mpe2013.org/fr/mpe-day-at-unesco/. It is also part of the virtual exhibition "Mathematics of Planet Earth http://imaginary.org/fr/node/134"

- Hélène Barucq is member of the scientific board created for helping to the organization of a mobile exhibition in favor of the equality between girls and boys. The exhibition will be held in Pau in June 2014.

- Juliette Chabassier has written a short paper, "Simuler le son d'un piano" , on the website of Mathématiques de la planète Terre 2013, "Un jour, une brève", http://mpt2013.fr/facteur-de-piano-numerique [75].

- Juliette Chabassier has written a short paper, "Le piano rêvé des mathématiciens" , in the book "Mathématiques: l'explosion continue", http://hal.inria.fr/hal-00913685.

- Juliette Chabassier has published a website on the piano modeling, http://modelisation.piano.free.fr.

- Julien Diaz participated to the "Journées jeunes chercheurs en mathématiques du lycée de Navarre / UPPA" http://univ-pau.fr/live/newsletter/newsletter-n46/journeesmaths?isPdf=1, March 20th-22th, 2013.

- Julien Diaz has written an article, "Prospection pétrolière : le sous-sol révélé", in the TDC (Textes et Documents pour la classe) journal, for high-school teachers, http://www.cndp.fr/tdc/tous-les-numeros/les-mathematiques-de-la-terre.html [77].

- Julien Diaz has written a short paper, "Jeter un œil "Au centre de la Terre" , on the website of Mathématiques de la planète Terre 2013, "Un jour, une brève", http://mpt2013.fr/jeter-un-oeil-au-centre-de-la-terre/ [76].

- Victor Péron participated to the "Journée d'Immersion des Lycéens à l'Université de Pau" and has given a talk "Probing the invisible, from the earthquake to the model", November 28th, 2013.

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

9. Dissemination

9.1. Scientific Animation

Pascal Durrens is :

> leader of the "Comparative Genomics" theme and member of the Scientific Council of the LaBRI UMR 5800/CNRS.

> responsible for scientific diffusion for the Génolevures Consortium.

> member of the editorial board of the journal ISRN Computational Biology, and was reviewer for the journal BMC Genomics

> expert in Genomics for the Fonds de la Recherche Scientifique-FNRS (FRS-FNRS), Belgium

David Sherman is :

> president of the Commission de Jeunes Chercheurs, Inria Bordeaux Sud-Ouest

> member for Bordeaux Sud-Ouest of Inria's Young Scientists Mission

> member of the editorial board of the journal Computational and Mathematical Methods in Medicine

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

> Licence : Anna Zhukova, J1MI2013 : Algorithmes et Programmes TD/TP, 30h, L2, Université Bordeaux, France

9.2.2. Supervision

> PhD in progress: Anna Zhukova, "Knowledge engineering for biological networks," 2011–, Sherman

> PhD in progress: Razanne Issa, "Analyse symbolique de données génomiques," 2010–, Sherman

9.2.3. Juries

David Sherman was a member of the juries of:

> Natalia GOLENETSKAYA, "Addressing scaling challenges in comparative genomics," U. Bordeaux, 2013-09-09

> Boyang JI, "Comparative and Functional Genome Analysis of Magnetotactic Bacteria," U. Aix-Marseille, 2013-10-23

> Andres ARAVENA, "Probabilistic and constraint based modelling to determine regulation events from heterogeneous biological data," U. Rennes, 2013-12-13

9.3. Popularization

Magnome participated in « UniThé ou Café » in the Inria Bordeaux – Sud-Ouest research center.

Anna Zhukova animated one of the Inria workshops at the 2013 "Fête de la Science"

David Sherman is a member of the Inria Bordeaux – Sud-Ouest's "Scientific Culture" committee, which organizes and proposes various scientific popularization actions.

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

8. Dissemination

8.1. Scientific Animation

8.1.1. Responsabilities

- Thierry Viéville is in charge, at the Inria national level, of the institute science outreach actions and depends on the Direction de la Recherche for this part of his work.
- Member of the scientific committee of the CNRS PEPS program, of the local Inria committee for invited professors (F. Alexandre).
- Expert of the ITMO 'Neurosciences, Sciences Cognitive, Neurologie, Psychiatrie' (F. Alexandre)

8.1.2. Review activities

- Reviewing for journals: Plos One, Frontiers in Neurorobotics, Applied Intelligence, Cognitive Computation, J. Physiol. (F. Alexandre); Neural Networks, Neurocomputing (N. Rougier); Frontiers in Computational Neuroscience (T. Viéville).
- Member of program committees of conferences: CAP, EMBS, TAIMA (F. Alexandre)
- Reviewing for the Fonds Recherche Quebec, the CNRS, the ANR and several french regional and territorial agencies and universities (F. Alexandre)

8.1.3. Workshops, conferences and seminars

Organization of conferences and workshops:

- Member of the organizing committee of the annual symposium of the CNRS GDR "Multi-electrodes", in charge of the tutorial day (F. Alexandre, october)

Invited speaker and seminars:

- Invited talk to the CNRS 'STIC-Santé' GDR day: "Computer Science and the Brain" (N. Rougier, november)
- Invited Talk to the "Robotics and the Living", Conference organized by the Cergy-Pontoise university (N. Rougier, december)
- Invited Talks "Scientific Visualization" for the JDEV 2013 days (N. Rougier, september)

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Many courses are given in universities and schools of engineers at different levels (LMD) by most team members, in computer science, in applied mathematics, in neuroscience and in cognitive science.

Concerning tutorials during conferences, Euroscipy 2013, Matplotlib tutorial, (N.Rougier, August); PRACE Winter school 2013, Scientific Visualisation and Python introduction (N. Rougier, March).

8.2.2. Juries

We participate to many juries each year.

8.3. Popularization

For a multi-disciplinary team as Mnemosyne, science popularization is not a nice and useful contribution to the dissemination of scientific knowledge but also a necessity since we work with colleagues from bio-sciences with whom sharing profound ideas in computer science is mandatory for a real collaboration.

- Thierry Viéville is half-time involved in popularization actions both at a concrete level [21], [23], [22], [9], [10] (including on Mnemosyne subjects [25], [20] and at the methodological level [15], [29], [18]. This explains the rather huge amount of publications on these external subjects in this document.

- "A small history of cyber-criminality" at the Journées pédagogiques sur ISN (N. Rougier, June)

- "About brain modeling", Interstices podcast, (N. Rougier, Februrary)

- Participation to the program "Science Publique", on the french national radio France Culture to a one-hour debate entitled "What can we expect from an artificial human brain?" (F. Alexandre, January).

CEPAGE Project-Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Editorial Work

- Ralf Klasing is Associate Editor for
    - Algorithmic Operations Research (since May 2007),
    - Parallel Processing Letters (since August 2007),
    - Networks (since September 2007),
    - Computing and Informatics (since January 2008),
    - Theoretical Computer Science (since December 2009),
    - Fundamenta Informaticae (since January 2010),
    - Discrete Applied Mathematics (since February 2010),
    - Wireless Networks (since May 2010),
    - Journal of Interconnection Networks (since November 2010).
- Olivier Beaumont is Associate Editor for
    - IEEE Transactions on Parallel and Distributed Systems (since June 2010).

8.1.2. Steering Committees

- Ralf Klasing is a member of the Steering Commitee of the *International Colloquium on Structural Information and Communication Complexity (SIROCCO)*.

