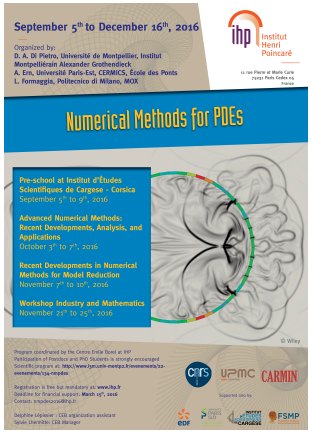
Institut Henri Poincaré

« Numerical methods for PDEs »
Paris, September 5th – December 16th, 2016

ME2 Conference : Advanced numerical methods: Recent developments, analysis and applications
Paris, October 3rd – 7th, 2016

Amphitheater Hermite



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

The conference organizers : Paola F. Antonietti (Politecnico di Milano), **Jérôme Droniou** (Monash University), **Robert Eymard** (Université Paris-Est Marne-la-Vallée)

Invited speakers : Rémi Abgrall (Universität of Zürich), **Susanne C. Brenner** (Louisiana State University), **Carsten Carstensen** (Humboldt-Universität su Berlin), **Clément Cancès** (Inria), **Bruno Després** (UPMC P6), **Thierry Gallouët** (Aix Marseille Université), **Jean-Luc Guermond** (Texas A&M University), **Alexander Linke** (Weierstrass Institute), **Konstantin Lipnikov** (Los Alamos National Laboratory, Los Alamos), **Jan Martin Nordbotten** (University of Bergen), **Martin Vohralík** (Inria), **Thomas Wihler** (University of Bern)

Contributed presentations : Abramo Agosti (Politecnico di Milano), **Gabriel Barrenechea** (University of Strachclyde), **Khalid Bellaj** (Ain Chock Science Faculty, Morocco), **Thomas Boiveau** (Université Paris Est, CERMICS), **Vrushali A. Bokil** (Oregon State University), **Wietse Boon** (University of Bergen), **Jessica Cervi** (University of Saskatchewan), **Florent Chave** (Université Montpellier), **Claire Chainais-Hillairet** (Lille1/ Laboratoire Paul Painleve), **Daniele Di Pietro** (University of Montpellier), **Alberto Ferroni** (Politecnico di Milano), **Tomas Gergelits** (Charles Universiy in Prague), **Matteo Giacomini** (Aix Marseille Université), **Heiko Gimperlein** (Heriot-Watt University), **Sônia Gomes** (Universidade de Campinas), **Julian Hennicker** (UNS/LJAD), **Bangti Jin** (University College London), **Ping Lin** (Universtity of Dundee), **Carlo Marcati** (LJLL, UPMC 6), **Ilario Mazzieri** (Politecnico di Milano), **Christophe Prud'homme** (Université de Strasbourg), **Bangwei She** (Czech Academy of Sciences), **Marco Verani** (Politecnico di Milano), **Paolo Zunino** (Politecnico di Milano)

