

**An introduction to the University of Pisa**  
**Physics Department**  
**PhD Course in Physics**  
(Coordinator: Massimo D'Elia)

**EuPRAXIA-DN kickoff meeting - Brussels, January 2023**

## **University of Pisa**

- **The University of Pisa, founded in 1343, is one of the most ancient and prestigious universities in Europe, with twenty large departments, covering all disciplinary areas, with high level research centres in the sectors of physics, computer science, engineering, mathematics, among others.**
- **The academic staff counts around 1400 professors and researchers, 1500 administrative employees, and more than 50.000 students (including students from other Italian regions and from abroad).**

## **The Physics Department**

- **In the Physics Department, research in diverse fields ranging from atomic physics to gravitational wave detection is carried in close collaboration with the INFN (National Institute for Nuclear Physics) and the CNR (National Research Council), pooling the expertise of leading experts in their fields both for research and undergraduate and graduate teaching.**
- **The academic staff counts 77 professors and researchers, 32 administrative and technical employees, and around 20 post-doc fellows (35% from abroad).**
- **The Department hosts undergraduate and graduate Courses in Physics, which count around 1000 students, with 50% of them coming from outside Tuscany.**
- **The Department has a fundamental role in many International Projects and Collaborations (VIRGO, EGO, CMS, ATLAS, LHCb, Belle II, MEG, Fermi/Glast, AMS, IXPE, and many others) and has gathered more than 20M euros in external funds in the last 10 years.**

## **The PhD Course in Physics**

- **The purpose of the PhD Program is advanced training towards frontier research, either fundamental or applied, experimental or theoretical, in a wide selection of subjects where the Physics Department of the University of Pisa and its national and international scientific partners excel at a worldwide level.**
- **Since 2018 the Program runs jointly with INFN (National Institute for Nuclear Physics), which funds three PhD fellowships each year.**
- **The PhD School counts around 60 PhD students. The main goal of PhD students is to perform original research, achieving scientific independence with an international characterization.**
- **Research is performed under the guidance of a supervisor and a co-supervisor, who are defined during the 1st year.**

- **These are the main research areas:**
  - **Applied Physics**
  - **Astronomy and Astrophysics**
  - **Condensed Matter and Plasma Physics**
  - **Experimental Elementary Particle Physics**
  - **Theoretical Physics.**
- **The Physics Department and INFN are located in the so-called Pontecorvo Area (Polo Fibonacci), which was once the main site of a textile factory owned by the family of Bruno Pontecorvo.**
- **For more information see the Phd Course, Physics Department and INFN websites, as well as the Area Pontecorvo research pages:**

<https://www.unipi.it>

<https://www.df.unipi.it>

<https://phd2.df.unipi.it>

<https://www.pi.infn.it>

<https://sites.google.com/a/unipi.it/research-in-the-pontecorvo-area>

## Main activities during the PhD

- Research is of course the main activity
- Two main physics courses during the first year (~ 40 hours each, mandatory presence of at least 70%)
  - One in the specific research field, the other to complement general knowledge
  - 5 courses offered within the PhD school, but a wide choice also outside it, see <https://phd2.df.unipi.it/offerta-formativa/offerta-formativa-a-a-2022-2023/>
  - exams in a single session in July
- Cross-sectoral and interdisciplinary teaching from UNIFI  
<https://dottorato.unifi.it/index.php/it/dottorandi/item/609.html>
  - one obligatory course on English for Research Purposes
  - many other interesting short courses PhD students are strongly encouraged to follow: Training for European Projects preparation, Open Access, Soft Skills, Gender Issues, and many others.

- **Seminar activities:**
  - one seminar for a general audience (the other PhD students) during the first year
  - prepare a Pre-Thesis document,  $\sim 20$  pages and  $\sim$  two months before the end of the second year, to be revised by a referee, and discuss it in a seminar
  - dissemination of research results in seminars and National and International Conferences, as well as third mission activities, are strongly encouraged
- **Research periods abroad are strongly encouraged, if not mandatory.**
- **Full research and logistic support from the Physics Department and from INFN**