8.1.3. Program Committees

- Olivier Beaumont: ICPP 2013 (Chair, Algorithm Track), IPDPS 2013, HCW 2013, ISCIS 2013, IPDPS 2014, EuroPar 2014.
- Ralf Klasing: SSS 2013 (Co Chair, Ad-hoc, sensor, robot and opportunistic networks Track) WAL-COM 2015, IWOCA 2014,ADHOC-NOW 2014,ALGOSENSORS 2013, ADHOC-NOW 2013, FCT 2013, IWOCA 2013,vSEA 2013.
- David Ilcinkas: SIROCCO 2013, ADHOC-NOW 2013, AlgoTel 2013.
- Lionel Eyraud-Dubois: IPDPS 2013, HiPC 2013, IPDPS 2014, HiPC 2014.
- Adrian Kosowski: COCOA 2013, SSS 2013, DISC 2013, ADHOC-NOW 2013, FCT 2015 (PC co-chair).
- Sofian Maabout: DaWAK 2013, DOLAP 2013, BDA 2013, EDA 2013, DaWAK 2014. PC co-chair of MEDI 2013.
- Cyril Gavoille: WG 2014, PODC 2014, IPDPS 2014, PODC 2013, ICALP 2013, IPDPS 2013, SODA 2013.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Master : Communication and Routing (last year of engineering school ENSEIRB, 2012) O. Beaumont, N. Bonichon, L. Eyraud, N. Hanusse, R. Klasing, A. Kosowski (16h)

Master : Communication Algorithms in Networks (2nd year MASTER "Algorithms and Formal Methods", University of Bordeaux, 2012) R. Klasing (24h)

Master : Search Engines (2nd year of engineering school ENSEIRB, 2012) O. Beaumont (20h)

Master : Distributed Computing (2nd year MASTER "Réseaux, Systèmes et Mobilité"), (24h) C. Gavoille

8.2.2. Supervision

HdR : Nicolas Bonichon, Université de Bordeaux 1, 2013

HdR : Adrian Kosowski, Université de Bordeaux 1, 2013

PhD : Ahmed Wade, Université de Bordeaux, 2014

PhD : Przemyslaw Uznanski, Université de Bordeaux 1, 2013

PhD : Pierre Halftermeyer, Université de Bordeaux 1, 2013

PhD : Quentin Godfroy , Université de Bordeaux 1, 2013

PhD : Christian Glacet , Université de Bordeaux 1, 2013

HIEPACS Project-Team

9. Dissemination

9.1. Scientific Animation

Emmanuel Agullo has been a member of the scientific committee of the international conferences IPDPS'13.

Olivier Coulaud is member of the C3I GENCI committee and of the scientific board of the regional computing mesocentre. Moreover, he is the leader of the Inria PlaFRIM computing plateform. He is member of the scientific committee of CCGRID2014.

Mathieu Faverge has been member of the technical program committee of the international conference HiPC'13 and reviewed for Parallel Computing journal.

Pierre Ramet is member of the GENCI scientific committee (Mathematics and Computer Sciences). He is also in the decision board of the "MCIA" project (*Mésocentre Aquitain : un environnement Mutualisé de Calcul Intensif en Aquitaine*).

Luc Giraud has been member of the scientific committee of the international conferences Preconditioning'13, IPDPS'13, HiPC'13, Pareng'13, PDCN'13 and PDSEC'13. He is also member of the editorial board of the SIAM Journal on Matrix Analysis and Applications (SIMAX), expert for the PRACE program and for the Italian VQR 2004-2010 programme. He is a member of DAS-SCI (Domaine d'Activité technologiques Stratégiques - Systémes complexes, Conception, architecture et Intégration) of Aerospace Valley (pôle de compétitivité).

Abdou Guermouche has been member of the scientific committee of the international conferences HiPC'13, ICPP'13 and IPDPS'13.

Jean Roman is a member of the Research Direction of Inria; he is the Deputy Scientific Director of the Inria research domain entitled *Applied Mathematics, Computation and Simulation* and is in charge at the national level of the Inria activities concerning High Performance Computing. He is member of the "Strategic Comity for Intensive Computation" of the French Research Ministry and is member of the "Scientific Board" of the CEA-DAM. As representative of Inria, he is member of the Steering Committee of EADS Corporate Foundation (for the research chair entitled *Mathematics of Complex Systems* in Bangalore-India), of the board of ETP4HPC (*European Technology Platform for High Performance Computing*), of the French Information Group for PRACE, of the Technical Group of GENCI and of the Scientific Advisory Board of the Maison de la Simulation. Finally, he has been member of the scientific committee of the international conference EuroMicro PDP'13 (IEEE).

Finally, the HIEPACS members have contributed to the reviewing process of several international journals (ACM Trans. on Mathematical Software, IEEE Trans. on Parallel and Distributed Systems, Journal of Engineering Mathematics, Parallel Computing, SIAM J. Matrix Analysis and Applications , SIAM J. Scientific Comp., ...), to the reviewing process of international conferences (CCGRID 2014, IEEE IPDPS 2014, IEEE PDP 2014, ...), and have acted as experts for the research agency ANR-MN.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

In the following are listed the lectures given by the HIEPACS members.

Undergraduate level/Licence

1. A. Esnard: Operating system programming, 36h, University Bordeaux I; Using network, 23h, University Bordeaux I.

He is also in charge of the computer science certificate for Internet (C2i) at the University Bordeaux I.

2. P. Ramet: System programming 24h, Databases 32h, Objet programming 48h, cryptography 32h at Bordeaux University.
   He is also in charge of the "licences professionelles" since 2007 at Bordeaux University.

Post graduate level/Master

1. O. Coulaud: Paradigms for parallel computing, 28h, ENSEIRB-MatMeca, Talence; Code coupling, 6h, ENSEIRB-MatMeca, Talence.

2. E. Agullo: Operating sysems, 24h, University Bordeaux I; Dense linear algebra kernels, 8h, ENSEIRB-MatMeca; Numerical Algorithms, 30h; ENSEIRB-MatMeca, Talence.

3. A. Esnard: Network management, 27h, University Bordeaux I; Network security, 27h, University Bordeaux I; Programming distributed applications, 35h, ENSEIRB-MatMeca, Talence.

4. M. Faverge: System Programming, 74h; Programming Environment, 26h; Load Balancing and Scheduling, 19h; Numerical Algorithmic, 30h; C Projects, 20h; ENSEIRB-MatMeca, Talence.
   He is also in charge of the second year of Embedded Electronic Systems option at ENSEIRB-MatMeca, Talence.

5. P. Ramet: Scheduling, 8h; Numerical Algorithmic, 30h; ENSEIRB-MatMeca, Talence.
   He also give classes on advanced databases, 30h, Ho Chi Minh City, Vietnam.

6. L. Giraud: Introduction to intensive computing and related programming tools, 20h, INSA Toulouse; Introduction to high performance computing and applications, 20h, ISAE-ENSICA; On mathematical tools for numerical simulations, 10h, ENSEEIHT Toulouse; Parallel sparse linear algebra, 11h, ENSEIRB-MatMeca, Talence.

7. A. Guermouche: Network management, 92h, University Bordeaux I; Network security, 64h, University Bordeaux I; Operating system, 24h, University Bordeaux I.

8. J. Roman: Parallel sparse linear algebra, 10h, ENSEIRB-MatMeca, Talence; Parallel algorithms, 22h, ENSEIRB-MatMeca, Talence.

9. X. Vasseur: Solution of PDE, 16 h, ENSEEIHT Toulouse; Linear Algebra and Optimization, 25 h, ISEA-ENSICA, Toulouse; Introduction to MPI, 11 h, ENM, Toulouse; Introduction to Fortran 90, 5 h, CERFACS, Toulouse.

9.2.2. Supervision

Defended HDR

1. HdR: Olivier Coulaud, *Contributions algorithmiques pour les simulations complexes en physique des matériaux*, Université Bordeaux 1, defended on 29 Nov. 2013.

Defended PhD thesis

1. Pablo Salas Medina, *Numerical and physical aspects of thermoacoustic instabilities in annular combustion chambers* Université Bordeaux I, defended on 15 Nov. 2013, advisors: L. Giraud and X. Vasseur (CERFACS).

2. Rached Abdelkhalek, *Accélération matérielle pour l'imagerie sismique:modélisation, migration et interprétation*, Université Bordeaux I, defended on 20 Dec. 2013 advisors: O. Coulaud, G. Latu (CEA Cadarache) and J. Roman.

PhD in progress :

1. Pierre Blanchard, *Fast and accurate methods for dislocation dynamics*, starting Oct. 2013,advisors: O. Coulaud and E. Darve.

2. Bérenger Bramas, *Optimization of time domain BEM solvers*, starting Jan 2013, advisors: O. Coulaud and G. Sylvand.

3. Astrid Casadei, *Scalabilité et robustesse numérique des solveurs hybrides pour machines massivement parallèles*, starting Oct. 2011, advisors: F. Pellegrini and P. Ramet.

