

DOCTORAL PROGRAMME IN PHYSICS AND ASTRONOMY

Director Prof. Giovanni Modugno

XL cycle – academic year 2024/2025

SCIENTIFIC AREA	
ADMINISTRATIVE OFFICE	Department of Physics and Astronomy
PARTNER INSTITUTIONS	Istituto Nazionale di Fisica Nucleare (INFN)
WEB	www.fisica.unifi.it/dottorato in fisica e astronomia
<p>POSITIONS AVAILABLE: 24 Positions with Scholarship: 22 Positions without Scholarship: 2* * <i>standard ranking only</i></p>	
RANKING LIST FOR STANDARD POSITIONS SCHOLARSHIPS AVAILABLE: 8	<p>5 - University of Florence 3 - Istituto Nazionale di Fisica Nucleare (INFN)</p>
RANKING LISTS FOR POSITIONS WITH SPECIFIC RESEARCH TOPICS SCHOLARSHIPS AVAILABLE: 14	<p>1 - Istituto Nazionale di Astrofisica - Osservatorio Astrofisico di Arcetri (INAF) Thematic: "Search and characterization of binaries in star cluster with time-series photometry and large photometric, spectroscopic, and astrometric surveys"</p> <p>1 - Istituto Nazionale di Astrofisica - Osservatorio Astrofisico di Arcetri (INAF) Thematic: "Stellar rotation as a means to study exotic stellar populations in star clusters"</p> <p>1 - Istituto Nazionale di Astrofisica - Osservatorio Astrofisico di Arcetri (INAF) Thematic: "Analysis of the surface chemistry of stars with distorted shape, caused by fast rotation or by the interaction with close companions"</p> <p>1 - Istituto Nazionale di Astrofisica - Osservatorio Astrofisico di Arcetri (INAF) Thematic: "Development of the adaptive Optics System MORFEO for the ELT Telescope: Wavefront Sensing Techniques and Advanced Control for Multi-Conjugate Systems"</p> <p>1 - Istituto Nazionale di Astrofisica - Osservatorio Astrofisico di Arcetri (INAF) Thematic: "Direct detection and spectral characterization of protoplanets: from VLT/ERIS to ELT/MICADO & ELT/METIS"</p>

	<p>1 - Istituto Nazionale di Astrofisica - Osservatorio Astrofisico di Arcetri (INAF) Thematic: "Theoretical, Observational Astrophysics and related Instrumentation and Technology"</p> <p>1 - Istituto di Ricerca e di Studi in Ottica e Optometria (IRSOO) Thematic: "Virtual Refraction: comparison of methods for refraction in domestic settings"</p> <p>1 - Department of Physics and Astronomy Thematic: "Development and characterization of photonic chips for quantum internet" Funded by ERC project "Quantum Optical MULTidimensional NETwork (QOMUNE) - G.A. n. 101077917</p> <p>2 - Department of Physics and Astronomy Thematic: "Galactic archeology in the local group with spectroscopic observations" Funded by ERC project "TREASURES: Digging into dwarf galaxies" (TREASURES) - G. A. n. 101117455</p> <p>1 - Department of Physics and Astronomy Thematic: "Study and realization of advanced atomic interferometers for precision measurements and fundamental physics tests" Funded by HORIZON-CL4-2021-DIGITAL-EMERGING-02 project "Deep Ultraviolet Laser For Quantum Technology" (UVQuanT) - G. A. n. 101080164</p> <p>1 - Department of Physics and Astronomy Thematic: "Multiplexed light-sheet microscopy for 3D molecular phenotyping of biological tissues" Funded by Swiss National Science Foundation project "3Dhist: Evolution of colorectal cancer metatases using multimodal 2D and 3D images"</p> <p>1 NRRP - European Union - NextGenerationEU Thematic: "Numerical simulations of many-body systems and magnetic molecules" Missione 4 "Istruzione e Ricerca" - Componente 2 "Dalla ricerca all'impresa" – "Rafforzamento delle strutture di ricerca per la creazione di "campioni nazionali di R&S" su alcune "Key Enabling Technologies" (Centri Nazionali) - Centro Nazionale di Ricerca HPC, Big data e Quantum Computing - CN1 - CUP: B83C22002830001</p> <p>1 - Department of Chemistry "Ugo Schiff" Thematic: "Spin-Electric effects in molecular magnetic materials of interest for quantum technologies" Funded by FIS2021 project ELECOS</p>
<p>ASI CALL - PUBLIC NOTICE TO START COLLABORATIONS WITH NATIONAL UNIVERSITIES FOR PHDS ON THEMES OF INTEREST ASI</p>	<p>The PhD course presented two projects entitled "<i>Applications of artificial intelligence techniques to the study of cosmic ray spectra with in-orbit experiments</i>" and "<i>Application of muography to the geophysical prospection of terrestrial analogues, for the modeling of the geological risk associated with the future exploration of the Moon and Mars</i>" as part of the ASI Call - Public notice to start collaborations with National Universities for PhDs on themes of interest ASI, for the funding of two scholarships for the 40th cycle of the PhD in Physics and Astronomy, the results of which have not yet been disclosed.</p>

