

## Ph.D course in Astrophysics

**Head of the Ph.D course:** Prof. Carlo Baccigalupi

**Web site:** [Astrophysics](#)

**Research lines:**

- Early Universe Physics
- Galaxies
- Stellar Evolution
- Gravitation Theory
- High Energy Astrophysics
- Large Scale Structure
- Relativistic Astrophysics

**Fellowships available:** 5

**Admission:** Academic and scientific qualifications + oral exam

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 30 points

**Access to Oral Exam:** minimum mark of 21/30 in the academic and scientific qualifications evaluation up to a maximum of 15 admitted candidates.

**Evaluation of Oral Exam:** 70 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 30 March, 2018

**Oral Exam:** 18 and 19 April, 2018.

### Second Session (only if there should still be places available after the first one)

**Deadline for online submission of applications:** 31 August 2018

**Oral Exam:** 11 and 12 September, 2018.

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

## Ph.D course in Astroparticle Physics

**Head of the Ph.D course:** Prof. Piero Ullio

**Web site:** [Astroparticle Physics](#)

**Research lines:**

- Classical and Quantum Gravity
- Early Universe Cosmology
- The Dark Universe
- Cosmic rays and Particle Astrophysics
- Gravitational Waves

**Fellowships available:** 5

**Admission:** Academic and scientific qualifications + written exam + oral exam

**Beginning of the Courses:** 1 October, 2018

**Evaluation of academic and scientific qualifications:** 10 points

**Access to Written Exam:** minimum mark of 7/10 on academic and scientific qualifications

**Evaluation of Written Exam:** 40 points

**Access to Oral Exam:** minimum mark of 28/40 in the written exam evaluation

**Evaluation of Oral Exam:** 50 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 7 March, 2018

**Written Exam:** 20 March, 2018

**Oral Exam:** 21 March, 2018

**Second Session (only if there should still be places available after the first one)**

**Deadline for online submission of applications:** 15 June, 2018

**Written Exam:** 4 July, 2018

**Oral Exam:** 5 July, 2018

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

## Ph.D course in Cognitive Neuroscience

**Head of the Ph.D course:** Prof. Davide Crepaldi

**Web site:** [Cognitive Neuroscience](#)

### Research lines:

- Visual perception
- Time perception
- Tactile perception
- Language, reading, and statistical learning
- Reward and social neuroscience
- Neural computation, with emphasis on language and spatial navigation
- Hierarchical Bayesian inference, learning, and action in the brain

**Fellowships available:** 8

**Admission:** Academic and scientific qualifications + written exam + oral exam

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 10 points

**Access to Written Exam:** minimum mark of 7/10 on academic and scientific qualifications

**Evaluation of Written Exam:** 40 points

**Access to Oral Exam:** minimum mark of 28/40 in the written exam evaluation

**Evaluation of Oral Exam:** 50 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 2 March, 2018

**Written Exam:** 16 April, 2018

**Oral Exam:** 17 April, 2018

### Second Session (only if there should still be places available after the first one)

**Deadline for online submission of applications:** 31 August, 2018

**Written Exam:** 13 September, 2018

**Oral Exam:** 14 September, 2018

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

## Ph.D course in Functional and Structural Genomics

**Head of the Ph.D course:** Prof. Antonello Mallamaci

**Web site:** [Functional and Structural Genomics](#)

### Research lines:

- Neurogenomics
- Cerebral Cortex Development
- Prion Biology
- Functional Genomics (including Scalable engineering of gene expression)
- Neurodegeneration
- Parkinson's Disease
- Structural Biology
- Drug Discovery
- Bioinformatics (including Molecular dynamics and simulation)
- Evolutionary Genomics
- Comparative Genomics
- Population Genomics

**Fellowships available:** 4

**Admission:** Academic and scientific qualifications + written exam + oral exam

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 10 points

**Access to Written Exam:** minimum mark of 7/10 on academic and scientific qualifications

**Evaluation of Written Exam:** 40 points

**Access to Oral Exam:** minimum mark of 28/40 in the written exam evaluation

**Evaluation of Oral Exam:** 50 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 2 March, 2018

**Written Exam:** 3 May, 2018

**Oral Exam:** 4 May, 2018

### Second Session (only if there should still be places available after the first one)

**Deadline for online submission of applications:** 31 August, 2018

**Written Exam:** 13 September, 2018

**Oral Exam:** 14 September, 2018

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

## Ph.D course in Geometry and Mathematical Physics

**Head of the Ph.D course:** Prof. Alessandro Tanzini

**Web site:** [Geometry and Mathematical Physics](#)

**Research lines:**

- Integrable systems, and their applications in Mathematical Physics and Geometry
- Noncommutative geometry (bundles, connections, quantum groups)
- Mathematical aspects of Quantum Field Theory and String Theory
- Mathematical Methods of quantum mechanics
- Algebraic geometry (deformation theory, moduli spaces, invariants)