4. Jean-Marie Couteyen, *Parallélisation et passage à l'échelle du code FLUSEPA*, starting Feb 2013, advisors : P. Brenner (Astrium Space Transportation) and J. Roman.

5. Yohann Dudouit, *Scalable parallel elastodynamic solver with local refinment in geophysics*, starting Oct. 2010, advisors: L. Giraud and S. Pernet (CERFACS).

6. Arnaud Etcheverry, *Toward large scale dynamic dislocation simulation on petaflop computers*, starting Oct. 2011, advisor: O. Coulaud.

7. Xavier Lacoste, *Scheduling and memory optimizations for sparse direct solver on multicore/multigpu cluster systems*, starting Jan. 2012, advisors: F. Pellegrini and P. Ramet.

8. Andra Hugo *Composabilité de codes parallèles sur plateformes hétérogènes*, starting Oct. 2011, advisors: A. Guermouche, R. Namyst and P-A. Wacrenier.

9. Alexis Praga, *Parallel atmospheric chemistry and transport model solver for massivelly platforms*, starting Oct. 2011, advisors: D. Cariolle (CERFACS) and L. Giraud.

10. Stojce Nakov, *Parallel hybrid solver for heterogenous manycores: application to geophysics*, starting Oct. 2011, advisors: E. Agullo and J. Roman.

11. Maria Predari, *Dynamic Load Balancing for Massively Parallel Coupled Codes*, starting Oct. 2013, advisors: A. Esnard and J. Roman.

12. Fabien Rozar, *Peta and exaflop algorithms for turbulence simulations of fusion plasmas*, starting Nov. 2012, advisors: Guillaume Latu (CEA Cadarache) and Jean Roman.

13. Moustapha Salli, *Design of a massively parallel version of the SN method for neutronic simulations*, starting Oct. 2012, advisors: Laurent Plagne (EDF), Pierre Ramet and Jean Roman.

14. Clément Vuchener, *Algorithmique de l'équilibrage de charge pour des couplages de codes complexes*, starting Sept. 2010, advisors: A. Esnard and J. Roman.

15. Mawussi Zounon, *Numerical resilient algorithms for exascale*, starting Oct. 2011, advisors: E. Agullo and L. Giraud.

9.2.3. Juries

PhD thesis defences

1. M. Malandain, *Simulation massivement parallèle des écoulements turbulents à faible nombre de Mach*, Institut National des Sciences Appliquées de Rouen, spécialité mécanique des fluides numériques, January 15, Referee: L. Giraud.

2. S. Fourestier, *Redistribution dynamique parallèle efficace de la charge pour les problèmes numériques de très grande taille*, Université Bordeaux I, June 20, Member: A. Esnard.

3. S. Henry, *Modèles de programmation et supports exécutifs pour architectures hétérogènes*, Université Bordeaux I, spécialité Informatique, Nov. 14, Member: L. Giraud.

HdR defences

1. C. Tadonki, High Performance Computing and Combination of Machines and Methods and Programming, Université Paris-Sud, Orsay, spécialité Informatique, May 16, Referee: L. Giraud.

9.3. Popularization

In the context of HPC-PME initiative, we started a collaboration with ALGO'TECH INFORMATIQUE and we have organised one of the first PhD-consultant action implemented by Xavier Lacoste led by Pierre Ramet. ALGO'TECH is one of the most innovative SMEs (small and medium sized enterprises) in the field of cabling embedded systems, and more broadly, automatic devices. The main target of the project is to validate the possibility to use the sparse linear solvers of our team in the area of electromagnetic simulation tools developped by ALGO'TECH.

The HIEPACS members have organized the PATC training session on Parallel Linear algebra at "Maison de la simulation" in Saclay from March 26th to March 28th. Mathieu Faverge also gave a full day lecture on dense linear algebra libraries at the PRACE Summer School at CINECA.

PHOENIX Project-Team

8. Dissemination

8.1. Scientific Animation

We have organized the following workshops:
- HCAN'13: Workshop on Assistive Technologies - http://phoenix.inria.fr/hcan13
- International Workshop on "Assistance and Service Robotics in a Human Environment", in conjunction with the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'2013) - http://www.lissi.fr/iros-ar

Charles Consel has been involved in the following events as
- Program Committee member of
  - ACM/IEEE International Conference on Software Engineering (ICSE) 2013, the New Ideas and Emerging Results (NIER Track)
  - 10th International Conference on Autonomic Computing (ICAC). ICAC 2013 will be held in conjunction with the 2013 Usenix Federated Conference Week (FCW), and will take place on June 26th-28th, 2013, in San Jose, CA.
  - ICSE 2014
- Invited speaker at
  - Yale University March 29th (DiaSuite Approach)
  - Fraunhofer Ctr. for Exp. Soft. Eng., College Park, Maryland (DiaSuite Approach)
  - MAPLS Mid-Atlantic Programming Language Seminar, University of Maryland (UMD) (DiaSuite Approach)
  - HCIL seminar, University of Maryland (UMD) (Personalizing Assisted Living)
  - University of Montreal, Université du Québec à Montréal (QaM), University of Sherbrooke (DiaSuite Approach)
  - McGill University (Design-Driven Development of Dependable Applications: A Case Study in Avionics)
  - the David Schmidt Fest, Kansas State University Sept, 2013 (DiaSuite Approach)
  - Research Institute for Geriatrics of the University of Montreal (CRIUGM) (Personalizing Assisted Living)

Charles Consel is a member of Quebec Network for Research on Aging and he participate to the project "Dépistage précoce de la démence : Utilisation novatrice des environnements intelligents pour détecter les difficultés rencontrés dans la vie quotidienne" (2013-2015).

Emilie Balland has been involved in the following events as
- Program Committee member of
  - SLE'13: 6th International Conference on Software Language Engineering
  - GPCE'13: 12th International Conference on Generative Programming: Concepts & Experiences (collocated with SPLASH'13, incl. OOPSLA'13)
  - WGP'13: 9th ACM SIGPLAN Workshop on Generic Programming (collocated with ICFP'13)
  - WASDETT'13: 4th International Workshop on Academic Software Development Tools and Techniques (collocated with ECOOP'13)
- Invited speaker at
  - ETH Zurich, Switzerland, August 2013.

David Daney has been involved in the following events as

- Organizer and Program Committee member of
    - IROS 2013 workshop on Assistance and Service Robotics in a Human Environment, IROS'13, Tokyo.
- Invited speaker at
    - National Days of Robotics Research, JNRR'13, Annecy
    - 2nd Workshop of National Expertise Center in Robotics, Evry
    - Inria Scientific Day, Rennes

D. Daney is coordinator of the Inria Project Lab Personally Assisting Living (IPL PAL) – see http://pal.inria.fr

Hélène Sauzéon has been involved in the following events as

- Reviewer for the following journals
    - Gerontology
    - BMC Geriatrics
    - Applied Psycholinguistics
    - Experimental Aging Research
    - Journal of Speech, Language, and Hearing Research
- Invited speaker at
    - Workshop – Alzheimer, Approche pluri-disciplinaire :de la recherche clinique aux avancées technologiques, Toulouse, Jan. 2013.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence : David Daney, Industrial control systems, 48h, L3, ITII, Polytech Nice, France

Master : David Daney, Medical robotics, 22h, M2, Master of Bio-Medical , Univ. Nice Sophia Antipolis France.

Master : David Daney, Mathematics of robotics, 9h, M2, IPB, Bordeaux, France.

Master : David Daney, Health Technology, 10h, M2, IPB, Bordeaux, France.

