

NUMERICAL ASPECTS OF TRANSPORT, BOLTZMANN AND KINETIC EQUATIONS TRACK NUMBER 600

Martin Campos-Pinto^{*}, Bruno Desprès^{*}, Olivier Laffite[†], Olga Mula[‡]

^{*} Sorbonne Université, LJLL
4, place Jussieu, 75252 Paris Cedex 05
Email: campos@ljl.math.upmc.fr ; bruno.despres@sorbonne-universite.fr
URL: <https://www.ljl.math.upmc.fr/campos/> ; <https://www.ljl.math.upmc.fr/despres/>

[†] Paris 13 University, LAGA
99, avenue Jean-Baptiste Clément
Email: olaf1@wanadoo.fr
Url: <https://www.math.univ-paris13.fr/lafitte/wiki/index.php>

[‡] Paris Dauphine University, CEREMADE
Place du Maréchal Lattre de Tassigny, 75775 Paris
mula@ceremade.dauphine.fr
URL: <https://www.ceremade.dauphine.fr/mula/>

Key words: Numerical Methods, Transport, Boltzmann, Kinetic Equations, Vlasov-Poisson, Neutronics, Plasma Physics

Abstract

The goal of the minisymposium is to present recent advances in the development of numerical schemes for the solution of transport dominated problems, with particular emphasis on Boltzmann and kinetic problems, and their applications to optics, nuclear engineering and plasma physics. Key challenges in the numerical solution of these equations include high-dimensionality, non-smooth solutions, hyperbolicity, multi-scale effects, application to the physics and rigorous quantification of uncertainties. In this minisymposium we gather experts from various fields to report on state-of-the-art techniques to tackle these challenges, as well as to identify new research directions, and stimulate collaboration.

Format

We request two sessions for our mini-symposium. This is a total of 12 presentations of 20 minutes each (but we propose 13 names). We propose ***** as keynote speaker.

List of potential speakers

Speaker	Affiliation	Topic
Wolfgang Dahmen	South Carolina University	Boltzmann, a posteriori
Martin Frank	RWTH	Moment closures for kinetic equations
Matthias Schlottbom	University of Twente	Boltzmann, inverse problems
Gerhard Kitzler	Vienna	Boltzmann, spectral
Philipp Grohs	Vienna	Boltzmann, tensors, time
Francesco Salvarani	University of Pavia	Homogenization
Eric Sonnendrucker	IPP Munich	Plasma Physics
Laurent Colas	CEA Cadarache	Maxwell, waves
Sever Hirstoaga	Inria, Paris	Transport Numerics
Lise-Marie Imbert-Gérard	University of Maryland	Maxwell, waves
Pascal Omnès	CEA	Transport Vlasov and mechanics
Erell Jamelot	CEA	Neutronics, domain decomposition
Cyril Patricot	CEA	Multiphysics couplings
Karim Ammar	CEA	Multiphysics couplings, uncertainty propagation
Andrea Zoia	CEA	Neutronics, Monte Carlo
Jean-Charles le Pallec	CEA	Neutronics, experiments
Phiippe Helluy	University of Strasbourg	Relaxation models, kinetic and fluid problems
Frédérique Charles	Sorbonne University	Numerical transport

The organizers of the mini-symposium can also make presentation, if it is desirable.