The workshop is endorsed by the following research network:

http://gdr-isis.fr/
http://gdr-ondes.u-bourgogne.fr/
http://gdrmoa.math.cnrs.fr/
https://fadili.users.greyc.fr/mia/
**Scope:** The New Computational Methods for Inverse Problems (NCMIP) conference 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 with 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 are mostly related to algorithmic and mathematical aspects of inverse problems, as well as applications in the domain of waves. The topics 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 (biomedical imaging, non-destructive evaluation...).

**About the conference:** NCMIP 2018 is the eighth edition of the conference. It is organized, in Cachan, France, under the patronage of Institut Farman (http://www.farman.ens-cachan.fr/). As for the past editions, NCMIP will be a one-day conference during which oral presentations will be given by authors of accepted papers and by three international invited speakers.

**Invited talks**

**Gabriele Steidl**, Technische Universität Kaiserslautern, Fachbereich Mathematik, Germany

*“Morphing of manifold-valued images”*

**Anne Sentenac**, Institut Fresnel, CNRS, Marseille, France

*“Some challenges in computational optical microscopy”*

**Philippe Ciuciu**, Neurospin, CEA Saclay, France

*“Distribution-controlled and optimally spread sampling trajectories for accelerated Magnetic Resonance Imaging”*
CALL FOR PAPERS

NCMIP 2018
8th International Conference on New Computational Methods for Inverse Problems

Submission of (4 to 6 pages) papers: deadline: March 1, 2018 (extended to March 16)
Notification of acceptance: April 20, 2018 Registration: before May 9, 2018 Conference date: May 25, 2018

Registration: The registration to NCMIP 2018 is free, but is mandatory. Registration instructions will be given in due time at
http://complement.farman.ens-cachan.fr/NCMIP_2018.html

Workshop co-chairs:
Eric Vourc'h, SATIE laboratory, Ecole normale supérieure Paris-Saclay, CNRS, France
Thomas Rodet, SATIE laboratory, Ecole normale supérieure Paris-Saclay, CNRS, France

Technical program committee:
Alexandre Baussard, ENSTA Bretagne, Lab-STICC, France
Silvia Bonettini, Università degli studi di Ferrara, dipartimento di matematica informatica, Ferrara, Italy.
Marc Bonnet, ENSTA, ParisTech, France
Laure Blanc-Féraud, I3S laboratory and INRIA Nice Sophia-Antipolis, France
Antonin Chambolle, CMAP, Ecole Polytechnique, CNRS, France
Marion Darbas, LAMFA, CNRS UMR 7352, Université de Picardie Jules Verne, France
Oliver Dorn, School of Mathematics, University of Manchester, UK
Laurent Fribourg, CNRS, ENS Paris-Saclay, France
Jerôme Idier, IRCCyN Laboratory, Ecole Centrale de Nantes, France
Pierre-Yves Joubert, IEF, Paris-Sud University, CNRS, France
Marc Lambert, GeePs Laboratory, CNRS, CentraleSupelec, Paris-Sud University, France
Dominique Lesselier, L2S Laboratory, CNRS, CentraleSupelec, Paris-Sud University, France
Giacomo Oliveri, eledia research center/eledia@L2S group, University of Trento, Italy
Matteo Pastorino, DIBE, University of Genoa, Italy
Gabriel Peyré, DMA, ENS, CNRS, France
Anthony Quinn, Trinity College Dublin, Ireland
Marco Salucci, eledia research center/eledia@L2S group, University of Trento, Italy

Local chairs:
Sophie Abriet, SATIE laboratory, ENS Paris-Saclay, France
Béatrice Bacquet, SATIE laboratory, ENS Paris-Saclay, France
Virginie Pauchont, CMLA laboratory, ENS Paris-Saclay, France
Dominique Bach, SATIE laboratory, ENS Paris-Saclay, France

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”.