

NCMIP 2012

2nd International Workshop on New Computational Methods for Inverse Problems Institut Farman, Ecole Normale Supérieure de Cachan, Cachan, France May 15, 2012

Call for paper

Scope: The New Computational Methods for Inverse Problems (NCMIP) Workshop focuses on recent advances in the resolution of inverse problems. Inverse problems appear in numerous scientific areas such as geophysics, biological and medical imaging, material and structure characterization, electrical, mechanical and civil engineering, and finances... The resolution of inverse problems consists of estimating the parameters of the observed system or structure from data collected by an instrumental sensing or imaging device. Its success firstly requires the collection of relevant observation data. It also requires accurate models describing the physical interactions between the instrumental device and the observed system, as well as the intrinsic properties of the solution itself. Finally, it requires the design of robust, accurate and efficient inversion algorithms. Advanced sensor arrays and imaging devices provide high rate and high volume data; in this context, the efficient resolution of the inverse problem requires the joint development of new models and inversion methods, taking computational and implementation aspects into account. During this one-day workshop, researchers will have the opportunity to bring to light and share new techniques and results in the field of inverse problems.

Topics: Topics of interest include, but are not limited to the following items: Algorithms and computational aspects of inversion, Bayesian estimation, Kernel methods, Learning methods, Convex optimization, Free discontinuity problems, Metamodels, Proper orthogonal decomposition, Reduced models for the inversion, Non-linear inverse scattering, Image reconstruction and restoration, Applications (bio-medical imaging, non-destructive evaluation...)

About the Workshop: NCMIP 2012 is the second edition of the workshop. The first edition took place in Cachan, France, in the scope of ValueTools in May 2011 (<http://www.ncmip.org/2011/>). As in the first edition, NCMIP will be a one-day workshop during which oral presentations will be given by authors of accepted papers and by three to four international invited speakers.

Invited talks:

- **Antonin Chambolle**, CMAP, Ecole Polytechnique, CNRS, France
Algorithms and methods for image restoration and curve shortening
- **Matteo Pastorino**, University of Genoa, Italy
Electromagnetic Inverse-Scattering Reconstructions by an Inexact-Newton Method: Numerical and Experimental Results.
- **Michael Unser**, Ecole polytechnique Fédérale de Lausanne, Switzerland
Sparse stochastic processes and the discretization of inverse problems

Important Dates:

Submission of (4-page) papers: February 15, 2012

Notification of Acceptance: April 06, 2012

Workshop Date: May 15, 2012

Registration: The registration to NCMIP 2012 is free, but is mandatory. Registration instructions will be given in due time.

Workshop Co-chair:

Laure Blanc-Féraud, I3S laboratory and INRIA Nice Sophia-Antipolis, France

Pierre-Yves Joubert, SATIE, ENS Cachan, and IEF, Paris-Sud University, CNRS, France

Technical Program Committee:

Alexandre Baussard, ENSTA Bretagne, Lab-STICC, France

Marc Bonnet, ENSTA, ParisTech, France

Jerôme Darbon, CMLA, ENS Cachan, CNRS, France

Oliver Dorn, School of Mathematics, University of Manchester, UK.

Mário Figueiredo, Instituto Superior Técnico, Lisbon, Portugal.

Laurent Fribourg, LSV, ENS Cachan, CNRS, France

Marc Lambert, L2S Laboratory, CNRS, SupElec, Paris-Sud University, France

Anthony Quinn, Trinity College, Dublin, Ireland

Christian Rey, LMT, ENS Cachan, CNRS, France

Joachim Weickert, Saarland University, Germany

Publication of the workshop proceedings:

Submitted papers will be peer reviewed and accepted papers will be published by IOP publishing "Journal of Physics : Conference Series" both on-line and in a printed volume.

Web site : <http://www.farman.ens-cachan.fr>