



UNIVERSITÀ DEGLI STUDI DI MILANO  
DIPARTIMENTO DI FISICA

COMPETITION FOR ADMISSION TO DOCTORATE SCHOOL IN PHYSICS, ASTROPHYSICS AND APPLIED PHYSICS  
XXXVI<sup>TH</sup> CYCLE - A.Y. 2020/2021

Evaluation criteria (curriculum): up to 20 points

a. Academic career: up to 16 points

The overall university career is assessed, taking into account both the Bachelor and Master degree programs, the presence of honors and the conditions under which each candidate earned their qualifications. For foreign candidates, judgment criteria are applied coherently with the academic systems where they gained their qualifications.

b. Publications: up to 2 points

c. Research and other titles and experiences: up to 2 points

Evaluation criteria (Research Project): up to 10 points

The submitted project will be evaluated considering its clarity and logical internal coherence, also with reference to the state of the art, and the relevance of the candidate contribution.

EVALUATION OF DOCUMENTS SUBMITTED

Candidate	Project	Curriculum	Total	Result
ABDI ZEINAB	2.0	5.0	7.0	not admitted for insufficient score
ABUJAMI MOHAMMED	7.0	13.0	20.0	admitted to the oral exam
ACHILLI BEATRICE	7.0	15.0	22.0	admitted to the oral exam
ALBRIGI TOMMASO	7.0	10.0	17.0	admitted to the oral exam
ANGELINI DAVIDE	4.0	5.0	9.0	not admitted for insufficient score
APOSTOLI CHRISTIAN	7.0	19.0	26.0	admitted to the oral exam
ARDESTANI SEYED MASOOD	5.0	7.0	12.0	not admitted for insufficient score
ARIOSTO SEBASTIANO	6.0	11.0	17.0	admitted to the oral exam
ARMANDO GIOVANNI	7.0	10.0	17.0	admitted to the oral exam
ASQUINI LAURA	6.0	11.0	17.0	admitted to the oral exam
AVANZI ELISABETTA	7.0	5.0	12.0	not admitted for insufficient score
AZIZI JAFAR	5.0	9.0	14.0	not admitted for insufficient score
BARA SILVIA	7.0	16.0	23.0	admitted to the oral exam
BELKHADRIA ZAKARIA	7.0	6.0	13.0	not admitted for insufficient score
BERNASCONI KEVIN GABRIELE	7.0	15.0	22.0	admitted to the oral exam
BERTOLINI ERICA	7.0	15.0	22.0	admitted to the oral exam
BERTUCCI FRANCESCO	7.0	14.0	21.0	admitted to the oral exam
BOLDRINI GIACOMO	7.0	15.0	22.0	admitted to the oral exam
BOLLATI FRANCESCO	7.0	15.0	22.0	admitted to the oral exam
BRIZIOLI MATTEO	7.0	17.0	24.0	admitted to the oral exam
BROGGI LUCA	7.0	16.0	23.0	admitted to the oral exam
CABINI RAFFAELLA FIAMMA	7.0	13.0	20.0	admitted to the oral exam
CAGLIARI MARINA SILVIA	8.0	16.0	24.0	admitted to the oral exam
CALVI GIACOMO	7.0	13.0	20.0	admitted to the oral exam
CAPECCI CHIARA	7.0	12.0	19.0	admitted to the oral exam
CAPPENBERG FEDERICO	6.0	7.0	13.0	not admitted for insufficient score
CARNELLI ALBERTO	6.0	5.0	11.0	not admitted for insufficient score
CARRARA PIETRO	7.0	15.2	22.2	admitted to the oral exam
CEPPI SIMONE	7.0	10.0	17.0	admitted to the oral exam
CERVATO BEATRICE	7.0	10.0	17.0	admitted to the oral exam