Master : Hélène Sauzéon, UE Neuroscience cognitive, 6h, M2, Master NEURASMUS, Université Bordeaux Segalen, France

Diplôme Inter-Universitaire Antilles-Guyanne, Sciences neuropsychologiques, 30h, Université de médecine de Guadeloupe, France

8.2.2. Supervision

PhD : Quentin Enard, "Développement d'applications logicielles sûres de fonctionnement: une approche dirigee par la conception", University of Bordeaux, May 6, 2013, supervised by Charles Consel

PhD : Pengfei Liu, "Intégration de politiques de sécurité dans les systèmes ubiquitaires", University of Bordeaux, January 17, 2013, supervised by Hélène Kirchner and Charles Consel

PhD : Tsounil Prashant Arvind Pala, "Approche écologique de l'évaluation de la mémoire épisodique dans le vieillissement normal et les neuropathologies", University of Bordeaux Segalen, December 18, 2013, supervised by Hélène Sauzéon and Bernard N'Kaoua

PhD in progress : Stéphanie Gatti, "Architecture en composants et qualification incrémentale", started in February 2010, supervised by Charles Consel and Emilie Balland

PhD in progress : Paul Van der Walt, "Certification d'une plateforme ouverte", started in November 2012, supervised by Charles Consel and Emilie Balland

PhD in progress : Milan Kabac, "Orchestration à grande échelle d'objets communicants", started in September 2012, supervised by Charles Consel

PhD in progress : Charles Fage, "Validation expérimentale d'un assistant numérique d'inclusion scolaire d'élèves collègiens porteurs d'autisme", started in September 2012, supervised by Hélène Sauzéon

PhD in progress : Lucile Dupuy, "DomAssist : Assistance domiciliaire pour la personne âgée et son aidant formel basée sur la technologie DiaSuiteBox", started in September 2013, supervised by Hélène Sauzéon and Charles Consel

8.2.3. *Juries*

Charles Consel has participated:

- in the thesis defense committee
    - Miruna Stoicescu, University of Toulouse, France
- in the thesis award committee of
    - Programming and Software of "Groupement de Recherche Génie de la Programmation et du Logiciel (GDR GPL)"

Emilie Balland has participated in the thesis defense committee of Jimmy Lauret, May 15, University of Toulouse, France.

David Daney has participated in the thesis defense committee of:

- Jorgé Alberto Rios Martinez, January 8, University of Grenoble, France
- Julien Alexandre Dit Sandretto, September 11, University of Nice, France
- Thibault Gayral, November 29, University of Nice, France

Hélène Sauzéon has participated in the thesis defense committee of Tsounil Prashant Arvind Pala, December 18, University of Bordeaux Segalen, France.

8.3. Popularization

Participation of the Phoenix Inria project team in the following events:

- Salon Aquitec, February 2013
- Accueil d'étudiants de terminale S option ISN, February 2013
- "Fête de la science" (national popular science event), October 2013
- Emilie Balland and Milan Kabac, Metro'Num, talk and demonstration of the HomeAssist project, September 2013
- Héléne Sauzéon, "Conférence prospective : Demain les objets sont connectés !", presentation of the HomeAssist project, 3ème Semaine digitale organized by the Bordeaux city hall, March 2013
- Hélène Sauzéon and Charles Fage, "Autisme et Numérique : Mise en place d'un assistant scolaire pour collégiens porteurs d'autisme", « Journée mondiale de sensibilisation à l'autisme » organized by Collectif Girondin des Associations Autour de l'Autisme, April 2013
- Hélène Sauzéon and Charles Fage, "Mise en place d'un assistant solaire Collège + pour les collègiens porteurs d'autisme", « Journée mondiale de sensibilisation à l'autisme » organized by Centre Ressource Autisme, CHU Poitiers, April 2013
- Hélène Sauzéon, presentation of the School+ project to Vincent Peillon, Point d'étape de l'entrée de l'École dans l'ère du numérique, Ministère de l'éducation Nationale, June 2013

<div align="center">**RUNTIME Project-Team**</div>

9. Dissemination

9.1. Scientific Animation

Raymond NAMYST is the head of the LaBRI-CNRS "SATANAS" (*Runtime systems and algorithms for high performance numerical applications*) research team (about. 50 people) that includes the BACCHUS, HIEPACS, PHOENIX and RUNTIME Inria groups.

Raymond NAMYST was chairing the scientific committee of the ANR "Numerical Models" program for the 2011-2013 period.

Raymond NAMYST serves as an expert for the following initiatives/institutions:

- ETP4HPC (http://www.etp4hpc.eu/, in 2013) ;
- CEA/DAM (as a "scientific expert" for the 2008-2012 period) ;
- ORAP (ORganisation Associative du Parallélisme, since 2013) ;
- CEA-EDF-Inria School technical committee (since 2009) ;
- GENCI (http://www.genci.fr/?lang=en, since 2009) ;

Raymond NAMYST was a program committee member of the following international conferences: SC'13, PACT 2013, ROSS 2013, ICPP 2013, CASS 2013; CCGrid 2013, PPAM 2013.

Raymond NAMYST gave invited talks at the following international conferences/workshops: SC'13 (Birds of a Feather on "Dynamic Exascale Runtime Systems"), ORAP 2013 ("Programming Heterogeneous Architectures").

Samuel THIBAULT was a program committee member of IPDPS 2014

Brice GOGLIN was a program committee member of EuroMPI 2013, Hot Interconnects 2013, HIPC 2013.

Brice GOGLIN organized the CEA-EDF-Inria summer school on Programming Heterogeneous Parallel Architectures in Cadarache (June 2013).

Guillaume MERCIER was program committee member of EuroMPI 2013.

Olivier AUMAGE was reviewer for the ACM TACO journal and for the EuroPar 2013, ICPP 2013, ROSS 2013, and IPDPS 2014 conferences and workshops. He also reviewed one project submission for the 2013 ANR MN funding call. He is part of the Inria Bordeaux – Sud-Ouest committee for scientific event fundings.

Olivier AUMAGE was an invited teacher for the European COST-funded ComplexHPC school in Uppsala, Sweden. He also was an invited speaker at the International Conquest Workshop organized by the Theoretical Chemistry and Modeling Group of the Institute for Molecular Science from the University of Bordeaux.

Emmanuel JEANNOT was program committee member for: Euro-MPI 2013, CCGRID 2013, Heteropar 2013, PPAM 2013, IPDPS 2014.

Emmanuel JEANNOT is member of the steering committee of Euro-Par and Cluster.

Emmanuel JEANNOT is associate editor of the International Journal of Parallel and Emergent Distributed Systems.

Emmanuel JEANNOT was reviewer for the following journals: JPDC, IEEE TPDS, Parallel Computing.

Emmanuel JEANNOT has given an invited talk at the JLPC in Urbana and at the ComplexHPC Spring School 2013 on "Heterogeneous computing - impact on algorithms - ".

Denis BARTHOU was program committee member for: Euro-Par 2013, IPDPS 2013, PROPER 2013, UCHPC 2013. He is part of the Inria Bordeaux – Sud-Ouest committee for Young Researchers. He is member of the Governing Board of the LaBRI and of the board of directors of the Institut Polytechnique de Bordeaux (IPB). Denis BARTHOU is scientific expert for the Exascale Computing Research Laboratory (since 2009).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Members of RUNTIME project gave thousands of hours of teaching at University of Bordeaux and ENSEIRB-MATMECA engineering schools, covering a wide range of topics from basic use of computers and C programming to advance topics such as operating systems, parallel programming and high-performance runtime systems.

9.2.2. Supervision

PhD: Sylvain HENRY, Programming Models and Runtime Systems for Heterogeneous Architectures, 2013/11, Denis BARTHOU and Alexandre DENIS

PhD: Cyril BORDAGE, Parallélisation de la méthode multipôle sur architecture hybride, 2013/11, Raymond NAMYST and David GOUDIN (CEA CESTA)

PhD: Alexandre DUCHATEAU, Automatic Algorithm Derivation and Exploration in Linear Algebra for Parallelism and Locality, 2013/03, Denis BARTHOU and David PADUA (UIUC)

PhD in progress : Bertrand PUTIGNY, Modèles de performance pour l'ordonnancement sur architectures multicoeurs hétérogènes, 2010/11, Brice GOGLIN and Denis BARTHOU

PhD in progress : François TESSIER, Placement d'applications hybrides sur machine non-uniformes multicœurs, 2011/10 Emmanuel JEANNOT and Guillaume MERCIER

PhD in progress : Paul-Antoine ARRAS, Development of a Flexible Heterogeneous System-On-Chip Platform using a mix of programmable Processing Elements and harware accelerators. 2011/10, Emmanuel JEANNOT and Samuel THIBAULT

