Iterative and direct solvers for optimization and inverse problems

Marcella Bonazzoli
INRIA, Institut Polytechnique de Paris, France
marcella.bonazzoli@inria.fr

Liu-Di Lu
Université de Genève, Switzerland
liudi.lu@unige.ch

Tommaso Vanzan
Politecnico di Torino, Italy
tommaso.vanzan@polito.it

Abstract

Optimization and inverse problems are ubiquitous in applied mathematics, with applications ranging from engineering and physics to imaging and data science. The complexity of these phenomena, such as multiphysics formulation, high frequency wave propagation, and long timescale, often necessitates advance tailored discretizations, which eventually lead to very large systems and require using efficient numerical techniques. Solvers both iterative and direct play a crucial role in addressing these problems. This minisymposium explores recent advances and emerging trends in the development of these solvers, discussing both theoretical insights, numerical implementations and practical applications.

Marcella Bonazzoli
INRIA, Institut Polytechnique de Paris, France
marcella.bonazzoli@inria.fr

Duc Quang Bui
INRIA, France
duc-quang.bui@inria.fr

Victorita Dolean–Maini
TU/e, The Netherlands
v.dolean.maini@tue.nl

Christophe Geuzaine
University of Liège, Belgium
cgeuzaine@uliege.be

Félix Kwok
Laval University, Canada

felix.kwok@mat.ulaval.ca

Ulrich Langer
University Linz, Austria
ulrich.langer@jku.at

Richard Löscher
TU Graz, Austria
richard.loscher@tugraz.at

Liu-Di Lu
Université de Genève, Switzerland
liudi.lu@unige.ch

Charlotte Milano
Université de Reims Champagne-Ardenne, France
charlotte.milano@univ-reims.fr

Bankim Chandra Mandal
IIT Bhubaneswar, India
bmandal@iitbbs.ac.in

Tram Thi Ngoc Nguyen
Max Planck, Germany
nguyen@mps.mpg.de

Norbert Djahou Tognon
INRIA, France
djahou-norbert.tognon@inria.fr