

Program Outline

Date: July 30–August 3, 2012
Venue: Room 3-309, Faculty of Science Building #3,
Hokkaido University, Sapporo, Japan
Organizers: L. Ambrosio (Pisa), Y. Giga (Tokyo),
P. Rybka (Warsaw), Y. Tonegawa (Sapporo)

Course Lecturers and Main Themes:

Luigi Ambrosio:

Gradient flows in metric spaces and in the space of probability measures

Yann Brenier:

Optimal Transport

Robert Jerrard:

Dynamics of vortices and other topological defects in nonlinear field theories

July 30 (Mon.)

10:00-10:50 Luigi Ambrosio (Scuola Normale Superiore)
(Lecture I) Metric formulations of gradient flows:
Energy Dissipation Inequalities and Evolution

11:10-12:00 Yann Brenier (Universite de Nice)
(Lecture I) Optimal transport of densities

14:00-14:50 Robert Jerrard (University of Toronto)
(Lecture I) Overview, and parabolic equations

15:10-16:10 Diego Pallara (Universita del Salento)
Bounded variation functions in Hilbert spaces and
related semigroups

July 31 (Tue.)

10:00-10:50 Luigi Ambrosio (Scuola Normale Superiore)
(Lecture II) Convergence of the Euler scheme and
existence results

11:00-12:00 Yann Brenier (Universite de Nice)
Lecture II) Optimal incompressible transport

14:00-14:50 Robert Jerrard (University of Toronto)
(Lecture II) Wave equations and timelike minimal surfaces

August 1 (Wed.)

10:00-11:00 Antonin Chambolle (Ecole Polytechnique)
Some non-local curvature evolutions

11:30-12:30 Patrick Guidotti (University of California, Irvine)
Nonlinear Diffusions and Image Processing

August 2 (Thu.)

10:00-10:50 Luigi Ambrosio (Scuola Normale Superiore)
(Lecture III) The theory of gradients in metric measure spaces

11:00-12:00 Yann Brenier (Universite de Nice)
(Lecture III) Optimal transport of divergence-free vector fields

14:00-14:50 Robert Jerrard (University of Toronto)
(Lecture III) Vortex dynamics in nonlinear Schrodinger equations

15:10-16:10 Piotr Mucha (University of Warsaw)
Models of sudden directional diffusion

16:30-17:30 Neshan Wickramasekera (University of Cambridge)
Higher multiplicity in minimal submanifolds

August 3 (Fri.)

- 10:00-10:50 Luigi Ambrosio (Scuola Normale Superiore)
(Lecture IV) Heat flow and gradient flow of the
entropy in metric measure spaces
- 11:00-12:00 Yann Brenier (Universite de Nice)
(Lecture IV) Perspectives and open problems
- 14:00-14:50 Robert Jerrard (University of Toronto)
(Lecture IV) Stability of binormal curvature flow