Candidate	Project	Curriculum	Total	Result
CHANDRAN ANJU	5.0	10.0	15.0	admitted to the oral exam
CINNIRELLA EMMANUELE	6.0	11.0	17.0	admitted to the oral exam
CORLI SEBASTIANO	7.0	7.0	14.0	not admitted for insufficient score
CORSO ROBERTO	6.0	14.0	20.0	admitted to the oral exam
CROVA FEDERICA	7.0	19.0	26.0	admitted to the oral exam
CUOMO MASSIMO	5.0	5.0	10.0	not admitted for insufficient score
CURONE PIETRO	7.0	14.0	21.0	admitted to the oral exam
D'ADDONA MAURIZIO	7.0	12.0	19.0	admitted to the oral exam
DEL PIO CLARA LAVINIA	7.0	16.0	23.0	admitted to the oral exam
DEMELA ALESSANDRO	7.0	13.4	20.4	admitted to the oral exam
DIANI MARCO	7.0	13.0	20.0	admitted to the oral exam
DITRANI FABIO ROSARIO	7.0	9.0	16.0	not admitted for insufficient score
DUPLETTA ULYANA	8.0	14.0	22.0	admitted to the oral exam
EL CHEIKH RAWYA	1.0	5.0	6.0	not admitted for insufficient score
ELIA VALERIO	7.0	10.0	17.0	admitted to the oral exam
ESLAMI MOHAMMAD	7.0	7.0	14.0	not admitted for insufficient score
FRANCO ANTONIO	7.0	9.0	16.0	not admitted for insufficient score
FRIGERIO MASSIMO	7.0	19.0	26.0	admitted to the oral exam
GIAIMO ANDREA	7.0	12.0	19.0	admitted to the oral exam
GIULIANI LUCA	7.0	10.0	17.0	admitted to the oral exam
GRANATA GIOVANNI	8.0	18.0	26.0	admitted to the oral exam
GUERINI ROCCO GIORGIO	7.0	14.6	21.6	admitted to the oral exam
GUPTA HARSH	4.0	12.0	16.0	not admitted for insufficient score
HASHEMINASAB FATEMEH	7.0	11.0	18.0	admitted to the oral exam
HELMY SALLY	7.0	15.0	22.0	admitted to the oral exam
HUSSAIN FIDA	4.0	7.0	11.0	not admitted for insufficient score
IACOBACCI LORENZO	7.0	9.0	16.0	not admitted for insufficient score
JELMINI BEATRICE	7.0	16.0	23.0	admitted to the oral exam
KHAN MUHAMMAD INAM	5.0	6.2	11.2	not admitted for insufficient score
LAMBERTI MARIO	5.0	8.0	13.0	not admitted for insufficient score
LAMBRI NICOLA	7.0	12.0	19.0	admitted to the oral exam
LONGARINI CRISTIANO	7.0	13.0	20.0	admitted to the oral exam
M ANJANA	6.0	13.0	19.0	admitted to the oral exam
MAGRIN MAFFEI RICCARDO	7.0	14.0	21.0	admitted to the oral exam
MAINO ANDREA	5.0	5.0	10.0	not admitted for insufficient score
MANCO GIULIA	7.0	12.0	19.0	admitted to the oral exam
MANDINI FEDERICO	5.0	9.0	14.0	not admitted for insufficient score
MANICCIA GIULIA	7.0	14.0	21.0	admitted to the oral exam
MANZAN ELENIA	7.0	16.0	23.0	admitted to the oral exam
MARFORI LORENZO	7.0	15.0	22.0	admitted to the oral exam
MARINELLI GIULIA	7.0	11.0	18.0	admitted to the oral exam
MARINO FRANCESCO	8.0	17.0	25.0	admitted to the oral exam
MARNI STEFANO	7.0	10.0	17.0	admitted to the oral exam
MARTINO LUIGI	7.0	5.0	12.0	not admitted for insufficient score
MELADA JACOPO	7.0	14.0	21.0	admitted to the oral exam
MIGLIORATI STEFANO	7.0	11.0	18.0	admitted to the oral exam
MIRARCHI GIOVANNI	7.0	14.0	21.0	admitted to the oral exam
MIRZA BAIG	4.0	7.5	11.5	not admitted for insufficient score
MONTEVERDI ALESSANDRO	7.0	9.0	16.0	not admitted for insufficient score
N SAI KRISHNA	5.0	8.0	13.0	not admitted for insufficient score
NAPONIELLO LUCA	7.0	7.0	14.0	not admitted for insufficient score
NAVA JACOPO	7.0	13.0	20.0	admitted to the oral exam
NAVIGLIO MANUEL	7.0	8.0	15.0	not admitted for insufficient score
NUTRICATI LUCA ARMANDO	7.0	10.0	17.0	admitted to the oral exam
OCAMPO INDIRA	5.0	11.0	16.0	admitted to the oral exam
PARIDEH ABDULRAHMAN	-	6.0	6.0	not admitted for missing documentation
PASINO ELEONORA	7.0	14.0	21.0	admitted to the oral exam
PELICCI LUCA	7.0	12.2	19.2	admitted to the oral exam