PhD in progress: Andra HUGO, Composability of parallel codes over heterogeneous platforms, 2013/10, Abdou GUERMOUCHE and Pierre-André WACRENIER and Raymond NAMYST

PhD in progress: Corentin ROSSIGNON, Design of an object-oriented runtime system for oil reserve simulations on heterogeneous architectures, 2012/04, Olivier AUMAGE and Pascal HÉNON (TOTAL) and Raymond NAMYST and Samuel THIBAULT

PhD in progress: Emmanuelle SAILLARD, Analyse statique/dynamique/itérative pour la validation et l'amélioration des applications parallèles multi-modèles sur supercalculateur hybride de type cluster de CPUs/GPUs, 2012/10, Patrick CARRIBAULT (CEA/DAM), Denis BARTHOU

PhD in progress: Grégory VAUMOURIN, Hiérarchie mémoire hybride et gestion dynamique de données dans les architectures parallèles embarquées, 2013/10, Thomas DOMBEK (CEA/DACLE), Denis BARTHOU

PhD in progress: Soufiane BAGHDADI, Collaboration entre compilateur et support d'exécution pour les applications parallèles 2011/10, Elisabeth BRUNET (Telecom SudParis), Jean-François TRAHAY (Telecom SudParis) , Denis BARTHOU

PhD in progress: Marc SERGENT, Passage à l'échelle de moteur d'exécution à base de graphes de tâches, 2013/09, Olivier AUMAGE, David GOUDIN (CEA/CESTA), Samuel THIBAULT, Raymond NAMYST

PhD in progress: Suraj KUMAR, Stratégies d'ordonnancement dynamique pour l'algèbre linéaire dense, 2013/12, Emmanuel AGULLO, Olivier BEAUMONT, Samuel THIBAULT

PhD in progress: Pei LI, High-Performance Code Generation for Stencil Computations on Heterogeneous Multi-device Architectures, 2012/10, Raymond NAMYST, Elisabeth BRUNET (Telecom SudParis)

9.2.3. Juries

Raymond NAMYST was member of the PhD defense jury for the following candidates:
- Jean-Yves VET (University Pierre et Marie Curie Paris, reviewer)

Denis BARTHOU was member of PhD defense jury of the following candidates:

- Amira MENSI (Mines de Paris, reviewer)
- Yuryi KACHNIKOV (UVSQ, reviewer)
- Jose NOUDOHOUENOU (UVSQ, president)
- Jean-Marc GRATIEN (UJF, president)

9.3. Popularization

Brice GOGLIN is in charge of the diffusion of the scientific culture for the Inria Research Center of Bordeaux. He is also a member of the national Inria committee on Scientific Mediation. He gave numerous talks about high performance computing and research careers to general public audience and school student, as well as several radio and paper interviews about Inria's activities.

Brice GOGLIN and Bertrand PUTIGNY wrote two popularization papers about High-Performance Computing in the Interstices online journal.

Brice GOGLIN and François TESSIER presented research careers at the Aquitec student exhibition.

Paul-Antoine ARRAS, Sylvain HENRY, Bertrand PUTIGNY and François TESSIER gave a hands-on introduction to programming to 30 teenagers at the *Fete de la Science*. Brice GOGLIN was in charge of a numeric science popularization game during that same event.

Samuel THIBAULT presented his research work in a local elementary school.

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

9. Dissemination

9.1. Editorial Activities

9.1.1. Editorial boards

Pierre-Yves Oudeyer has been editor of IEEE CIS Newsletter on AMD, and Fabien Benureau has been associate editor.

Pierre-Yves Oudeyer has been of journals IEEE TAMD, International Journal of Social Robotics, and Frontiers in Neurorobotics.

PY Oudeyer is member of the IEEE CIS Technical Committee on Autonomous Mental Development. (Key instance for the organization of the IEEE ICDL conference series).

M. Lopes is member of the steering committee of the IEEE RAS TC on Robot Learning.

D. Filliat has been associate editor for the IROS 2013 conference.

9.1.2. PC committees and reviewing

- PY Oudeyer has been reviewer for journals (Proceedings of IEEE, Topics in Cognitive Science, Frontiers in Psychology,), member of conference program committees (Humanoids 2013, ICDL-Epirob 2013, IROS 2013, ICRA 2013), and reviewer and expert for several European projects of the ICT Program.

- D Filliat has been member of the evaluation committee for the ANR Apprentissages program, member of the program committee for the REACTS workshop, reviewer for the Autonomous Robots journal and reviewer for conferences (ECMR,ICRA,IROS,IV).

- Jonathan Grizou has been reviewer for ICDL-Epirob 2013 and Robotica 2013 conferences.

- Clément Moulin-Frier has been reviewer for the ICDL-Epirob 2013 conference and the IEEE Transactions on Autonomous Mental Development journal.

- Alexander Gepperth has been reviewer for IROS 2013, ITSC 2013, IJCNN 2013, for the journals Cognitive Computation, Transactions on Intelligent Transportation systems, Neuroco;puting, Neural Networks and Neural Processing Letters. He has been program committe member for IJCNN 2013.

- Freek Stulp was reviewer for journals (IEEE Transactions on Robotics, Autonomous Robots, IEEE Transactions on Autonomous Mental Development, Journal of Intelligent and Robotic Systems), conferences (International Joint Conference on Neural Networks (IJCNN), IEEE International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Robotics and Automation (ICRA), IEEE Humanoids), and member of the program committee of ICRA.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

License: Introduction à Matlab, 21 heures. L3 - ENSTA ParisTech (Alexander Gepperth)

License: Traitement numérique du signal , 21 heures. L3 - ENSTA ParisTech (Alexander Gepperth)

Master: Apprentissage Autonomme, 6 heurs. M2, ENSEIRB - Bordeaux (Pierre-Yves Oudeyer).

Master: Apprentissage Autonomme, 6 heurs. M2, ENSEIRB - Bordeaux (Manuel Lopes).

Master: Robotique de Compagnie, 6 heurs. M2, ENSTA - Paris Tech (Manuel Lopes).

Master: Robotique Mobile, 24 heures. M2, ENSTA - ParisTech (David Filliat).

Master: Vision pour la robotique, 12 heures. M2, University Pierre et Marie Curie (David Filliat).

License: Introduction to Matlab, 21 heures. L3, ENSTA - ParisTech (David Filliat).

Licence 2: Graphe, Langage, Cryptologie, 21 heures. Pole Universitaire Francais de Ho Chi Minh Ville

Master: Option Robotique, Projet Robot Autonome, 32 heures. ENSEIRB, Bordeaux, France.

Licence: Mathématique, 20 heures, niveau (L1), Université de Bordeaux (Olivier Mangin)

Licence: Infomatique, Introduction à la robotique, 30 heures, niveau (L3), Université de Bordeaux (Olivier Mangin et Fabien Bénureau)

9.2.2. *Supervision*

PhD finished: Mai Nguyen, Bootstrapping Intrinsically Motivated Learning with Human Demonstration, defended nov. 2013 (superv. Pierre-Yves Oudeyer).

PhD finished: Thomas Cederborg, A unified view of context-dependant skill learning and language acquisition, defended dec. 2013 (superv. Pierre-Yves Oudeyer).

PhD finished: Natalia Lyubova, A developmental approach to perception for a humanoid robot [23], defended october 30th, 2013 (superv. David Filliat).

PhD in progress: Louis-Charles Caron, Developmental learning in multimodal sensory-motor loops, started january 2012 (superv. Alexander Gepperth).

PhD in progress: Guillaume Duceux, Navigation and exploration based on RGB-D cameras, started october 2011 (superv. David Filliat).

PhD in progress: Alexandre Armand, Contextual electronic copilot for driving assistance, started feb. 2011 (superv. David Filliat)

PhD in progress: Matthieu Lapeyre, Developmental constraints for biped humanoid walking, started oct. 2010 (superv. Pierre-Yves Oudeyer and Olivier Ly).

PhD in progress: Fabien Benureau, Cumulative, hierarchical and intrinsically motivated learning of robot skills, started oct. 2010 (superv. Pierre-Yves Oudeyer).

PhD in progress: Jonathan Grizou, Fluid simultaneous learning of task and feedback models, started oct. 2011 (superv. Manuel Lopes and Pierre-Yves Oudeyer).

