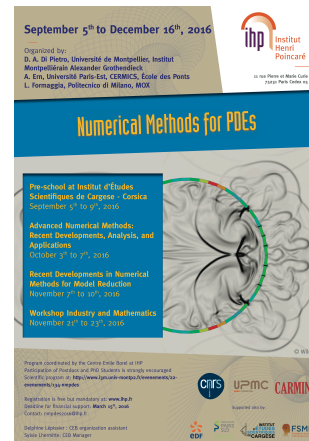


«Numerical methods for PDEs»  
Paris, September 5<sup>th</sup> – December 16<sup>th</sup>, 2016

(ME4) Workshop: Industry and mathematics  
Paris, November 21<sup>st</sup> – 23<sup>th</sup>, 2016

**Amphitheater Hermite**



**The thematic quarter organizers :** **Daniele Di Pietro** (University of Montpellier), **Alexandre Ern** (Université Paris-Est), **Luca Formaggia** (Politecnico di Milano)

**Invited speakers :** **Grégoire Allaire** (Ecole Polytechnique), **Christophe Baehr** (Météo France), **Martin Ferrand** (EDF R&D, MFEE), **Sylvie Granet** (EDF, LAMSID), **Roland Masson** (Université Nice Sophia Antipolis), **Aurelio Mauri** (Politecnico di Milano), **Edie Miglio** (MOX), **Laurent Monasse** (ENPC), **Franck Nicoud** (University of Montpellier), **Nicola Parolini** (Politecnico di Milano), **Christophe Prud'homme** (Cemosis, Université de Strasbourg, Alsace) **Chiara Riccobene** (MOXOFF), **Pierre Saramito** (CNRS, LJK Grenoble), **Paolo Ruffo** (ENI), **Pierre Sochala** (BRGM)

**Contributed presentation :** **Amina Benaceur** (CERMICS), **Michele Botti** (University of Montpellier), **Sônia Maria Gomes** (Universidade de Campinas), **Edoardo Lombardi** (INRIA), **Angel Ramirez Gutierrez** (Instituto de Matematica y Ciencias Afines, Lima - Peru), **Rita Riedlbeck** (University of Montpellier/EDF), **Anna Scotti** (Politecnico di Milano), **Nicole Spillane** (CMAP Polytechnique), **Roberta Tittarelli** (Université de Montpellier, IMAG),

**Rencontres Math-Industrie day Speakers :**

**Christophe Berton** (Lebesgue), **Christophe Chalons** and **Laurent Dumas** (IMPOSE), **Stéphane Cordier** (AMIES), **Luca Formaggia** (MOXOFF), **Emmanuel Frenod** (see-d), **Emmanuel Maitre** (MaiMoSiNE), **Massimiliano Martinelli** (Sportello Matematico per l'Industria Italiana), **Christophe Prud'homme** (CEMOSIS)

## PROGRAM

### Monday November 21<sup>st</sup>

09.00 am – 09.30 am	<b>Registration</b>	IHP ground floor
09.30 am – 10.00 am	<b>Aurelio Mauri</b>	A 3D Framework for Multi-Physics Simulation of Semiconductor devices and Bio-Ion channels.
10.00 am – 10.30 am	Coffee break	IHP ground floor .
10.30 am – 11.00 am	<b>Sylvie Granet</b>	Modelling of Geological Nuclear Waste Disposal : Some Thermo-Hydro-Méchanical problems in porous media.
11.00 am – 11.30 am	<b>Pierre Saramito</b>	On a collaboration with Saint-Gobain Recherche for surface tension modeling by phase field or level-set, and a discontinuous Galerkin approximation.
11.30 am – 12.00 pm	<b>Christophe Baehr</b>	Stochastic engineering for the atmospheric sciences.
12.00 pm – 02.00 pm	Lunch break – Free time	
02.00 pm – 02.30 pm	<b>Laurent Monasse</b>	Discrete element methods for computational mechanics.
02.30 pm – 03.30 pm	<b>Sônia Maria Gomes</b>	An adaptive finite element simulation of well stability.
	<b>Amina Benaceur</b>	Model reduction for a non-linear heat transfer equation.
03.30 pm – 04.00 pm	<b>Roland Masson</b>	Modelization and discretization of multiphase flows in fractured porous media.
04.00 pm – 04.30 pm	Coffee break	IHP ground floor
04.30 pm – 05.00 pm	<b>Pierre Sochala</b>	Uncertainty propagation using polynomial chaos for geoscience applications.
05.00 pm – 05.30 pm	<b>Grégoire Allaire</b>	The RODIN project: an example of research collaboration with industry in the context of shape and topology optimization of structures.

