



Document updated on 09/06/2021.

Addenda and corrections are written in red.

CALL FOR PHD POSITIONS – 37th CYCLE

PHD PROGRAMME IN PHYSICS

Coordinator	Prof. Paolo OLIVERO
Department	Physics
Programme length	3 years
Programme website	http://dottorato.ph.unito.it/
Programme start date	1 st November, 2021
Departments involved in the PhD Programme	Physics

Positions offered by the PhD Programme¹	
n. 13 17 positions with scholarship, of which n. 2 3 reserved to candidates with international qualifications	of which: - n. 8 scholarships funded by the University of Torino; - n. 1 scholarship funded by the University within the the project "Rita Levi Montalcini" reserved to students holding a foreign degree - n. 2 scholarship funded by INFN - n. 3 scholarships funded by the Department of Physics (Excellence Project) - n. 3 scholarships funded by INAF

¹ Any additional scholarships and apprenticeship contracts (Legislative Decree no. 81/2015 art.45), which may become available after the publication of this Call, will be announced on the Doctoral School website [Partecipare al Bando/Submitting your application](#) until the Call's deadline.



ADMISSION PROCEDURE <i>(qualifications, including research project + interview)</i>			
	Max	Score	Information/Application documents
QUALIFICATIONS		40	
Final grade Graduates in Italy		<i>max. 15</i>	<i>Weighted average of the final grade of Laurea Magistrale (Master):</i> 110 lode: ____ 15 pts 110: ____ 13 pts 108-109: ____ 11 pts 106-107: ____ 9 pts 104-105: ____ 7 pts 102-103: ____ 5 pts <= 101: ____ 3 pts
Weighted average Graduands in Italy		<i>max. 15</i>	<i>Weighted average of examinations results obtained during the Laurea Magistrale (Master)</i> ≥ 29/30: ____ 15 pts ≥ 28/30 e < 29/30 ____ 13 pts ≥ 27/30 e < 28/30 ____ 10 pts ≥ 26/30 e < 27/30 ____ 7 pts <26/30 ____ 3 pts
CV Graduates in Italy Graduands in Italy		<i>max. 5</i>	<i>as per the CV template. The CV should report the final grade of the Bachelor Degree, if available.</i>



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CV Graduates abroad Graduands abroad		<i>max. 20</i>	<i>As per the CV template. For graduates and graduands from a foreign University the final grade will not be considered separately from the rest of the CV.</i> <i>The CV should report the final grade of the Bachelor Degree, if available.</i>
Publications	2	<i>max. 2</i>	
Reference letters	2	0	Two letters are required
Research Project		<i>max. 18</i>	The research project, written in English (max 6000 characters including spaces and bibliography), should refer to one of the research fields listed for the PhD program and should focus on the following points: state-of-the-art of the field; main goals of the project; proposed methodology.
Threshold		24	
INTERVIEW		60	The online interview will focus on the research project and the relevant physics. The examining board will evaluate the scientific quality of the project, its feasibility during the 3 years of PhD, also considering the research environment in Turin, its goals, its possible impact. Working knowledge of English is mandatory.
Threshold to pass the interview (qualified for PhD)		36	



Research topics **PhD Programme in Physics**

1. Astrofisica sperimentale da Terra e dallo spazio/ Ground- and space-based experimental astrophysics
2. Fisica dei plasmi astrofisici/ Astrophysical plasmas
3. Elio fisica e corpi minori del sistema solare/ Heliophysics and minor bodies of solar system
4. Esopianeti e planetologia/ Extrasolar planets and planetology
5. Evoluzione stellare e Via Lattea/ Stellar evolution and Milky Way
6. Galassie e cosmologia/ Galaxies and cosmology
7. Onde gravitazionali/ Gravitational waves
8. Fisica del clima e dell'atmosfera/ Climate and atmospheric physics
9. Dinamica dei fluidi geofisici e oceanografia fisica/ Geophysical Fluid Dynamics and Physical Oceanography
10. Fisica dei neutroni/ Neutron Physics
11. Fisica dei raggi cosmici/ Cosmic rays
12. Fisica nucleare sperimentale/ Experimental nuclear physics
13. Fisica sperimentale del quark-gluon plasma/ Experimental quark-gluon plasma physics
14. Fisica sperimentale delle particelle elementari/ Experimental high energy physics
15. Elettronica, microelettronica e nuove tecnologie per rivelatori di particelle/ Design of electronics and microelectronics and new technologies for particle detectors
16. Fisica medica/ Medical physics
17. Fisica dei beni culturali/ Cultural heritage physics
18. Materiali e micro/nano-dispositivi innovativi/ Materials and micro/nano-devices
19. Sistemi dinamici, turbolenza e onde nonlineari/ Dynamical systems, turbulence and nonlinear waves
20. Modelli fisici per sistemi biologici/ Physical modelling of biological systems
21. Teoria dei campi su reticolo e modelli integrabili/ Lattice field theory and integrable models



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22. Fisica teorica astroparticellare/ Theoretical astroparticle physics
23. Teoria della stringa e supergravità/ String theory and supergravity
24. Fisica teorica dei nuclei e del quark-gluon plasma / Nuclear theory and quark-gluon plasma physics
25. Fenomenologia delle particelle elementari/ Phenomenology of elementary particles
26. Didattica e storia della fisica/Physics education and history of physics
27. Turbolenza, onde non lineari e fluidi complessi/Turbulence, nonlinear waves and complex fluids (G. Boffetta, M. Onorato) *(titolo abbinato alla borsa finanziata dal Dipartimento di Fisica nell'ambito del progetto Dipartimenti di Eccellenza / research project linked to the scholarship funded by "Dipartimento di Fisica" under project "Dipartimenti di eccellenza")*
28. Metodi di intelligenza artificiale per stimare l'energia libera/Machine Learning methods for Free Energy Calculations (M. Caselle) *(titolo abbinato alla borsa finanziata dal Dipartimento di Fisica nell'ambito del progetto Dipartimenti di Eccellenza / research project linked to the scholarship funded by "Dipartimento di Fisica" under project "Dipartimenti di eccellenza")*
29. Fisica applicata alla diagnosi e cura dei tumori/ Applied physics for cancer diagnostics and therapy (R. Sacchi) *(titolo abbinato alla borsa finanziata dal Dipartimento di Fisica nell'ambito del progetto Dipartimenti di Eccellenza / research project linked to the scholarship funded by "Dipartimento di Fisica" under project "Dipartimenti di eccellenza")*
30. Aspetti non-perturbativi delle teorie di campo conformi/ Non-perturbative aspects of conformal field theories (L. Bianchi). (Research project linked to the scholarship funded by the University within the "Rita Levi Montalcini" project)
31. Gravitational Astrometry & Fundamental Physics to test the dynamical evolution of our Galaxy and its place in cosmology (M. Crosta and M. G. Lattanzi). (Research project linked to the scholarships funded by INAF).
32. Solar Wind: Tracking the spatial evolution of the interfaces between fast, intermediate, and slow solar wind regimes in the inner and extended corona (R. Susino e S. Fineschi). (Research project linked to the scholarships funded by INAF)



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33. Solar coronagraphs for new generation of space missions: experiments and observations (L. Zangrilli and F. Landini). (Research project linked to the scholarships funded by INAF)