Candidate	Project	Curriculum	Total	Result
PICCOLINI MATTEO	7.0	5.0	12.0	not admitted for insufficient score
PINOLINI BIANCA SOFIA	7.0	15.0	22.0	admitted to the oral exam
POGLIANI ANDREA	7.0	14.0	21.0	admitted to the oral exam
PRADHAN SHREETAMA	4.0	8.0	12.0	not admitted for insufficient score
REHMAN ABDUL	4.0	8.0	12.0	not admitted for insufficient score
REHO RICCARDO	7.0	12.0	19.0	admitted to the oral exam
RESELLI SIMONE	6.0	9.0	15.0	not admitted for insufficient score
ROSSI VALENTINO	7.0	14.0	21.0	admitted to the oral exam
ROTA ALESSIA ANNIE	8.0	13.2	21.2	admitted to the oral exam
ROTA SIMONE	8.0	16.0	24.0	admitted to the oral exam
SALEH MIRIAM	6.0	13.0	19.0	admitted to the oral exam
SALERNO GIANLUIGI	6.0	10.0	16.0	admitted to the oral exam
SAURO DARIO	6.0	11.0	17.0	admitted to the oral exam
SCALCINATI LORENZO	7.0	12.0	19.0	admitted to the oral exam
SCALERA ROBERTO	7.0	6.0	13.0	not admitted for insufficient score
SCHUHMACHER SEBASTIAN	4.0	9.0	13.0	not admitted for insufficient score
SEGATI ALESSIA	7.0	12.0	19.0	admitted to the oral exam
SERRANI MATTIA	6.0	8.0	14.0	not admitted for insufficient score
SILVETTI MARTINO	6.0	8.0	14.0	not admitted for insufficient score
TERRANOVA DIEGO	-	9.0	9.0	not admitted for missing documentation
TORTORELLI NAZARENA	5.0	5.2	10.2	not admitted for insufficient score
TREVISAN ANDREA	7.0	16.0	23.0	admitted to the oral exam
TUFINO EUGENIO	4.0	11.0	15.0	not admitted for insufficient score
UBOLDI LORENZO	7.0	14.0	21.0	admitted to the oral exam
USSEGLIO DAVIDE	7.0	10.0	17.0	admitted to the oral exam
VIALE ILARIA	7.0	15.2	22.2	admitted to the oral exam
VICEDOMINI MARCO	7.0	8.0	15.0	not admitted for insufficient score
VINELLI GIUSEPPE	6.0	7.0	13.0	not admitted for insufficient score
ZAGHET SIMONE	7.0	10.0	17.0	admitted to the oral exam
ZAHOOR RIZWAN	4.0	7.0	11.0	not admitted for insufficient score
ZANCHI DENNY	7.0	8.0	15.0	not admitted for insufficient score

to be admitted to interview, candidates must obtain a minimum of 10 points in the curriculum and a minimum of 5 points in the research project.

### CALENDAR OF ORAL EXAMINATIONS

The interviews will take place on the platform ZOOM by the link <https://us02web.zoom.us/j/7137606922?pwd=VkhsUDFGUmRyZWZlWlBodGxTROQyZz09>.

NON-EU Candidates having (serious) problems with the date of interview are requested to communicate it before 30th July to [phd@fisica.unimi.it](mailto:phd@fisica.unimi.it) or [luigi.guzzo@unimi.it](mailto:luigi.guzzo@unimi.it).

As specified in the guidelines, interviews will consist of a discussion on the candidates' research project and, more in general, on the scientific perspectives of their area of interest. In practice, candidates are expected to give a brief introduction to their project (3-5 minutes maximum, no slides), which will be followed by questions from the panel. Focus of the discussion will not be on the absolute scientific merit of the project, but rather on exploring the ability of the candidate to identify and discuss scientific issues with a critical approach.

