1st
in Europe
& 8th
in the World
2024 ARWU ranking ("Shanghai")

3400
researchers, lecturers, engineers and technicians

5
Nobel prizes

40
laboratories involving 11 operators: university faculties, grandes écoles, research organisations, and associate member universities

500
doctoral students

600
Master students

115
scientific and technical plateforms

4
doctoral schools

15%
of France's research potential

The Graduate School of Physics

Physics is one of the main pillars of Université Paris-Saclay.
Recognised worldwide, research and training in physics at the university cover all fields of the discipline, from fundamental to applied physics, from theory, modelling and simulation to instrumentation, from laboratory experiments to large instruments located in research infrastructures or in space, from the core of the discipline to its interfaces.

Physics at Université Paris-Saclay also stands out for its strong potential for scientific and technological innovation, enabling it to make significant contributions to numerous socio-economic issues at the interface with physics (energy, environment, health, etc.)

This research is conducted within multiple collaborations in the Île-de-France region, nationally, across Europe and worldwide, with numerous synergies with local and national industry. It benefits from the support of three LabEx: P2IO (Physics of the 2 Infinities and Origins), PALM (Physics of Atoms, Light and Matter) and NanoSaclay.

Strengths in research

Conducted by more than 3,000 researchers, engineers and technicians spread across some 40 laboratories on the campus of Université Paris-Saclay, physics research is organised along three thematic axes:

- **Physics of Waves and Matter (PhOM):** It seeks to understand, describe, and apply the principles and phenomena of physics at scales ranging from atoms to planets, as well as the emergence of complexity in systems with (very) many components, governed by multiple interactions in cooperation or competition. It is distinguished by its capacity for experimentation, i.e. the ability to act directly and non-destructively on the object of study.

- **Physics of the 2 Infinities (P2I):** The major scientific questions concern the ultimate and infinitely small components of matter and the fundamental laws that govern their interactions, as well as the origin and evolution of the infinitely large components of the Universe. The instrumental developments made to answer these major questions make a significant contribution to two vital societal issues: health and energy.

- **Astrophysics:** Research focuses on the functioning of the solar system, the formation and evolution of stars and planetary systems, galaxies and large scale structures, cosmology, and physics under extreme conditions. The work closely combines space and ground-based instrumentation, multi-wavelength or multi-messenger observations, data processing, theory, modelling, simulations, and laboratory experiments.

GRADUATE SCHOOL

Physics

université PARIS-SACLAY

Doctoral Schools

The doctoral programme at the Graduate School of Physics coordinates the activities of four Doctoral Schools, with more than 500 doctoral students and about 200 thesis defences per year, representing 17% of doctoral students in physics enrolled in French universities:

- EDOM (Doctoral School of Waves and Matter) covers optics, diluted matter and condensed matter.
- PHENIICS (Particles, Hadrons, Energy, Nuclei, Instrumentation, Imaging, Cosmos and Simulation) addresses the "physics of the two infinities" and its technical and societal applications.
- AAIF (Astronomy and Astrophysics in Île-de-France) covers the entire interdisciplinary field of astrophysics and its methods of observation, measurement, and computation.
- EDPIF (Doctoral School of Physics in Île-de-France) covers the broad field of fundamental physics, both theoretical and experimental, and its applications.