	<p>For more information, please consult the call for applications: https://www.asi.it/2024/02/avviso-pubblico-per-avviare-collaborazioni-con-gli-atenei-nazionali-per-dottorati-di-ricerca-su-tematiche-di-interesse-asi/</p> <p>If one or both projects are funded by ASI, the scholarship(s) will be awarded to the eligible candidate(s) according to the order of the ranking</p>
STUDY/RESEARCH PERIODS ABROAD	3 months
DOCUMENTS REQUIRED FOR THE ADMISSION (under penalty of exclusion)	<ul style="list-style-type: none"> • Copy of the Identification Document • Self-declaration for qualifications obtained in Italy (laurea Triennale, Specialistica o Magistrale o ciclo unico) with a list of all exams taken and their marks, title of the thesis and graduation mark. (download the form here, make sure you fill in all the fields) • Qualifications obtained abroad (Bachelor's and Master's Degrees or combined cycle Degree) with a list of all exams taken and their marks, title of the thesis and graduation mark. <p><i>The same documentation except for the final mark must be submitted by those who will graduate within the 31/10/2024</i></p>
DOCUMENTS REQUIRED FOR THE EVALUATION	<p>MANDATORY</p> <ul style="list-style-type: none"> • Curriculum vitae et studiorum (maximum 2 pages, A4) • Research project (maximum 2 A4 pages) <p>OPTIONAL</p> <ul style="list-style-type: none"> • List of publications • Thesis abstract • Other qualification documents
RESEARCH PROJECT	<p>The project may be written in Italian or English and must outline a possible research activity to be carried out within one of the research groups in the Dipartimento di Fisica e Astronomia or in the linked Enti di Ricerca.</p> <p>The candidate may present the same project for the standard scholarship and for any scholarship with specific research topic and separate ranking lists he/she intends to apply for, or alternatively may present different projects for each scholarship, indicating clearly to which scholarship each project refers.</p>
INTERVIEW MODE	<p>Remotely (videocall)</p> <p>The interview is conducted in English language.</p>
FURTHER INFORMATION	<p>The interview will concern the research project, the CV and the publications. Questions may be asked concerning the master's thesis work and basic physics knowledge related to the project and to the thesis.</p>

EVALUATION MARKS	parameter	minimum score	maximum score
	Research project, other titles and publications, curriculum vitae et studiorum, and list of taken exams with accompanying grades	30/120	45/120
	Applicants who obtain a mark of at least 30/120 will be admitted to the interview		
	Interview: discussion of research project, thesis, qualification documents and publications	50/120	75/120
	Eligibility is achieved with a minimum score of 80/120		

EXAMINATION SCHEDULE		
	DATE	TIME
INTERVIEW	July 11 th , 2024	09:30 a.m.
The list of candidates admitted to the interview and the final ranking will be published at the following web page: https://www.unifi.it/p12593		