### Tuesday November 22<sup>nd</sup>

09.00 am – 09.30 am	<b>Chiara Riccobene</b>	Where you don't expect numerical methods would help: Coffee, milk and more!
09.30 am – 10.00 am	<b>Martin Ferrand</b>	Development of an integral formulation for flows in media cluttered with obstacles in an open-source CFD code.
10.00 am – 10.30 am	Coffee break	IHP ground floor
10.30 am – 11.30 am	<b>Roberta Tittarelli</b>	A space-time error estimator for the electromagnetic computations in eddy current problems.
	<b>Michele Botti</b>	A Nonconforming High-Order Method for Poroelasticity Problems on Polyhedral Meshes.
	<b>Rita Riedlbeck</b>	Stress and flux reconstruction in Biot's poro-elasticity problem with application to a posteriori error analysis.
11.30 am – 12.00 pm	<b>Edie Miglio &amp; Paolo Ruffo</b>	Some issues in Geophysical and Geological Modeling.
12.00 pm – 12.20 pm	<b>Edoardo Lombardi</b>	An example of Reduced Order Models at work: aerodynamic shape optimization through a coupled CFD/POD approach.
12.20 pm – 02.00 pm	Lunch break – Free time	
02.00 pm – 02.30 pm	<b>Franck Nicoud</b>	Accounting for blood complexities in hemodynamics: issues and applications.
02.30 pm – 03.30 pm	<b>Nicole Spillane</b>	Adaptive Multipreconditioning applied to Domain Decomposition Methods.
	<b>Angel Ramirez Gutierrez</b>	Numerical solution of an in situ combustion model formulated as a mixed complementarity problem.
	<b>Anna Scotti</b>	Numerical simulation of hydrocarbons generation in the source rock.
03.30 pm – 04.00 pm	<b>Nicola Parolini</b>	Fluid-structure interaction and geometrical multi-scale models for packaging systems.
04.00 pm – 04.30 pm	Coffee break	IHP ground floor

04.30 pm – 05.00 pm **Christophe Prud'homme** A zoom on some Math-Entreprise collaborations at the Center of Modeling and Simulation of Strasbourg (Cemosis)

**06.00 pm – 09.00 pm Cocktail**

**IHP ground floor**

**Wednesday November 23<sup>th</sup>**

### Rencontres Math-Industrie day

09.30 am – 10.00 am **AMIES (Stéphane Cordier)** Relations maths-entreprises en France : programmes AMIES, réseau MSO et exemples en EDP.  
10.00 am – 10.30 am Coffee break IHP ground floor  
10.30 am – 11.00 am **IMPOSE (Christophe Chalons, Laurent Dumas)** : Forecasting seasonal epidemics: an example of maths/SME interaction.

11.00 am – 11.30 am **MaiMoSiNE (Emmanuel Maitre)** Interactions between applied maths researchers and SME through MaiMoSiNE.  
11.30 am – 12.00 pm **MOXOFF (Luca Formagia)** **MOXOFF, a spinoff dedicated to the industrialization of mathematical models.**

12.00 pm – 02.00 pm Lunch break – Free time

02.00 pm – 02.30 pm **Sportello Matematico per l'Industria Italiana (Massimiliano Martinelli)** : Isogeometric large deformation problems.

02.30 pm – 03.00 pm **See-d (Emmanuel Frenod)** New Machine Learning Tools based on ODE and PDE Discretization.  
03.00 pm – 03.30 pm Coffee break IHP ground floor  
03.30 pm – 04.00 pm **Lebesgue (Christophe Berton)** **A well-balances SHP scheme.**  
04.00 pm – 04 .30 pm **CEMOSIS (Christophe Prud'homme)** TBA.  
04.30 pm – 05.00 pm **Discussion: PDEs and Industry**

Abstracts are available on the website of the trimester « **Numerical Methods for PDEs** »: <http://www.math.univ-montp2.fr/~nmpdes/ME4-programme.pdf>