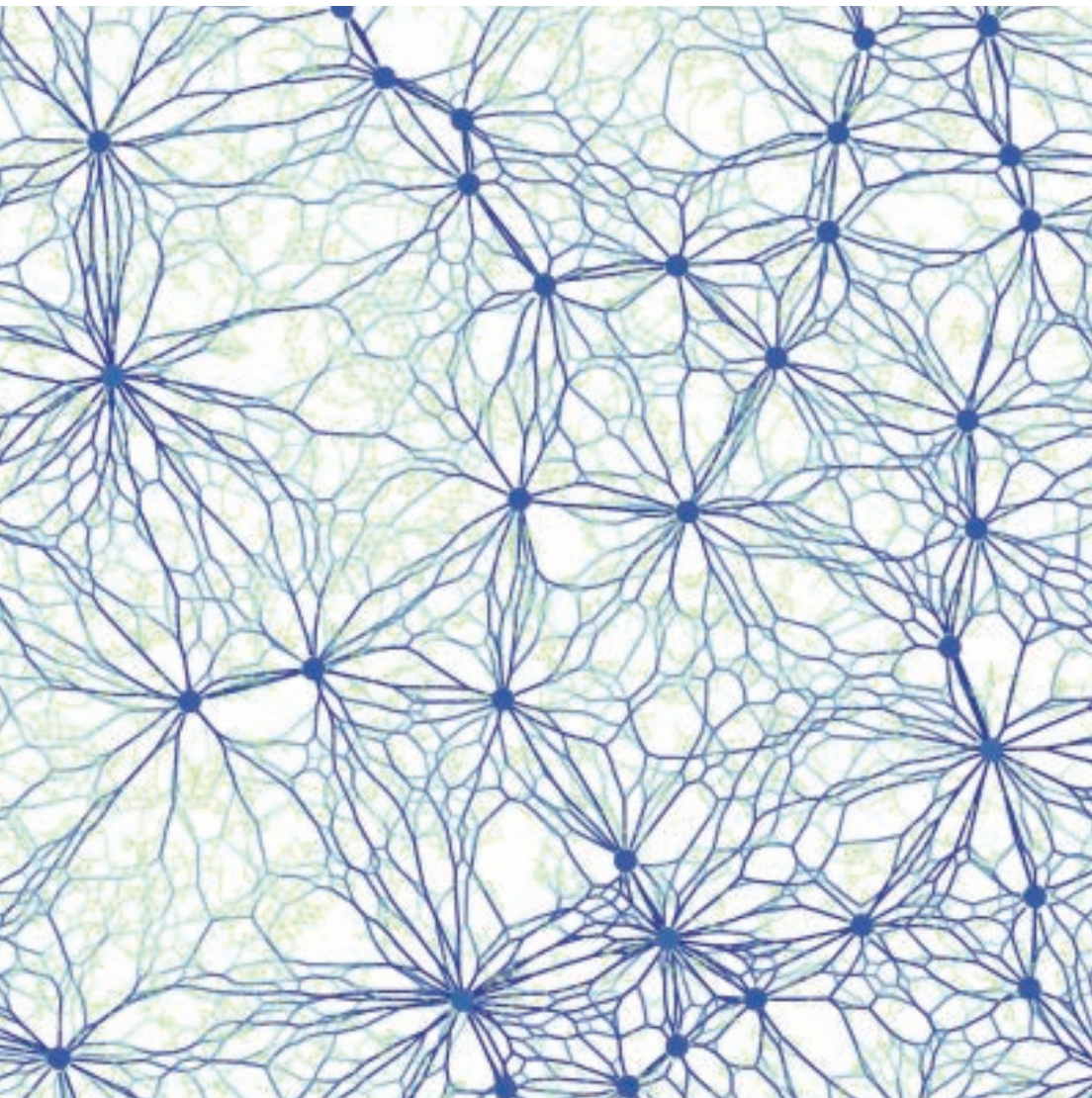
Master

With more than 600 national and international students, the Master's degree in Physics covers the entire spectrum of physics, both experimental and theoretical, with strong links to the latest research being conducted in the laboratoires of Paris-Saclay.

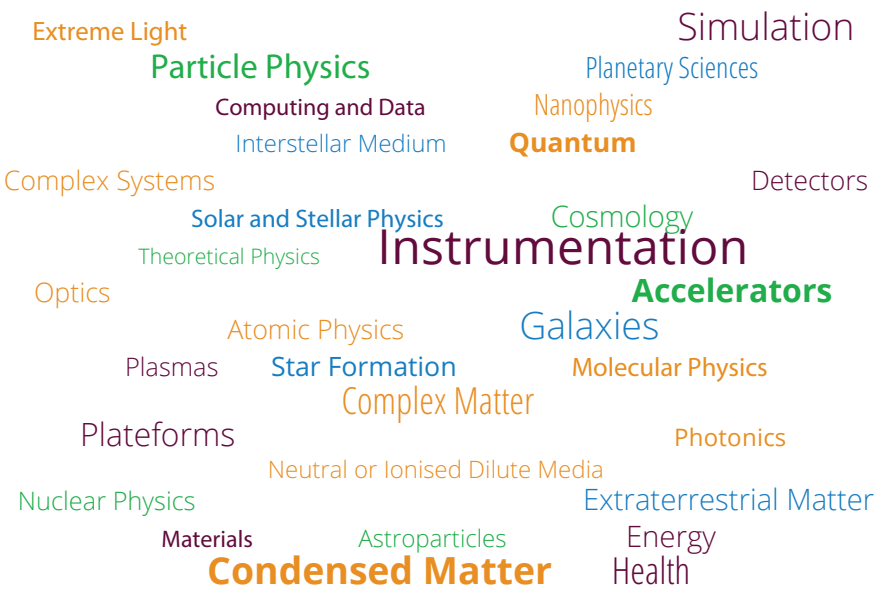
The variety of teaching approaches offered (conceptual or application-oriented, offering the possibility of immersion in a laboratory or a company, aimed at professional integration at Bachelor's or Master's level) is adapted to a variety of student profiles and offers numerous possibilties for specialisation and career opportunities. In the first year, it offers several generalist courses (M1Fundamental Physics, M1 Physics and Applications, M1 General Physics in English) and around twenty M2 focused courses in the second year, in English or French, as well as two Erasmus Mundus courses, one focusing on the physics of large instruments (LASCALA) and the other on quantum science and technologies (QUARMEN). Illustrating the richness and variety of profiles and courses offered on the campuses of Université Paris-Saclay, students at Grandes Écoles can also enrol in a Master's degree programme in physics alongside their studies. Finally, the Master's degree in physics offers the possibility of a double degree with the University of Ferrara or with the Politecnico di Torino.

The Graduate School of Physics aims to attract and train the researchers and engineers of tomorrow, and to share the latest advances in physics with the academic world, businesses, and society.

–>It brings together **15% of France's physics potential** in research and training, combining a range of skills, resources, and experimental facilities of the highest standard, unique in France, and recognised internationally.



Key themes



Platforms

Physics has the unique feature of bringing together nearly 115 scientific and technical platforms capable of hosting activities outside the laboratories where they are located and operated.

These platforms cover all of the Graduate School's themes as well as related themes (chemistry, engineering, biology, etc.). Geographically concentrated, they enable cutting-edge disciplinary research to be carried out in laboratories, provide the academic and industrial communities with unique technical and experimental expertise, and complement university teaching at all levels.

université
PARIS-SACLAY

GRADUATE SCHOOL
Physique

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