# ESI SENIOR RESEARCH FELLOW
# LECTURE COURSE
## Summer Term 2016

The Erwin Schrödinger International Institute of Mathematics and Physics (ESI) of the University of Vienna offers the following Lecture Course held by a Senior Research Fellow in residence during the Summer Term 2016:

**Optimal transport methods for hamiltonian PDEs**
**Yann Brenier** (CNRS, École Polytechnique, Palaiseau)

**Lecture Course (250 120 VO): April to June 2016**
Thursday and Friday, 13:15 - 14:45 hrs
Start: April 14, 2016

**Proseminar (250 121 PS): April to June 2016**
Thursday and Friday 15:00 - 15:45 hrs
Start: April 14, 2016

Note there will be no activities in the period May 1 - 20, 2016.

Course website: http://www.esi.ac.at/activities/events/2016/yann-brenier-senior-fellow-course-2016
Venue: ESI, Schrödinger Lecture Hall

**Content:**

In the last 25 years, Optimal transport theory, which lies between Calculus of Variations, Probability and Geometry, has been used many times to address non-linear elliptic PDEs, such as the real Monge-Ampere equation, or parabolic equations such as the heat equation and many nonlinear generalizations. Its link with conservative, hamiltonian and hyperbolic PDEs is much less documented.e.

The aim of this course is to cover two important examples: namely the Euler equations of incompressible fluids, which goes back to the 18th century (few years before Monge introduced the first optimal transport problem) and the Born-Infeld equations of Electromagnetism which goes back to 1934 and has been revisited in the 90s by High Energy Physicists.

Joachim Schwermer
Director