**Fellowships available:** 8

**Admission:** Academic and scientific qualifications + written exam + oral exam

**Beginning of the Courses:** 1 October, 2018

**Evaluation of academic and scientific qualifications:** 10 points

**Access to Written Exam:** : minimum mark of 7/10 on academic and scientific qualifications

**Evaluation of Written Exam:** 40 points

**Access to Oral Exam:** minimum mark of 28/40 in the written exam evaluation

**Evaluation of Oral Exam:** 50points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 13 March, 2018

**Written Exam:** 20 March, 2018

**Oral Exam:** 21 March, 2018

**Second Session (only if there should still be places available after the first one)**

**Deadline for online submission of applications:** 31 August, 2018

**Written Exam:** 12 September, 2018

**Oral Exam:** 13 September, 2018

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

## Ph.D course in Mathematical Analysis, Modelling, and Applications

Head of the Ph.D course:

Prof. Massimiliano Berti

Web site:

[Mathematical Analysis, Modelling, and Applications](#)

Research lines:

- Conservation laws
- Transport problems
- Geometric PDEs
- Nonlinear analysis
- Dynamical systems
- Calculus of variations
- Gamma-convergence and multiscale analysis
- Rate independent evolution problems
- Geometric control theory
- Sub-Riemannian geometry
- Inelastic behavior of solids: plasticity, damage, fracture
- Mechanobiology of the cell and cell motility
- Mechanics of soft and active materials
- Reduced basis methods
- Boundary integral methods and isogeometric analysis
- Fluid-structure interaction problems

Fellowships available: 8

Admission: Academic and scientific qualifications + written exam + oral exam

Beginning of the Courses: 1 October, 2018

**Evaluation of academic and scientific qualifications:** 10 points

**Access to Written Exam:** minimum mark of 7/10 on academic and scientific qualifications

**Evaluation of Written Exam:** 40 points

**Access to Oral Exam:** minimum mark of 28/40 in the written exam evaluation

**Evaluation of Oral Exam:** 50 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 30 March, 2018

**Written Exam:** 12 April, 2018

**Oral Exam:** 13 April, 2018

**Second Session (only if there should still be places available after the first one)**

**Deadline for online submission of applications:** 22 August, 2018

**Written Exam:** 5 September, 2018

**Oral Exam:** 6 September, 2018

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

## Ph.D course in Molecular Biology

**Head of the Ph.D course:** Prof. Giuseppe Legname

**Web site:** [Molecular Biology](#)

**Research lines:**

- Molecular Biology of Cells
- Developmental Biology
- Plant biology
- Structural Biology of Proteins and Nucleic Acids
- Genomics
- Molecular Oncology
- Molecular Cardiology
- Molecular Mechanisms of Neurodegeneration
- Molecular Virology
- RNA therapeutics
- Drug Discovery
- DNA damage
- Molecular and Cellular Immunology

**Fellowships available:** 5 (1 financed by SISSA, 1 by the University of Udine, 1 by the University of Trieste and 2 by ICGEB - Trieste)

**Admission:** Academic and scientific qualifications + oral exam (also by videoconference)

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 30 points

**Access to Oral Exam:** minimum mark of 21/30 on academic and scientific qualifications

**Evaluation of Oral Exam:** 70 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### Single Session

**Deadline for online submission of applications:** 31 August 2018

**Oral Exams:** 20 and 21 September, 2018

Candidates admitted to the oral exam will be notified by email by 15 September 2018. The results of the oral exams and the final ranking will be notified by email.

## Ph.D course in Neurobiology

**Head of the Ph.D course:** Prof. Anna Menini

**Web site:** [Neurobiology](#)

**Research lines:**

- Somatosensation
- Peripheral Nervous System
- Olfactory Systems and Ion Channels
- Synaptic Neurophysiology and Neuronal Networks
- Bionanotechnology
- New Materials and Neurons
- Neurophysiology of Motor control
- Spinal networks patho-physiology and locomotion
- Interfaces to simultaneously stimulate and record signals from the spinal cord

**Fellowships available:** 7

**Admission:** Academic and scientific qualifications + oral exam

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 30 points

Besides the documents mentioned in the general part of the announcement, all applicants must provide a written essay in English, describing their previous academic background and scientific motivations to pursue a SISSA PhD and including a short list of these projects among those available (see above list).

The essay (about 3 pages long) will be used for an initial screening of suitable candidates to be invited to the oral exam.

**Access to Oral Exam:** minimum mark of 21/30 on academic and scientific qualifications

**Evaluation of Oral Exam:** 70 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### Single Session

**Deadline for online submission of applications:** 3 September 2018

**Oral Exams:** 26 and 27 September, 2018

Candidates admitted to the oral exam will be notified by email by 17 September 2018. The results of the oral exams and the final ranking will be notified by email.



