

INTERNATIONAL CONFERENCE ON NONLINEAR PDE

FREE SURFACE & INTERFACE PROBLEMS WORKSHOP

Oxford 10 - 15 September 2012



The main objective of the conference is to bring together scientists with interests in the analysis of nonlinear partial differential equations (PDE) and their applications to present recent developments and explore new connections between nonlinear PDE and other areas in mathematics and related fields in the sciences. PDE are ubiquitous in the sciences, where they provide a natural mathematical description of many phenomena. The behaviour of every material object, with length scales ranging from sub-atomic to astronomical and timescales ranging from picoseconds to millennia can be modelled by PDE or by equations having similar features. Contemporary challenges raised by recent advances in the sciences are confronted with state-of-the-art mathematical ideas and tools in PDE.

Held at the Maths Institute, Oxford there will be 12 lectures and 8 mini-symposium sessions over 4 days (**Monday to Thursday**), covering a wide spectrum of topics related to nonlinear PDE. The conference and workshop are part of the joint scientific activities of Oxford Centre for Nonlinear PDE (OxPDE, Oxford) and Centre for Analysis & Nonlinear PDE (CANPDE, Edinburgh) Funding is provided by EPSRC and the London Mathematical Society. Limited financial support for research students is available upon request when registering.

Plenary Speakers

Luigi Ambrosio - SNS Pisa
Constantine Dafermos - Brown University
Isabelle Gallagher - Paris Diderot
Martin Hairer - University of Warwick
Fang-Hua Lin - Courant Institute NYU
Pierre-Louis Lions - Collège de France
Felix Otto - Max Planck Institute - Leipzig
Frank Pacard - École Polytechnique-CNRS
Richard M Schoen - Stanford University
Gigliola Staffilani - MIT
Andrew J Majda - Courant Institute NYU
Eitan Tadmor - University of Maryland

Mini-Symposium Speakers

PDE in Meteorology	Andrew J Majda (NYU)	Bernard Legras (ENS Paris)	Ian Roulstone (Surrey)
PDE in Geometry	Michael Eichmair (ETH Zurich)	Aaron Naber (MIT)	Melanie Rupflin (Max-Planck Golm)
Dispersive PDE	Pierre Raphael (Toulouse)	Joachim Krieger (Lausanne)	Benjamin Dodson (UC Berkeley)
Hyperbolic PDE	Marshall Slemrod (Wisconsin)	Stefano Bianchini (SISSA)	Steve Shkoller (UC Davis)
Calculus of Variations	Thomas Schmidt (Erlangen)	László Székelyhidi (Leipzig)	Giuseppe Mingione (Parma)
Stochastic PDE	Nicolas Burq (Paris d'Orsay)	Andrey L Piatnitski (Narvik)	Massimiliano Gubinelli (Paris)
PDE in General Relativity	Hans Ringstrom (KTH)	Gustav Holzegel (Princeton)	Jonathan Luk (Princeton)
PDE in Materials	Duvan Henao (Católica de Chile)	Xavier Blanc (Paris)	Nicolas Dirr (Cardiff)

For more information visit:

www.maths.ox.ac.uk/groups/oxpde/events

Organising Committee: Gui-Qiang Chen (Oxford), John Toland (INI Cambridge), Sergei Kuksin (Heriot Watt), Barbara Niethammer (Bonn), Peter Topping (Warwick) & Aram Karakhanyan (Edinburgh)



FREE SURFACE & INTERFACE PROBLEMS WORKSHOP—14 &15 SEPTEMBER 2012

The workshop will be held at St Anne's College, Oxford and consist of three sessions, each of three hours duration (**Friday and Saturday**). The general theme will be the theoretical and numerical aspects of nonlinear hyperbolic and dispersive free boundary and interface problems. These various types of PDE problems arise from a variety of important real world problems in fluid and gas dynamics, and offer challenges both from the analytical and numerical viewpoints. Each session will involve a mix of analysts and numerical analysts and show connections between the analysis and the numerical sides of the problems discussed.

Provisional Speakers: **Adrian Constantin** (Vienna), **Diego Cordoba** (Madrid), **Mikhail Feldman** (Wisconsin), **Harald Garcke** (Regensburg), **David Lannes** (ENS Paris), **Nader Masmoudi** (Courant Institute, NYU), **James Sethian** (UC Berkeley)