Thursday 30<sup>th</sup> July 2020 - from 9:00 to 12:30 of the Milan (Summer) time zone

N°	candidate	project title
1	D'ADDONA MAURIZIO	Anomaly Detection con tecniche di Machine e Deep Learning non supervisionato nelle moderne Sky Survey.
2	DEL PIO CLARA LAVINIA	Implementation of a new renormalization scheme for the direct determination of the weak mixing angle at the HL-LHC and study of its running with higher-order accuracy.
3	DEMELA ALESSANDRO	Measurement of Higgs boson mass from $H \rightarrow \gamma\gamma$ events in pp collision at $\sqrt{s} = 14$ TeV with the ATLAS detector.
4	DIANI MARCO	Effective coupling constants in N=6 superconformal Chern-Simons theory.
5	DUPLETTA ULYANA	Analysis of SMBH merger trees: pairing dynamics, accretion and triple interactions.
6	ELIA VALERIO	Impact of surface nanotopography on mechanotransductive and exo/endocytic processes during metastatic cancer cell migration.
7	FRIGERIO MASSIMO	Nonclassical steering and its applications.
8	GIAIMO ANDREA	Modified gravity: f(R) gravity theories.
9	GIULIANI LUCA	Elaborazione di metodi di riconoscimento automatico per sorgenti da erosita all-sky survey.

**Thursday 30<sup>th</sup> July 2020 - from 14:00 to 15:30 of the Milan (Summer) time zone**

N°	candidate	project title
1	GRANATA GIOVANNI	Using strong lensing by galaxy clusters to test the $\Lambda$ CDM model and explore the early Universe.
2	GUERINI ROCCO GIORGIO	Development of ultra-low thermal emittance photocathodes for future high- brightness electron sources.
3	JELMINI BEATRICE	Physics of neutrino oscillations at the JUNO experiment.
4	LAMBRI NICOLA	Optimized regression models for Parton Distribution Function determination using deep learning methods.

**Friday 31<sup>st</sup> July 2020 - from 9:00 to 12:30 of the Milan (Summer) time zone**

N°	candidate	project title
1	LONGARINI CRISTIANO	Non-planar disc dynamics and its effects on star and planet formation.
2	MAGRIN MAFFEI RICCARDO	New Molecular NanoMagnets for High-Density Storage.
3	MANCO GIULIA	Study of the Higgs boson decay to pairs of heavy quarks.
4	MANICCIA GIULIA	Quantum gravity induced modifications on the spectrum of the inflaton field.
5	MANZAN ELENIA	A high-performance feedhorns coupled waveguide OMTs system for CMB B-mode polarization measurement above 100 GHz.
6	MARFORI LORENZO	Spatially resolved investigation of the role of cell membrane mechanosensitive ion channels in mechanotransduction processes through combined AFM spectroscopy and electrophysiology methods.
7	MARINELLI GIULIA	Phenomenology of joint small- and large-x resummation.
8	MARINO FRANCESCO	A new approach for constructing nuclear energy functionals.

**Friday 31<sup>st</sup> July 2020 - from 14:00 to 17:30 of the Milan (Summer) time zone**

N°	candidate	project title
1	MARNI STEFANO	Soluzioni di oligomeri di DNA con sequenza casuale: self-assembly e comportamento di fase.
2	MELADA JACOPO	Development of a smart sensor for the automatic identification of pigments and dyes in artwork through similarity learning.
3	MIGLIORATI STEFANO	Realization of a magnetic Aharonov-Bohm effect measurement with positron interferometry in the QUPLAS apparatus.
4	MIRARCHI GIOVANNI	Ruolo delle fluttuazioni di densità di carica nella determinazione dei fenomeni anomali nei superconduttori cuprati.
5	NAVA JACOPO	Towards a global analysis of Axion-Like Particles interactions.
6	NUTRICATI LUCA ARMANDO	MOTIVATION LETTER IN STRING THEORY
7	PASINO ELEONORA	Quantum interferometry and gravitation with antihydrogen in the ASACUSA experiment at CERN.
8	PELICCI LUCA	Misura del flusso di neutrini solari dal ciclo CNO con il rivelatore JUNO: studi di sensitività e preparazione dell'analisi.

