

Institute for Analysis and Scientific Computing, and Doctoral Program "Dissipation and Dispersion in Nonlinear PDEs"

Course Announcement:

An Introduction to Viscosity Solutions for Fully Nonlinear PDE with Applications to Calculus of Variations in L^∞

by

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Content:

Part I General Theory

- History, Examples, Motivation and First Definitions
- Second Definitions and Basic Analytic Properties of the Notions
- Stability Properties of the Notions and Existence via Approximation
- Mollification of Viscosity Solutions and Semiconvexity
- Existence of Solution to the Dirichlet Problem via Perron's Method
- Comparison results and Uniqueness of Solution to the Dirichlet Problem

Part II Applications

- Minimisers of Convex Functionals and Viscosity Solutions of the Euler-Lagrange PDE
- Existence of Viscosity Solutions to the Dirichlet Problem for the ∞ -Laplacian

$$F(\cdot, u, Du, D^2u) = 0$$

$$\Delta_\infty u := Du \otimes Du : D^2u = 0.$$

