

Elisa SCHENONE

Italian, 10/06/1986

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Scholar: <https://scholar.google.lu/citations?user=9mpzXpUAAAAJ&hl=en>

CURRENT POSITION

- Since February 2015**
- **Post-doctoral researcher** at University of Luxembourg
Subject: application of reduced order methods to elastic and hyperelastic materials.
Supervisors: Stéphane Bordas and Lars Beex.

SCIENTIFIC INTERESTS

- Cardiac electrophysiology, inverse problems, parameter identification, reduced order models, Reduced Basis, Proper Orthogonal Decomposition, Empirical Interpolation Method, approximated Lax pairs.

EDUCATION

- Oct. 2011 - Nov. 2014**
- **PhD in APPLIED MATHEMATICS**
UPMC and Inria, Paris (France)
Supervisors: Jean-Frédéric Gerbeau (REO team, Inria Paris - Rocquencourt) and Muriel Boulakia (Jacques-Louis Lions Laboratory - UPMC).
Thesis: Reduced order models, forward and inverse problems in cardiac electrophysiology.
Theses defended on the 28th of November 2014 (mention *très honorable*).
<https://tel.archives-ouvertes.fr/tel-01092945>
- Feb. 2009 - July 2011**
- **Master of Science in MATHEMATICAL ENGINEERING**
Politecnico di Milano
Majoring in Scientific Computing: Partial Differential Equations, Numerical analysis of PDEs, Programming, Fluid dynamics.
– **Research Internship in REO team at Inria Paris-Rocquencourt**
Supervisors: Jean-Frédéric Gerbeau and Muriel Boulakia.
Project: Reduced models and inverse problems in cardiac electrophysiology.
– **Erasmus Program - Université Pierre et Marie Curie, Paris**
Fall semester 2010-2011 at *Paris VI* University.
- Oct. 2005 - Feb. 2009**
- **Bachelor of Science in MATHEMATICAL ENGINEERING**
Politecnico di Milano
Final project: Numerical approximation of scalar conservation laws with discontinuous finite elements, Advisor: Paolo Zunino

PUBLICATIONS

Articles in preparation

- E. Schenone, L. Beex, J.S. Hale, S. Bordas
Proper Orthogonal Decomposition with reduced integration method. Application to nonlinear problems.
- J.-F. Gerbeau, D. Lombardi, E. Schenone
Approximated Lax Pairs and Empirical Interpolation for nonlinear parabolic partial differential equations.
- J.-F. Gerbeau, D. Lombardi, E. Schenone
On the source detection inverse problem in MEA technology.
- N. Tarabelloni, E. Schenone, A. Collin, F. Ieva, A.M. Paganoni, J.-F. Gerbeau
Statistical assessment and calibration of ECG models.

Submitted papers

- M. Boulakia, E. Schenone
Theoretical study of the estimate of some ionic model parameters.
Submitted in peer-reviewed journal, August 2015.

Articles in peer-reviewed journals

- E. Schenone, A. Collin, J.-F. Gerbeau
Numerical simulation of electrocardiograms for full cardiac cycles in healthy and pathological conditions
International Journal for Numerical Methods in Biomedical Engineering.
Article published online: 17 Sept. 2015
DOI: 10.1002/cnm.2744
- J.-F. Gerbeau, D. Lombardi, E. Schenone
Reduced Order Model in Cardiac Electrophysiology with Approximated Lax Pairs
Advances in Computational Mathematics, special issue on "Model Reduction of Parametrized Systems", Pages 1-28, 2014
DOI: 10.1007/s10444-014-9393-9
- E. Schenone, S. Veys, C. Prud'Homme
High Performance Computing for the Reduced Basis Method. Application to Natural Convection
ESAIM: Proceedings 43(2013), Pages 255-273.
DOI: 10.1051/proc/201343016
- M. Boulakia, E. Schenone, J.-F. Gerbeau
Reduced-order modeling for cardiac electrophysiology. Application to parameter identification
International Journal for Numerical Methods in Biomedical Engineering.
Volume 28, Issue 6-7, Pages 727-744, 2012.
DOI: 10.1002/cnm.2465

