

# NONLINEAR HYPERBOLIC PDEs, DISPERSIVE AND TRANSPORT EQUATIONS: ANALYSIS AND CONTROL



SISSA, Trieste, May 16 – July 22, 2011

## Aim

The trimester aims to provide a broad introduction and an up-to-date overview of the status and perspectives for some of the most vital research areas in partial differential equations. It is organized in a series of courses (on a weekly basis), a workshop and a conclusive conference. There will be also some sessions of communications by young researchers.

> **Lecturers:** the courses (of about 6 hours each) will be delivered by

“Interplay between rearrangement and convection theories”  
**Yann BRENIER** (Université de Nice, France)

“Hydrodynamic PDE”  
**Peter CONSTANTIN** (University of Chicago, USA)

“Controllability and stabilization: some cases where the nonlinearity is crucial”  
**Jean-Michel CORON** (Université Pierre et Marie Curie, Paris, France)

“Stability of finite difference schemes for hyperbolic initial boundary value problems”  
**Jean-François COULOMBEL** (Université Lille 1, France)

“Problems in Geometric Measure Theory”  
**Marianna CSORNYEI** (University College, London, UK)

“Existence of algebraic vortex spirals and ill-posedness of inviscid flow”  
**Volker ELLING** (University of Michigan, USA)

“Variational models for the incompressible Euler equations”  
**Alessio FIGALLI** (University of Texas, USA)

“Von Karman Evolution equations and other dynamics”  
**Irena LASIECKA** (University of Virginia, USA)

“Elastic deformations on the plane and approximations”  
**Aldo PRATELLI** (University of Pavia, Italy)

“Dispersive equations and their importance in mathematics”  
**Gigliola STAFFILANI** (MIT, USA)

“Optimal Transport, Ricci Curvature and Gradient Flows”  
**Karl-Theodore STURM** (University of Bonn, Germany)

“From isometric embeddings to turbulence”  
**Laszlo SZEKELYHIDI** (University of Bonn, Germany)

“Uniform stabilization of hyperbolic problems in bounded domains”  
**Roberto TRIGGIANI** (University of Virginia, USA)

“Finite energy solutions to the isentropic Euler equations”  
**Michael WESTDICKENBERG** (Georgia Institute of Technology, USA)

“Some topics in Compressible Navier-Stokes System”  
**Zhouping XIN** (Chinese University of Hong Kong)

> **Workshop:** “Modelling and Control of Nonlinear Evolution Equations”, May 24-27, 2011.

> **Conference:** “Ninth Meeting on Hyperbolic Conservation Laws, Fluid Dynamics and Transport Equations: Recent Results and Research Perspectives”, July 18-22, 2011.

> **Scientific and Organizing Committee**

**Giovanni ALBERTI** (University of Pisa, Italy)  
**Fabio ANCONA** (University of Padova, Italy)  
**Stefano BIANCHINI** (SISSA, Trieste, Italy)  
**Gianluca CRIPPA** (University of Parma, Italy)

**Camillo DE LELLIS** (University of Zürich, Switzerland)  
**Andrea MARSON** (University of Padova, Italy)  
**Corrado MASCIA** (University of Roma “Sapienza”, Italy)

**Sponsors:** SISSA, ERC Project “System of Hyperbolic Conservation Laws: singular limits, properties of solutions and control problems”, GDRE CONEDP “European Research Group on Control of Partial Differential Equations”

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