## Ph.D course in Physics and Chemistry of the Biological Systems

**Head of the Ph.D course:** Prof. Giovanni Bussi

**Web site:** [Physics and Chemistry of the Biological Systems](#)

### Research lines:

- Algorithm development for biomolecular simulations
- Algorithm development for data mining
- Atomistic simulations of drugs interacting with proteins and nucleic acids
- Kinetics, mechanics and entanglement of biopolymers: atomistic and coarse-grained approaches
- Modeling and simulation of cellular motility
- Rational drug design
- Systems Biology

**Fellowships available:** 5

**Admission:** Academic and scientific qualifications + written exam + oral exam

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 10 points

**Access to Written Exam:** minimum mark of 7/10 in the academic and scientific qualifications evaluation up to a maximum of 12 admitted candidates

**Evaluation of Written Exam:** 40 points

**Access to Oral Exam:** minimum mark of 28/40 in the written exam evaluation

**Evaluation of Oral Exam:** 50 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 12 March, 2018

**Written Exam:** 26 March, 2018

**Oral Exam:** 27 March, 2018

### Second Session (only if there should still be places available after the first one)

**Deadline for online submission of applications:** 31 August, 2018

**Written Exam:** 17 September, 2018

**Oral Exam:** 18 September, 2018

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

## Ph.D course in Statistical Physics

**Head of the Ph.D course:** Prof. Pasquale Calabrese

**Web site:** [Statistical Physics](#)

**Research lines:**

- Statistical Field Theories and Applications
- Exactly Solved Models of Statistical Mechanics
- Classical and Quantum Statistical Physics out of Equilibrium
- Cold Atoms
- Quantum Quenches
- Entanglement in many-body systems
- Quantum Integrable Models
- Quantum Systems with Disorder
- Complex Systems
- Critical phenomena and renormalization group
- Two-dimensional conformal field theories

**Fellowships available:** 5

**Admission:** Academic and scientific qualifications + oral exam (also by videoconference)

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 30 points

**Access to Oral Exam:** minimum mark of 21/30 on academic and scientific qualifications

**Evaluation of Oral Exam:** 70 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 15 March, 2018

**Oral Exam:** 26 to 29 March, 2018

The results of the academic and scientific qualifications evaluation will be notified by email by 21 March 2018. Selected candidates will be informed about day and time of the oral exam that, on demand, could be taken by videoconference, preferably through "Skype" (see general announcement).

**Second Session (only if there should still be places available after the first one)**

**Deadline for online submission of applications:** 22 August, 2018

**Oral Exam:** 3 to 7 September, 2018

The results of the academic and scientific qualifications evaluation will be notified by email by 28 August. Selected candidates will be informed about day and time of the oral exam that, on demand, could be taken by videoconference, preferably through "Skype" (see general announcement).

The results of the oral exams and the final ranking will be notified by email.

## Ph.D course in Theoretical Particle Physics

**Head of the Ph.D course:** Prof. Marco Serone

**Web site:** [Theoretical Particle Physics](#)

**Research lines:**

- String Theory, AdS/CFT duality and applications
- Supersymmetric Field Theories
- Conformal Field Theories
- Quantum Gravity
- Physics beyond the Standard Model
- Physics at the LHC
- Neutrino and Flavour Physics

**Fellowships available:** 5

**Admission:** Academic and scientific qualifications + written exam + oral exam

**Beginning of the Courses:** 1 October, 2018

**Evaluation of academic and scientific qualifications:** 10 points

**Access to Written Exam:** minimum mark of 7/10 on academic and scientific qualifications

**Evaluation of Written Exam:** 40 points

**Access to Oral Exam:** minimum mark of 28/40 in the written exam evaluation

**Evaluation of Oral Exam:** 50 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 7 March, 2018

**Written Exam:** 22 March, 2018

**Oral Exam:** 23 March, 2018

### Second Session (only if there should still be places available after the first one)

**Deadline for online submission of applications:** 15 June, 2018

**Written Exam:** 2 July, 2018

**Oral Exam:** 3 July, 2018

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

## Ph.D course in Theory and Numerical Simulation on the Condensed Matter

**Head of the Ph.D course:** Prof. Sandro Sorella

**Web site:** [Theory and Numerical Simulation on the Condensed Matter](#)

**Research lines:**

- Strongly correlated systems in and out of equilibrium.
- Quantum modeling of materials at the nanoscale.
- Quantum Monte Carlo simulations of strongly correlated systems and materials science

**Fellowships available:** 8

**Admission:** Academic and scientific qualifications + oral exam (also by videoconference)

**Beginning of the Courses:** 5 November, 2018

**Evaluation of academic and scientific qualifications:** 30 points

**Access to Oral Exam:** minimum mark of 21/30 on academic and scientific qualifications

**Evaluation of Oral Exam:** 70 points

**Total Evaluation:** 100 points

**Eligibility:** 70 points

### First Session

**Deadline for online submission of applications:** 15 March, 2018

**Oral Exam:** from 26 to 29 April, 2018

The results of the academic and scientific qualifications evaluation will be notified by email by 21 March. Selected candidates will be informed about day and time of the oral exam that, upon request, could be taken by videoconference, preferably through "Skype" (see general announcement).

### Second Session (only if there should still be places available after the first one)

**Deadline for online submission of applications:** 10 September, 2018

**Oral Exam:** 24 and 25 September, 2018

The results of the academic and scientific qualifications evaluation will be notified by email by 17 September. Selected candidates will be informed about day and time of the oral exam that, on demand, could be taken by videoconference, preferably through "Skype" (see general announcement).

The results of the oral exams and the final ranking will be notified by email.