PhD in progress: Olivier Mangin, Learning of sensorimotor primitives with Non-Negative Matrix Factorization, started oct. 2010 (superv. Pierre-Yves Oudeyer).

PhD in progress: Ievgen Perederieiev, Adaptive task execution for implicit human-robot coordination, started oct. 2012 (superv. Manuel Lopes).

PhD in progress: Thibaut Munzer, Learning from Instruction, started oct. 2013 (superv. Manuel Lopes).

PhD in progress: Yuxin Chen, Interactive learning of objects and names on a humanoid robot, started oct. 2013 (superv. David Filliat).

9.2.3. *Juries*

Edouard Klein (Manuel Lopes, 2013, examinateur) Contributions à l'apprentissage par renforcement inverse, supervised by Yann Guermeur and Matthieu Geist, Université de Lorraine, France

Pedro Sequeira (Manuel Lopes, 2013, examinateur) Socio-Emotional Reward Design for Intrinsically Motivated Learning Agents, supervised by Ana Paiva and Francisco Melo, Instituto Superior Técnico, Portugal

Hemanth Korrapati (03/07/13, David Filliat, Examinateur) : Loop Closure for Topological Mapping and Navigation with Omnidirectional Images. Université Blaise Pascal - Clermont-Ferrand II, Youcef Mezouar (Dir.)

Cédric Meyer (14/06/13, David Filliat, Examinateur) : Théorie de vision dynamique et application à la robotique mobile. Université Pierre et Marie Curie, Ryad Benosman (Dir.)

Srikrishna Bhat (22/01/13, David Filliat, Rapporteur) : Visual words for pose computation. Université de Lorraine (22/01/2013), Marie-Odile Berger (Dir.)

Beata Gryzb (04/13, PY Oudeyer, Rapporteur): Grounding spatial awareness in sensorimotor representations: an interdisciplinary approach, Univ. Madrid, Spain

Xavier Hinault (01/12, PY Oudeyer, Rapporteur): Réseau de neurones récurrent pour le traitement de séquences abstraites et de structures grammaticales, avec une application aux interactions homme-robot, Univ. Lyon 1, France.

Antoine de Rengervé (12/13, PY Oudeyer, Rapporteur): Apprentissage interactif en robotique autonome : vers de nouveaux types d'IHM, Univ. Cergy Pontoise.

Michael Garcia Ortiz (7/2013, A.Gepperth, Rapporteur): Driver behavior prediction, Univ. de Bielefeld (Allemagne)

Sarra Jlassi (28/11/13, Freek Stulp, Examinateur) : Formulation et Etude des Problemes de Commande en Co-manipulation Robotique. Laboratoire des Signaux et Systemes, Supelec (Dir. Yacine Chitour)

9.3. Popularization and Outreach

9.3.1. *Popular Science Publications*

Pierre-Yves Oudeyer published a popular science book entitled "Aux sources de la parole" at Odile Jacob, http://www.pyoudeyer.com/AuxSourcesDeLaParole.htm

9.3.2. *Popular Science Radio Broadcast*

PY Oudeyer participated to several popular science radio broadcast:

France Culture (28th october 2013), La parole et l'ordinateur, Interview avec Stéphane Delogeorges, émission Continent Sciences. http://www.franceculture.fr/emission-continent-sciences-la-parole-et-l-ordinateur-2013-10-28

France Inter (27 octobre) Le langage: une auto-organisation ? Interview avec Stéphane Paoli, émission 3D, le journal. http://www.franceinter.fr/emission-3d-le-journal-ou-va-lhumanite-et-langage-une-auto-organisation

RFI (Sept. 2013) Comment s'invente le langage ? (Interview 55 mn), Emission "Autour de la question" de Caroline Lachowsky.http://www.rfi.fr/emission/20130909-1-comment-s-invente-le-langage

9.3.3. *Popular Science Talks*

Musée des Arts et Métiers (7 nov. 2013) Aux sources de la parole, Parole d'auteurs, rencontre avec PY Oudeyer animée par Daniel Fiévet (France Inter).

9.3.4. *Museum Exhibitions, Science Festivals and Public Demonstrations*

9.3.4.1. Educatec-Educatice

Kidlearn have been presented on Educatec-Educatice exhibition the 20,21 and 22 November 2013. This exhibition was held in Paris and grouped together 220 education professional and more than 12000 visitors. It was an opportunity to present Kidlearn project and create contact for potential partnership.

9.3.4.2. Cap Sciences exhibition on "Brain and Cognition"

Cap Sciences is an organization in Bordeaux to promote and to communicate about science to the public. Cap Sciences is preparing an exhibit about the brain starting in February 2013. The Flowers team will contribute to this exposition by setting up a booth to explain the complexity of the processing required for intelligent artificial systems (e.g. robots) to transform observations from the environment to actions done in this environment, such processing being done continuously by all living beings, most notably by nervous systems and brains. To explain this idea, the Flowers team is working on a game for the visitors of the exhibit: a player has to drive forward a mobile robot, specifically an iRobot Roomba, while avoiding obstacles. The difficulty for the visitor in this game is that the player is not able to watch the robot in its environment: the player has to control it using only the sensory-information displayed on a computer screen. The player wins when the robot has traveled a given distance in a straight line and in limited time without bumping into an obstacle. This exhibit will start in February 2013 and last for a year. After that, it may move to different locations. More than 100,000 visitors are expected in Cap Sciences, half of them will come from elementary schools. The data generated by the robot and the visitors will be logged and will be available for research on life long learning with robots.

9.3.4.3. NOVAQT

Poppy and Kidlearn have been presented in the NOVAQT exhibition the 5, 6 and 7 December 2013. This exhibition was held in Bordeaux and brought together a selection of 108 innovations created in the region Aquitaine. It was a chance to present our research to 3 different public: industry, education and general public. Feedbacks were very enthusiastic and we have found several potential collaborations with local actors.

9.3.4.4. Fète de la science

On october 13th, the team organised robotics demonstrations for the "Fete de la science" in ENSTA ParisTech. We demontrated physical human-robot interaction using the Meka robot, object segmentation and recognition through a Kinect camera and navigation and mapping with a Pioneer robot. Around 300 people participated in the event.

9.3.5. Education towards the younger

The team also initiated the development of educational activities in "écoles primaires" et "collèges" to have kids discover robotics and programming, as well as ran experiments in "école primaires" in Aquitaine to test novel educational software to help children learn mathematics, and developped within the KidLearn ADT project. This was achieved thanks to the arrival of Didier Roy, former math teacher in college, in the team. Our mediation of robotics activities aim primarily at students, teachers and schools. We focused on three approaches :

- A website, consisting of video presentation of researchers Flowers team, news related to robotics , questions / answers, ready activities for teachers for their students , a directory of links, videos, and pages for "robotics in schools stories " where teachers and students come to post texts, photos and videos to show what happens in robotics in their establishments. A forum is available for researchers to ask questions. We also test robotic kits to be able to provide advices on choices.

- Direct support of schools . For example, we went to Nevers in high school Follereau present what robotics is, interact with students, discuss robotic upcoming events in their school. We subsequently asked to provide technical assistance in the context of robotic operations in the school. We offer activities and we provide technical and educational advice. We move, if needed, in schools or propose meetings by videoconference .

- We formed a working group of a dozen people, most of whom are teachers in primary and secondary and special education (training for disabled adults returning to education) . This group meets regularly to discuss activities, share experiences within schools and consider a robotic curriculum from primary to the end of schooling.

We also participated in Educatec- Educatice event in Paris where education professionals told great interest in robotic activities in education. We participated in the symposium Didacstic didapro in Clermont -Ferrand, about mediation of digital sciences . We worked with cluster Aquitaine Robotics to develop a reflection on the teaching of robotics.

9.3.6. Press, TV and Web coverage

https://flowers.inria.fr/press/

MANAO Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Conference organization

PRISM2 workshop: second workshop of the PRISM network (6 invited speakers, 42 attendees, 3 days).

IHM 2013 workshop: 25th francophone conference on human-computer interaction (125 attendees, 3 days).

INM 2013 workshop: Imaging New Modalities (in conjunction with German Conference on Pattern Recognition GCPR: 200 attendees, 3 days - workshop 1 day).

