

Jean-Baptiste Lagaert

Curriculum vitae

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Personal information

Situation Post-doctoral researcher at Ljk (Grenoble university) and at Legi (Grenoble INP)

Contact

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Experience

2011 – 2012 **Post-doctoral researcher**, *LEGI/Ljk*, Grenoble INP, Grenoble.

Supervised by GH. Cottet (LJK), G. Baralac (LEGI) and C. Piccard (LJK). This work is dedicated to develop efficient parallel implementation of particles method (used to advect a passive scalar) coupled to other scheme like pseudo-spectral solvers or finite-volume on unstructured meshes (used to compute the flow by solving a Navier-Stokes equation).

2008 – 2011 **Phd thesis**, *IMB/Inria MC2*, Bordeaux.

Tumor growth model : Parameter estimation, model dedicated to gliomas (brain tumor) and numerical simulation of these models. Advisor: Thierry Colin and Olivier Saut.

Summer Program

Sum. 2012 **CTR Summer Program**, *Stanford University*, USA.

Member of the "Algorithm" project (a four week research session founding by the CTR): Particle method - an efficient tool for direct numerical simulations of high Schmidt number passive scalar in turbulent flow. Collaboration with G. Balarac (LEGI, Grenoble, France) and GH. Cottet (LJK, Grenoble, France).

Sum. 2009 **Cemracs**.

Member of the "Stroke" project (a five week research session): modeling inflammatory process during a stroke. Supervised by G. Chapuisat (Aix-Marseille 3 University) and MA. Dronne. (Lyon 1 University).

Teachings

2011-2012 **University Joseph Fourier**, *Initiation to Matlab for student of 3 year in University*.

Initiation to Matlab and implementation of basics numerical method to solve EDO and simple EDP.

2008 – 2011 **Enseirb-Matmeca**, *Teaching in first and second year in a Engineering School*.

Initiation to programming in Fortran , introduction to Ordinary Equations and on finite-volume method in order to solve advection-diffusion problem.

Education

2008 – 2011 **Phd thesis**, *Université de Bordeaux 1*, IMB/INRIA Bordeaux-Sud Ouest, MC2 team.

Phd thesis supervised by Thierry Colin (professor) and Olivier Saut (CNRS).

2006 – 2007 **Preparation to french "Agrégation de Mathématiques"**, *ENS de Lyon*, (recruitment for teaching).

2004 – 2008 **"Elève normalien"** at **"Ecole Normale Supérieure de Lyon"**, (a french pluri-disciplinary institution of higher education).

Master on applied Mathematics ("Advanced mathematics"), specialization in EDP and scientific computation. Master degrees in the Lyon 1 University, ENS Lyon and Ecole Centrale Lyon.

2003 – 2004 **License**, *University Paris 6 (Pierre et Marie Curie)*, Paris, L3.

License degree.

Languages

French Native language

English Read and talk

German Read and talk

Research activities - keywords

HPC Implementation in C++ and Fortran of numerical method in order to simulate complex flow and complex system. Parallel computing with MPI library.

Numerical method Finite-volume method on cartesian mesh with level-set method, remeshed particles method coupled with pseudo spectral method or finite-volume methods on unstructured grid.

Bio-mathematics Modeling tumor growth

Inverse problem Parameter estimation with adjoint based method.

Publications

T Colin, H. Fathallah-Shaykh, J.-B. Lagaert, and O Saut. A new go or grow model for studying glioma growth or invasion. (submitted).

T Colin, A. Iollo, J.-B. Lagaert, and O Saut. An inverse problem for the recovery of the vascularization of a tumor. *Journal of Inverse and Ill-Posed Problems*. (to appear).

C Di Russo, Lagaert J.-B., Chapuisat G., and Dronne M.-A. A mathematical model of inflammation during ischemic stroke. *ESSAIM: Proceedings*, 30:15–33, August 2010.

J.-B. Lagaert, G. Balarac, and G.-H. Cottet. Hybrid spectral particle method for turbulent transport of passive scalar. (submitted).

J.-B. Lagaert, G. Balarac, G.-H. Cottet, and P. Begou. Particle method: an efficient tool for direct numerical simulations of a high Schmidt number passive scalar in turbulent flow. In *Proceedings of the Summer Program 2012*, Stanford, États-Unis, October 2012.