Detailed Curriculum Vitae

Géraldine Pichot

1. Personal Data

- Born on October 18, 1980 (Lyon, France).
- Nationality: French
- Professional address: INRIA Rennes Bretagne Atlantique, Equipe SAGE, Campus de Beaulieu 35042 Rennes Cedex (France)
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2. Current position

Research scientist (CR1) at INRIA - French National Institute for computer science and applied mathematics. Project team SAGE (Simulations and Algorithms on Grids for Environment).

Title of my research program: In silico modelling of fluid flow and contaminants transport in geological media.

Research interests:
- Numerical methods for the simulations of flow and transport of contaminants in complex and heterogeneous media
- Hydrogeological applications
- High performance computing (parallel computing using MPI)

3. Education

2007 PhD in Mathematics and Application, University of Rennes 1, Thesis Title: Modelling and numerical analysis of the coupling process between the net and the flow around a cod-end net. Advisor: R. Lewandowski (IRMAR) IFREMER co-advisor: D. Priour (IFREMER Brest) Defended on december 06, 2007 Doctoral school: MATISSE Mention: Very honourable

2004 Master degree in Mathematics (University Claude Bernard Lyon 1). Mention: Good


4. Professional experience

10/2010-present  **Research scientist** at INRIA, project team SAGE.

03/2010 – 06/2010  **young Helmholtz Visiting Researcher** (UFZ, Leipzig, Allemagne)
- Simulation of inert transport in heterogeneous porous media via a Lagrangian approach.

Advisor: A. Beaudoin.
- Parallel simulation of transport in heterogeneous porous media via a particle tracking method.

Advisors: J-R. de Dreuzy (Géosciences Rennes), J. Erhel (Inria, Rennes)
- Simulation of flow in fractured media using a Mixed-Hybrid Finite Element Method with an adaptation of a mortar-like method to be able to mesh the fractures independently.

09/2004 – 12/2007  **Doctoral position** at IFREMER Brest / IRMAR (Univ. Rennes 1)
Modelling and numerical analysis of the coupling process between the net and the flow around a cod-end net.
Advisors: R. Lewandowski (IRMAR), D. Priour (IFREMER Brest).
- Experimental campaigns at the IFREMER basin of Boulogne-sur-Mer (France). PIV and LDV measurements.
- Comparison of the numerical results with the gathered experimental data and estimation of the parameters of the model.

Simulation of the mechanical deformation of a fishing net under a uniform flow.
Advisor: R. Lewandowski (IRMAR)
- Discrete modelling of the net and definition of the forces exerted on it. Net deformations obtained by a minimization of the net energy. C++ programming.

03/2003 – 08/2003  **Engineer degree Project**. McMaster Univ. Hamilton, Ontario (Canada)
Modelling and simulations of the solvent debinding stage involved in the Powder Injection Molding technic.
Advisor: A. N. Hrymak
- Modelling by a diffusion equation in a porous medium with boundary conditions that take into account the progressive dissolution of the polymer by the solvent
- Resolution by a Finite Element Method for 2D and 3D geometries. Fortran 90 programming.
5. Awards

- IFREMER Best Thesis Prize 2009
- young Helmholtz Visiting Researcher (yHVR) financial support for a 3 months stay at UFZ (Leipzig – from March, 2010 to June, 2010).

6. List of Publications

International refereed Journal Publications


National refereed Journal Publications

Directions of work or proceedings

- Domain Decomposition Methods in Science and Engineering XXI

Papers submitted and in preparation


Publications in Conference Proceedings

- G. Pichot, B. Poirriez, J. Erhel, J.-R. de Dreuzy
  A Mortar BDD method for solving flow in stochastic discrete fracture networks
  Lecture Notes in Computational Science and Engineering (LNCSE)
- J. Erhel, A. Lejay and G. Pichot. Comparison of some lagrangian schemes for the simulation of diffusion in discontinuous media.
  Proceedings of the 4th International Conference on Approximation Methods and Numerical Modelling in Environment and Natural Resources (MAMERN’11), 319-322, 2011
  B. Amaziane and D. Barrera and H. Mraoui and M.L. Rodriguez and D. Sbibih (ed.)
  B. Amaziane and D. Barrera and M. Fortes and M. Ibanez and M. Odunlami and A. Palomares and M. Pasadas and M. Rodriguez and D. Sbibih (ed.)

Contributed Talks in Conferences


• B. Poirriez, J. Erhel, G. Pichot. Domain decomposition methods applied to flow simulation in 3D Discrete Fracture Networks. 11th Copper Mountain Conference on Iterative Methods, Copper Mountain, USA, April 2010


**Seminar and Workshop participation**

• Méthodes numériques pour la simulation du transport de solutés en milieu poreux 2D/3D. Seminar EPI Fluminance, december, 13, 2011.

• Finding upscaling rules using a stochastic framework. Seminar, UFZ, Leipzig (Germany), June 10, 2010

• Simulating flow and transport in Discrete Fractured Networks (DFNs), Workshop Leipzig (Germany), March 22, 2010

• Some numerical methods to simulate flow and transport in complex geological media, *Seminar LOMC*, December 2009, LOMC, University of Le Havre.


• Proceeding in flow modelling around a cod-end net, *Workshop Oil spill containment Boom and Nets*, La Rochelle, October 5, 2006.

**Poster communications**


7. **Computer Skills**

• Member of the developer team of the **H2OLAB platform**

• C/C++, Matlab (+GUI), Fortran 77/90, Parallel Computing (MPI), FreeFem++

• LaTeX

• Operating Systems: Linux, Mac OS X, Windows
8. Languages

- Mother Tongue: French
- English: spoken, written
- German: high school level