8.1.2. Program committee

Conferences: International Conference on Computer Vision (ICCV) 2013, Computer Vision and Pattern Recognition (CVPR) 2013, Eurographics (EG) 2014, Siggraph Asia Posters & Technical Briefs 2013, Interneational Conference on Computational Photography (ICCP) 2013, British Machine Vision Conference (BMVC) 2013, International Conference on 3D Vision (3DV) 2013, High Performance Graphics (HPG) 2013, Workshop on Computational Cameras and Displays (CCD), Pacific Graphics (PG) 2013, Eurographics Symposium on Rendering (EGSR) 2013, Web3D 2013, International Conference in Central Europe on Computer Graphics, Visualization, and Computer Vision (WSCG) 2013

8.1.3. Reviews

The members of *MANAO* have also participated to the reviewing process for conferences and journals:

Journals: ACM Transaction on Graphics (TOG), Computer Graphics Forum (CGF), International Journal of Computer Vision (IJCV), Transactions on Pattern Recognition and Machine Intelligence (PAMI), Applied Optics (AO), Computer and Graphics (C&G), The Visual Computer (VC), Signal Image and Video Processing, ACM Journal of Computing and Cultural Heritage, Image & Vision Computing

Conferences: ACM Siggraph 2013, ACM Siggraph Asia 2013, Eurographics 2014, Eurographics Symposium on Rendering 2013, Graphics interface (GI) 2013, CGI 2013, Web3D 2013.

Grant Proposals: NSERC (Canada)

8.1.4. Committees

In 2013, the members of *MANAO* have been involved in the following responsibilities:

Inria - Evaluation committee member - Gaël Guennebaud.

Inria Bordeaux - commission for technological development (CDT) - Gaël Guennebaud.

AFIG 2013 - Best paper jury - Gaël Guennebaud.

IHM 2013 - Demo chair - Patrick Reuter.

8.1.5. Invited Talks

Talk "The archeologist of the future" at TedX Basque Country, June, Bidart, France.

Keynote Talk "Computational Optical Measurement and Display" at Journée Imagerie Optique Non-Conventionelle, Paris

Invited Talk "Computational Optical Measurement and Display" at SPIE student chapter University of Rochester

Invited Talk "A Reconfigerable Camera Add-On for HDR, Multi-Spectral, Polarization, and Light-Field Imaging" at University of British Columbia

Invited Talk "Computational Optical Measurement and Display" at Schloss Dagstuhl, Germany

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

The members of our team are involved in teaching computer science at University Bordeaux I and II, ENSEIRB Engineering School, and Institut d'Optique Graduate School (IOGS). General computer science is concerned, as well as the following graphics related topics:

Master : Pierre Bénard and Romain Pacanowski, Photorealistic and Expressive Image Synthesis, 60 HETD, M2, Univ. Bdx I, France.

Master : Xavier Granier, Numerical Techniques, 45 HETD, M1, IOGS, France

Master : Xavier Granier, Image Synthesis, 14 HETD, M2, IOGS, France

Master : Xavier Granier, Romain Pacanowski and Boris Raymond, Algorithmic and Object Programming, 60 HETD, M1, IOGS, France

Master : Xavier Granier and Romain Pacanowski, Radiometry and Colorimetry, 15 HETD, M1, IOGS, France

Master : Gaël Guennebaud and Simon Boyé, High-performance 3D Graphics, 60 HETD, M1, Univ. Bdx I, France.

Master : Pascal Guitton and Pierre Bénard, Virtual Reality, 60 HETD, M2, Univ. Bdx I, France.

Master : Ivo Ihrke, Computational Optical Imaging, 20 HETD, M1, IOGS, France

Master : Christophe Schlick, Martin Hachet, Pierre Bénard and Jeremy Laviole, Image Synthesis and Virtual Reality, 60 HETD, M2, ENSEIRB, France

Licence : Patrick Reuter, Digital Imaging, 36 HETD, L3, Univ. Bdx 2, France.

Some members are also in charge of some fields of study:

Master : Xavier Granier, Optics and Computer Science, M1/M2 , IOGS, France.

License : Patrick Reuter, Science and Modeling, L2, Univ. Bdx II, France.

8.2.2. Supervision

PhD : Cyprien Buron, Interactive Generation and Rendering of Massice Models: a Parallel Procedural Approach, Univ. Bordeaux, 4th of February 2014, Jean-Eudes Marie & Gaël Guennebaud & Xavier Granier

PhD : Heqi Lu, Importance Sampling of Realistic Light Sources, Univ. Bordeaux, 27th of February 2014, Xavier Granier & Romain Pacanowski

PhD : Alkhazur Manakov, Calibration and Characterization of Advanced Image-Based Measurement Systems, Saarland University, Ivo Ihrke

PhD : Boris Raymond, Rendering and manipulation of anisotropic materials , Univ. Bordeaux, Pascal Barla & Gaël Guennebaud & Xavier Granier

PhD : Ilya Reshetouski, Mirror Systems for Extended View Point Coverage, Saarland University, Ivo Ihrke

PhD : John Restrepo, Plenoptic Imaging and Computational Image Quality Metrics, Univ. Bordeaux, Ivo Ihrke

PhD : Brett Ridel, Interactive spatial augmented reality, Univ. Bordeaux, Patrick Reuter & Xavier Granier

PhD : Carlos Zubiaga Pena, Image-space editing of appearance , Univ. Bordeaux, Pascal Barla & Xavier Granier

8.2.3. Juries

PhD : Jean-Patrick Roccia [87], 24th of May, Toulouse, France.

PhD : Adrien Bernhardt [36], 3th of July, Grenoble, France.

PhD : Suman-Kumar Maji [71], 12th of November, Bordeaux, France.

PhD : Violaine Todoroff, 9th of December, Toulouse, France.

8.3. Popularization

8.3.1. Exhibitions

Organization of the Inria's booth at Siggraph 2013, Anaheim, US.

Participation at the temporary exhibition "Eternal Egypt" at the Museum "Allard Pierson" in Amsterdam, The Netherlands, with the interactive spatial augmented reality setup "The Revealing Flashlight" [26].

Participation at the temporary exhibition "Du Nil à Alexandrie. Histoires d'eaux" at the Museum "Mariemont" near Bruxelles, Belgium with the 1/5 scale reproduced reassembled Isis statue within the ANR SeARCH project.

8.3.2. Tutorials and Workshops

Tutorial on the Eigen library at Cg-libs, Italian Eurographics chapter, June, Pisa, Italy.

Tutorial at Eurographics 2013, Girona, Spain

Tutorial at German Conference on Pattern Recognition 2013, Saarbrücken, Germany

Workshop at the Nodem 2013 conference: "Interactive exhibitions with 3D content: Virtual Museums - Workshop", December, Stockholm, Sweden.

8.3.3. Miscellaneous

Organization of Miniforum 3D - a meeting between students, researchers, and local industry

