Ph.D course in Geometry and Mathematical Physics

Head of the Ph.D course: Prof. Marcello PORTA
Web site: **Geometry and Mathematical Physics**
Research lines:

- Asymptotic analysis of ordinary differential equations and applications to integrable systems and geometry
- Integrable systems and applications to Hamiltonian dispersive equations with random initial data
- Local and global study of algebraic stacks and of their morphisms and applications
- Low dimensional geometry and topology
- Quantum statistical mechanics and analysis of many-body quantum systems
- Real algebraic geometry and convex geometry
- Refined invariants of moduli spaces of sheaves and derived categories
- Toeplitz operators and determinants, quasiperiodic Schroedinger operators
- Random matrices, statistical mechanics, and Gaussian Multiplicative Chaos
- Representation theory, conformal field theory, integrable systems, and cluster algebras
- Stability in algebraic and complex differential geometry, applications to enumerative invariants
- Supersymmetric gauge theories, conformal field theories, topological strings and their applications to geometry of moduli spaces, integrable systems and general relativity

Fellowships available: **8**
Admission: **Academic and scientific qualifications + oral exam (remotely)**
Beginning of the Courses: **1st October, 2026**

Evaluation of academic and scientific qualifications: 30 points
Access to Oral Exam: minimum mark of 21/30 in the academic and scientific qualifications evaluation.
Evaluation of Oral Exam: 70 points

To be considered eligible, candidates must pass all the phases (academic qualifications, and interview) with a minimum mark of 7/10 or equivalent.

Deadline for online submission of applications: **19th January, 2026**
Oral Exam: **23rd to 27th February, 2026**

Admission to the oral exam and results of all evaluations will be notified by email.