PROGRAM

Monday October 3rd		
09.00 am – 09.30 am	**Registration and welcome coffee –** IHP ground floor	
09.30 am – 10.20 am	**Susanne C. Brenner**	Adaptive Methodes for Fourth Order Problems.
10.20 am – 10.45 am	Coffee break	IHP ground floor
10.45 am – 11.10 am	**Carlo Marcati**	*h - P* Discontinuous Galerkin methods for electronic structure calculation.
12.30 pm – 02.00 pm	Lunch break – Free time	
02.00 pm – 02.50 pm	**Martin Vohralík**	Guaranteed and robust a posteriori bounds for Laplace eigenvalues and eigenvectors.
02.50 pm – 03.40 pm	**Daniele Di Pietro**	High order numerical scheme for Leray-Lions operators.
	Florent Chave	A Hybrid High-Order method for the Cahn-Hilliardproblem in mixed form.
03.40 pm – 04.00 pm	Coffee break	IHP ground floor
04.00 pm – 04.50 pm	**Carsten Carstensen**	Separate marking adaptive algorithms.
Tuesday October 4th		
09.00 am – 09.50 am	**Clément Cancès**	Entropy dissipative methods for parabolic problems.
09.50 am – 10.15 am	**Bangwei She**	Convergent finite difference scheme for the compressible viscous isentropic flow.
10.15 am – 10.40 am	Coffee break	IHP ground floor
10.40 am – 11.30 am	**Ping Lin**	Energy-law Preserving Continuous Finite Element Methods for Quasi-Incompressible Navier-Stokes Cahn-Hilliard (NSCH) System with Variable Density.
	Abramo Agosti	A Cahn – Hilliard type model with degenerate mobility and single-well potential. Convergence and error analysis of a finite element discretization.
11.30 pm – 12.20 pm	**Thierry Gallouët**	Discrete functional analysis.
12.30 pm – 02.00 pm	Lunch break – Free time	
02.00 pm – 02.50 pm	**Konstantin Lipnikov**	Mimetic finite difference method for nonlinear parabolic equations: theory and applications.
02.50 pm – 03.40 pm	**Vrushali A. Bokil**	A High Order Dispersion Optimized Mimetic Finite Difference Method for Maxwell's Equations in Linear Dispersive Media.
	Jessica Cervi	Higher-order operator splitting methods for the bidomain model.
03.40 pm – 04.05 pm	Coffee break	IHP ground floor
04.05 pm – 04.55 pm	**Julian Hennicker**	Hybrid Dimensional Modelling and Discretization of Two Phase Darcy Flow through DFN in Porous Media.
	Wietse Boon	Robust Discretization for Flow in Fractured Porous Media.
Wednesday October 5th		
09.00 am – 09.50 am	**Jean-Luc Guermond**	Invariant domains and continuous finite element approximation for hyperbolic systems.
09.50 am – 10.15 am	**Gabriel Barrenechea**	From nonlinear edge diffusion to Algebraic Flux Correction schemes.
10.15 am – 10.40 am	Coffee break	IHP ground floor
10.40 am – 11.30 am	**Ilario Mazzieri**	Discontinuous Galerkin methods for the elastodynamics problem on polygonal and polyhedral meshes.
	Alberto Ferroni	Discontinuous Galerkin spectral element methods for the elastodynamics equation on hybrid hexahedral-tetrahedral grids.

11.30 am – 12.20 pm	**Thomas Wihler**	Galerkin discretizations for finite time blow-up problems.

Thursday October 6th

09.00 am – 09.50 am	**Alexander Linke**	Towards pressure-robust mixed methods for the incompressible Navier-Stokes equations.
09.50 am – 10.15 am	**Marco Verani**	A nonconforming Virtual Element Method for a biharmonic problem on polygonal meshes.
10.15 am – 10.40 am	Coffee break	IHP ground floor
10.40 am – 11.30 am	**Sônia Gomes**	New approximation space configuration for the mixed finite element method for elliptic problems based on curved 3D meshes.
	Heiko Gimperlein	Adaptive time domain BEM for acoustic problems.
11.30 am – 12.20 pm	**Rémi Abgrall**	Some recent developments on parameter free finite element like methods for unsteady hyperbolic problems.
12.30 pm – 02.00 pm	Lunch break – Free time	
02.00 pm – 02.50 pm	**Bruno Després**	Well-balanced schemes for Friedrichs systems and related problems.
02.50 pm – 03.40 pm	**Matteo Giacomini**	Volumetric expressions of the shape gradient of the compliance in structural shape optimization.
	Tomas Gergelits	Estimation of Algebraic and Total Error in Diffusion Equations with Random Coeffcients.
03.40 pm – 04.05 pm	Coffee break	IHP ground floor
04.05 pm – 04.55 pm	**Bangti Jin**	Variational formulation of problems involving fractional order differential operators.
	Khalid Bellaj	Image Denoising Using Variations of Perona-Malik Model with domain decomposition.
06.00 pm – 09.00 pm	**Cocktail Dinner**	**Pierre and Marie Curie University** **Zamansky Tower – 24th floor** **4 place Jussieu – 75005 Paris** **Subway line 7 – Station : Jussieu** **Note : bring your ID card or Passport**

Friday October 7th

09.00 am – 09.50 am	**Jan-Martin Nordbotten**	Momentum-conserving discretizations for elasticity.
09.50 am – 10.15 am	**Christophe Prud'homme**	An HDG Method for Coupling Multiscale Models Involving Integral Boundary Conditions.
10.15 am – 10.40 am	Coffee break	IHP ground floor
10.40 am – 11.55 am	**Paolo Zunino**	Numerical approximation of coupled PDEs on manifolds with high dimensionality gap.
	Thomas Boiveau	Penalty free Nitsche method for interface problems.
	Claire Chainais-Hillairet	Exponential time decay of a finite volume scheme for drift-diffusion systems.
11.55 am – 12.00 pm	**Conference conclusion**	

Abstracts are available on the website of the trimester « Numerical Methods for PDEs »: http://www.i3m.univ-montp2.fr/evenements/22-evenements/134-nmpdes#ME2