<p align="center">**POTIOC Team**</p>

8. Dissemination

8.1. Scientific Animation

- Editoring : ACM Journal of Computer and Cultural Heritage - Special issue on "Interacting with the Past" (M. Hachet)
- Conference organization (all Potioc team) and general chairing (M. Hachet): IHM 2013
- Workshop organization: "affective Brain-Computer Interface (aBCI) workshop" at ACII, 2013 (C. Mühl)
- Workshop organization: "Brain-Computer Interface workshop in Bordeaux", co-organized with the g.tec R&D company, March 2013 (F. Lotte)
- Workshop organization: "Teachning the BCI skill: feedback and human training approaches", International BCI meeting 2013, Asilomar, CA, USA, co-organized with R. Scherer (TU Graz) and A. Lécuyer (Inria Rennes), June 2013 (F. Lotte)
- Steering committee : IEEE 3DUI (M. Hachet)
- Program committees : IEE VR 2013 (M. Hachet), ISIS3D (M. Hachet), Web3D 2013 (J. Jankowski), aBCI workshop @ ACII 2013 (C. Mühl, F. Lotte), ACII 2013 (F. Lotte), PRNI 2013 (F. Lotte), IEEE SSCI-CCMB 2013 (F. Lotte)
- Reviewing for conferences: ACM CHI 2013 (M. Hachet, F. Lotte), ACM CHI 2014 (M. Hachet, F. Lotte, J. Jankowski, C. Mühl, J. Laviole), ACM UIST 2013 (M. Hachet, J. Laviole), INTERACT 2013 (J. Jankowski, F. Lotte), Web3D 2013 (J. Jankowski), SUI 2013 (J. Jankowski), MobileHCI 2013 (J. Jankowski), CSCW 2014 (J. Jankowski), 3DUI 2014 (J. Jankowski, J. Laviole), ISMAR 2013 (J. Laviole), ITS 2013 (R. Gervais), PG 2013 (R. Gervais), ACII 2013 (F. Lotte), aBCI Workshop @ ACII 2013 (J. Frey, C. Mühl, F. Lotte), IHM 2013 (F. Lotte), PRNI 2013 (F. Lotte), IEEE SSCI-CCMB 2013 (F. Lotte)
- Reviewing for journals: ACM Journal on Computing and Cultural Heritage (J. Jankowski, R. Gervais, J. Frey), GeoInformatica (J. Jankowski), Technique et Science Informatique (TSI) (R. Gervais), IEEE Transactions on Affective Computing (C. Mühl), Brain-Computer Interfaces (F. Lotte), Frontiers in Neuroprosthetics (F. Lotte), IEEE Transactions on Biomedical Engineering (F. Lotte), IEEE Transactions on Human Machine Systems (F. Lotte), International Journal of Neural Systems (F. Lotte), Journal of Neural Engineering (F. Lotte), NeuroImage (F. Lotte), Presence (F. Lotte), IEEE Reviews in Biomedical Engineering (F. Lotte)
- Reviewing for book chapters: Handbook of Affective Computing @Oxford (C. Mühl)
- ANR : Revue de programme CONTINT 2013 (M. Hachet)

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Teaching at University of Bordeaux I:

- Master: Jérémy Laviole, Réalité Virtuelle immersive, Projet Étude et Développement, Master 2, University of Bordeaux I, France
- Bachelor: Jérémy Frey, supervision of 3 programming projects during "semestre rebondir", 30h, 1st year, University of Bordeaux 1, France
- Bachelor: Jérémy Frey, réseau et projet de programmation 2, 35h, 3rd year, University of Bordeaux 1, France

Teaching at University of Bordeaux II:

- Master: Martin Hachet, Réalité Virtuelle, 24h eqtd, M2 Sciences Cognitives, Université Bordeaux Segalen, France
- Master: Fabien Lotte, Réalité Virtuelle, 12h eqtd, M2 Sciences Cognitives, Université Bordeaux Segalen, France
- Bachelor: Camille Jeunet, Knowledge and Representations, 18h, 3rd Year, Cognitive Sciences, Université Bordeaux Segalen, France

Teaching at Enseirb-Matmeca:

- Master: Martin Hachet, Réalité Virtuelle, 12h eqtd, 3rd Year, Enseirb-Matmeca, IPB, France
- Master: Fabien Lotte, Réalité Virtuelle, 2h eqtd, 3rd Year, Enseirb-Matmeca, IPB, France
- Master: Jérémy Laviole, Virtual Reality, 9h, 3rd Year, Enseirb-Matmeca, France
- Master: Jérémy Laviole, Object Tracking Project, 8h, 3rd Year, Enseirb-Matmeca, France
- Bachelor: Renaud Gervais, Medias numeriques, 4h, Enseirb-Matmeca, France

Other teaching activities:

- Master: Jérémy Laviole, Augmented Reality Course + TP, 16h, 3rd Year, ENJMIN, France

8.2.2. *Supervision*

- PhD: Jérémy Laviole, "Interaction en Réalité Augmentée Spatiale pour le Dessin Physique", Université Bordeaux 1, Defended December 5th, 2013, Martin Hachet
- PhD in progress: Renaud Gervais, "Organic User Interfaces", started December 1st, 2012, Martin Hachet
- PhD in progress: Jérémy Frey, "Assesing 3DUI with passive Brain-Computer Interfaces", started October 1st, 2012, Fabien Lotte and Martin Hachet
- PhD in progress: Camille Jeunet, "Human Learning for Brain-Computer Interfaces", started October 1st, 2013, Fabien Lotte, Martin Hachet, Bernard N'kaoua and Sriram Subramanian.
- Master 2: Camille Jeunet, Master 2 from University of Bordeaux 2, affective BCI, February-June 2013 (C. Mühl, F. Lotte)
- Engineer (Master 2): Pierre-Marie Plans, Enseirb-Matmeca 3rd year, Collaborative virtual reality, February-June 2013 (M. Hachet)
- Master 1: Leonard Pommereau, Master 1 from University of Bordeaux 2, EEG and stereoscopy, April-June 2013 (F. Lotte, M. Hachet)

8.2.3. *Juries*

- PhD Jury: Prashant Arvind-Pala, Université Bordeaux Segalen, 18 Dec. 2013 (M. Hachet)
- PhD Jury: Javier Mauricio Antelis, University of Zaragoza, Spain, June 2013 (F. Lotte)
- PhD Jury: Mohit Kumar Goel, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, June 2013 (F. Lotte)
- PhD Jury for half-PhD (after 1.5 year of PhD work): Raphaelle N. Roy, CEA-Leti/Gipsa-Lab, Grenoble, France (F. Lotte)
- External PhD Review: Adam Westerski - Universidad Politecnica de Madrid (J. Jankowski)

8.3. Popularization

The members of Potioc have published several popularization articles targeted to the general public:

- "Quand la réalité virtuelle rencontre les surfaces tactiles" (http://interstices.info/toucheo), Interstices [24] (M. Hachet)
- "Arrêtez de regarder la 3D, prenez-en le contrôle !" (http://www.inriality.fr/informatique/interaction-homme-machine/3d/arretez-de-regarder-la/), Inriality [23] (M. Hachet)
- "Grâce au numérique, on peut lire dans les pensées" (https://interstices.info/jcms/nn_73094/grace-au-numerique-on-peut-lire-dans-les-pensees), Interstices : Idée reçue [26] (F. Lotte)
- " Interaction Hommes-Machines : une histoire de 30 ans" (http://www.inriality.fr/informatique/interface-homme-machine/inria/interaction-hommes-machines-une/), Inriality [25] (M. Hachet)

They gave the following popularization talks:

- "L'activité cérébrale pilote directement l'ordinateur : présentation de l'interface cerveau-ordinateur (Brain-Computer interface)", conference "Demain les objets sont connectés !", event "Semaine Digitale 2013" in Bordeaux (J. Frey)
- Talk introducing BCI and follow-up debate around augmented human, conference "L'homme « augmenté » : notre avenir est-il « cyborg » ?", event "Nancy Renaissance 2013" in Nancy (J. Frey)
- "Utiliser son cerveau pour contrôler une machine", Cité des sciences, Paris (F. Lotte)
- "Le cerveau au commandes", conference as part of the "Cervorama" exhibition, Cap-Sciences, Bordeaux (F. Lotte)
- "Interfaces Cerveau-Ordinateur et Homme Augmenté", conférence "Neurotechnologies: vers un homme augmenté?", Bordeaux (F. Lotte)

They also demonstrated their work to the general public during various events:

- Portes ouvertes Université Bordeaux1, demonstrations de PapARt (J. Laviole)
- Cap Sciences - expo permanente, PapARt - development (J. Laviole)
- Cap Sciences - Évènement IHM 2013, demonstration de PapARt (J. Laviole)
- BCI demo for highschool students following "informatique et sciences du numérique" courses (J. Frey, A. Cellard, F. Lotte)
- BCI demo for the general public during "La nuit des chercheurs" in Talence (F. Lotte, A. Cellard)

Finally, they also participated to the following events

- Aquitec 2013, for promoting research jobs (J. Frey)
- Film-debate, "ExistenZ : faut-il avoir peur de la réalité virtuelle ?", University of Bordeaux 1 (J. Frey)
- Interview for a highschool class for their video project on science (A. Cellard)
- Participation to "visages des sciences 2013" (postcard and video interview) (A. Cellard)
- Interview (video and paper) for the SoNews online journal (local Inria Bordeaux newspaper) (A. Cellard)