PhD Programme in PHYSICS	
DISCIPLINARY SCIENTIFIC AREA	02- PHYSICAL SCIENCES
COORDINATOR	PROF. UMBERTO D'ALESIO
HEAD DEPARTMENT	DEPARTMENT OF PHYSICS
DURATION	3 YEARS
LEARNING OUTCOMES AND RESEARCH TOPICS	The PhD Project: The organization of the PhD programme in Physics allows PhD students to acquire fundamental tools and expertise to conduct research activity in academic and industrial sectors, as well as to develop skills in activities of public engagement and teaching. The composition of the PhD Board, covering a broad range of research fields in Physics, gives PhD students the opportunity to acquire high-level expertise in a large variety of scientific areas. This will be also strengthened by the possibility to be part of large national and international collaborations. Special care is also devoted to problem solving skills, allowing PhD students to face more general situations outside research. The PhD programme in Physics pursues the following goals: 1. COMPLETING THE BACKGROUND IN PHYSICS – The PhD candidates will attend specific lectures, seminars, and additional lecturing activities at post-graduate level. 2. DEVELOPING A PROPER RESEARCH ATTITUDE - The PhD candidate will be assigned a supervisor according to the state-of-the-art research topic who will supervise her/his research and training activities. PhD students join research groups and will work in teams including undergraduate students, post-docs, researchers, and faculty members. Additionally, to complete the training to research, the supervisor will favour the involvement and the commitment of the PhD candidate in international collaborations, the attendance at workshops and conferences as well as in drawing up internal reports and scientific articles. 3. WORKING ON AN INNOVATIVE RESEARCH TOPIC – The research activity of the PhD candidates will be inserted in research projects. The PhD candidates have (i) to work on a novel topic; (ii) to publish the obtained results in national and international scientific journals; (iii) to present the research line and the obtained results in both internal review sessions (year-end seminars and year-end reports) and workshops and/or conferences. 4. DEEPENING ASPECTS OF PROJECT MANAGEMENT – The PhD candidate will be exposed to specific courses on skills related to drafting and managing a project including issues associated with the intellectual property. 5. DEVELOPING SKILLS IN AREAS OUTSIDE RESEARCH – The PhD candidate will be involved in periodic meetings with PhDs working in the context of public engagement and outreach.

	In Italy, PhDs in Physics are usually employed in the academy and/or in public research institutes. However, due to the involvement of research groups of the Physics Department in projects with a strong contribution from companies (INFN projects at CERN, the SRT-Sardinian Radio Telescope, the RESET project within the European Innovation Partnership and the project supported by the NIH-National Institutes of Health), the connection with industries and companies will be strengthened. PhDs in Physics are also involved in activity of public engagement and editorial services at high level: some examples are their recruitment at the Bruno Kessler Foundation and the Editorial Office di Nature Communication.
ELIGIBILITY AND OTHER REQUIREMENTS FOR CANDIDATES (ART. 2 - NOTICE OF COMPETITION)	LM-8 Biotecnologie industriali LM-9 Biotecnologie mediche, veterinarie e farmaceutiche LM-17 Fisica LM-18 Informatica LM-20 Ingegneria aerospaziale e astronautica LM-21 Ingegneria biomedica LM-22 Ingegneria chimica LM-23 Ingegneria civile LM-25 Ingegneria dell'automazione LM-26 Ingegneria della sicurezza LM-27 Ingegneria delle telecomunicazioni LM-28 Ingegneria elettrica LM-29 Ingegneria elettronica LM-30 Ingegneria energetica e nucleare LM-31 Ingegneria gestionale LM-32 Ingegneria informatica LM-33 Ingegneria meccanica LM-34 Ingegneria navale LM-35 Ingegneria per l'ambiente e il territorio LM-40 Matematica LM-44 Modellistica matematico-fisica per l'ingegneria LM-53 Scienza e ingegneria dei materiali LM-54 Scienze chimiche LM-58 Scienze dell'universo LM-71 Scienze e tecnologie della chimica industriale LM-74 Scienze e tecnologie geologiche LM-79 Scienze geofisiche LM Sc. Mat. Scienze dei materiali 8/S (specialistiche in biotecnologie industriali) 9/S (specialistiche in biotecnologie mediche, veterinarie e farmaceutiche) 20/S (specialistiche in fisica) 23/S (specialistiche in informatica) 25/S (specialistiche in ingegneria aerospaziale e astronautica) 26/S (specialistiche in ingegneria biomedica) 27/S (specialistiche in ingegneria chimica) 28/S (specialistiche in ingegneria civile) 29/S (specialistiche in ingegneria dell'automazione) 30/S (specialistiche in ingegneria delle telecomunicazioni) 31/S (specialistiche in ingegneria elettrica) 32/S (specialistiche in ingegneria elettronica) 33/S (specialistiche in ingegneria energetica e nucleare) 34/S (specialistiche in ingegneria gestionale)

	35/S (specialistiche in ingegneria informatica) 36/S (specialistiche in ingegneria meccanica) 37/S (specialistiche in ingegneria navale) 38/S (specialistiche in ingegneria per l'ambiente e il territorio) 45/S (specialistiche in matematica) 50/S (specialistiche in modellistica matematico-fisica per l'ingegneria) 61/S (specialistiche in scienza e ingegneria dei materiali) 62/S (specialistiche in scienze chimiche) 66/S (specialistiche in scienze dell'universo) 85/S (specialistiche in scienze geofisiche) Foreign candidates: Master's degree in Physics and related subjects (to be evaluated on a case-by-case basis)
ADMISSION TESTS	ASSESSMENT OF QUALIFICATIONS AND CURRICULUM VITAE, AND VIDEOCONFERENCE INTERVIEW During the interview, the candidate's language skills in English will be assessed.
ADMISSION TESTS FOR FOREIGN CANDIDATES APPLYING FOR RESERVED POSITIONS SUPPORTED BY A SCHOLARSHIP	ASSESSMENT OF QUALIFICATIONS AND CV, VIDEO CONFERENCE INTERVIEW The interview can also be conducted in English. Reference letters (up to 3) must be written in English, using the form available on the webpage https://unica.it/dottoratiricerca (How to apply for PhD selection: Guidelines and forms- Annex C), by a university professor or an expert in the research fields of the PhD programme, on letterhead of their institution, dated and signed. Evaluators will send their letters directly to the email address phdcall_referenceletter@unica.it (object: surname and name of the candidate being evaluated and name of the PhD programme for which he/she is applying).
POSITIONS	8
SCHOLARSHIPS	4 funded by MUR PL, 1 of which reserved for foreign candidates with a degree awarded abroad 1 funded by I.N.F.N - National Institute for Nuclear Physics 1 funded by INAF-OAC - National Institute for Astrophysics - Astronomical Observatory of Cagliari. The applicant will have to develop a project related to the research carried out at INAF - Astronomical Observatory of Cagliari. 1 INAF-OAC, within the framework of the project CN00000013 - National Center for HPC, Big Data and quantum computing - CUP C53C22000350006, entitled: "Codes for analysis, visualization and management of data and applications to radio astronomy by SKA", funded by European Union - Next Generation EU.
POSITIONS WITHOUT SCHOLARSHIP	1
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