CONFERENCES AND COMMUNICATIONS

Conferences

- 4th International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease. Paris (France), May 2014
Poster session: *Numerical simulations of full cycle electrocardiograms* (with A. Collin).
- Mini Symposium Cardiovascular Biomechanics, APCOM&ISCM2013
Singapour, December 2013
Reduced-order methods in cardiac electrophysiology. Application to long-time simulation and parameters identification.
- V International Symposium on Modelling Of Physiological Flows – MPF2013
Chia Laguna, Sardinia Island (Italy), June 2013
Reduced-order methods in cardiac electrophysiology. Application to long-time simulation and parameters identification.
- 41e Congrès National d'Analyse Numérique - CANUM12
Superbesse (France), May 2012
Poster session: *Reduced-order modeling in cardiac electrophysiology.*

Seminars

- “Modélisation numérique et Images” Seminar of MAP5 Laboratory, Paris Descartes University. Paris (France), October 2015 (invited)
Reduced order models, forward and invers problems in cardiac electrophysiology
- Research Unit in Engineering Science Seminar. Luxembourg, March 2015
Reduced order methods.
- Inria-Rocquencourt Junion Seminar. Paris (France), June 2014
Reduced Order Models in Cardiac Electrophysiology.
- PhD students working group of Jacques-Louis Lions Laboratory of UPMC. Paris (France), March 2014
Reduced Order Model in Cardiac Electrophysiology with Approximated Lax Pairs.
- 2nd Feel++ Users Days. Strasbourg (France), January 2013
Reduced Basis Method. Application to Natural Convection Problem.

SUMMER SCHOOLS

- CEMRACS 2012. Luminy, Marseille (France), July - August 2012
17th ”Centre d’Été Mathématique de Recherche Avancée en Calcul Scientifique”. A one week summer school on Scientific Computing joints with a five week research session.
Summer school subject: Numerical Methods and Algorithms for High Performance Computing
Research session subject: High Performance Computing for the Reduced Basis Method applied to Natural Convection
Collaborations with Christophe Prud’Homme et Stéphane Veys.

COMPUTER SKILLS

- Scientific Softwares**
- Matlab, Freefem++, Scilab, 3-matic, Gmsh, R, AMLP.
- Programming**
- C/C++, Python.
- Libraries**
- PETSc, SLEPc, MPI, petsc4py, slepc4py.
- FE code development**
- FELiScE - <http://felisce.gforge.inria.fr/>
- FE code user**
- FEEL++ - <http://www.feelpp.org>
 - FEniCS - <http://fenicsproject.org>

LANGUAGES

- **Italian** Mother tongue
- **English** Fluent - TOEFL Certificate, EAS Milano, August 2008
- **French** Fluent

TEACHING EXPERIENCES

- 2013-2014**
- Practical classes, L2 - Scilab (36 hours), UPMC - Paris
- 2012-2013**
- Tutorial classes, L1 - Algebra 1 - Vectorial calculus (72 hours), UPMC - Paris
 - Practical classes, L3 - Numerical matrices calculus (24 hours), UPMC - Paris

ADMINISTRATION ACTIVITIES AND COMUNITY RESPONSABILITIES

- Sept. 2012 - July 2014**
- **Responsibilities at Inria:** co-organiser of Inria-Rocquencourt Junior Seminar, monthly seminar held in English by young Inria researchers.
<https://www.rocq.inria.fr/sem/doc/>
- March 2012**
- **Responsibilities in REO team:** realisation of team web-page, in collaboration with Justine Fouchet-Incaux.
<https://team.inria.fr/reo/>
- January - July 2010**
- **Popular Science:** worked as scientific guide for Museo Nazionale della Scienza e della Tecnologia “Leonardo da Vinci” (Milano) at Leonardesque models and rail and water transports departments.
<http://www.museoscienza.org>
- Jan. 2009 - July 2010**
- **Association work:** cofounder and vice-president of Associazione Ingegneri Matematici (AIM), a student association that looks forward to create a network between students, alumni and companies.
<http://www.aim-mate.it>