**Monday 3<sup>rd</sup> August 2020 - from 9:00 to 12:30 of the Milan (Summer) time zone**

N°	candidate	project title
1	PINOLINI BIANCA SOFIA	VBS analysis via Deep Learning with CMS Run2 and Run3 data.
2	POGLIANI ANDREA	Non-Equilibrium Fluctuations in a colloidal suspension on Earth and under microgravity conditions.
3	REHO RICCARDO	Studies in Conformal and Perturbative Field Theory, with application to particle physics, condensed matter and cosmology.
4	ROSSI VALENTINO	Characterization of LGAD sensors for the High Granularity Timing Detector in the ATLAS Phase-II upgrade project.
5	ROTA ALESSIA ANNIE	Constraining protoplanetary disc evolution in Taurus multiple systems with ALMA observations.
6	ROTA SIMONE	Struttura infrarossa e simmetrie asintotiche in teorie di gauge e gravità.
7	SALEH MIRIAM	Integrazione multidisciplinare di analisi fisiche applicate allo studio di provenienza di ossidiane italiane.
8	SALERNO GIANLUIGI	Fisica oltre il Modello Standard nei decadimenti antiB $\rightarrow$ D $\pi$ anti $\nu$ e antiB $\rightarrow$ D $\pi^*$ anti $\nu$

**Monday 3<sup>rd</sup> August 2020 - from 14:00 to 17:30 of the Milan (Summer) time zone**

N°	candidate	project title
1	SAURO DARIO	Dynamical appearance of the Planck scale.
2	SCALCINATI LORENZO	Studio delle proprietà statistiche di vortici ottici in campi speckle generati nei processi di scattering.
3	SEGATI ALESSIA	Holographic techniques: entropy of supersymmetric rotating black holes in AdS5 from partition functions of dual field theories.
4	TREVISAN ANDREA	Ruolo delle correlazioni nella dinamica di sistemi quantistici aperti.
5	UBOLDI LORENZO	Optimizing signal extraction for low energy events in DUNE.
6	USSEGLIO DAVIDE	Cosmological constraints on Modified Gravity Theory arises from Loop Quantum Cosmology.
7	VIALE ILARIA	Multi-wavelength and multi-messenger studies of extragalactic high-energy particle sources.
8	ZAGHET SIMONE	A step forward in modeling atomic nuclei beyond the mean field approximation.

**Tuesday 4<sup>th</sup> August 2020 - from 9:00 to 12:30 of the Milan (Summer) time zone**

N°	candidate	project title
1	ACHILLI BEATRICE	Sondare la transizione di fase liquido-solido in liquidi atomici sovraraffreddati - Supportare l'analisi dati attraverso Simulazioni e Machine Learning.
2	ALBRIGI TOMMASO	W and Z bosons in the early Universe.
3	APOSTOLI CHRISTIAN	Real-time simulations of quantum soft-particles systems.
4	ARIOSTO SEBASTIANO	Meccanica statistica dell'apprendimento nelle deep neural network.
5	ARMANDO GIOVANNI	Factorisation and Resummation for Multi-Jet Production in the High Energy Limit at the LHC.
6	ASQUINI LAURA	Tecniche di pianificazione dinamica per la Time Domain Astronomy.
7	BARA SILVIA	Measurements of internal conversion electrons to study multipolarity of gamma transitions and nuclear structure.
8	BERNASCONI KEVIN GABRIELE	Misura della rottura di simmetria d'isospin nel nucleo $^{52}\text{Fe}$ a temperatura finita.

*Tuesday 4<sup>th</sup> August 2020 - from 14:00 to 17:30 of the Milan (Summer) time zone*

N°	candidate	project title
1	BERTOLINI ERICA	The Physics is in the Boundary.
2	BERTUCCI FRANCESCO	Teorie di gravità quantistica e Swampland.
3	BOLDRINI GIACOMO	Search for resonant and nonresonant Higgs boson pair production in the bbqq final state in proton-proton collisions at $\sqrt{s} = 13/14$ TeV.
4	BOLLATI FRANCESCO	Deeply learning protoplanetary discs.
5	BRIZIOLI MATTEO	Study of the rheological properties of bacterial biofilms growing under flow.
6	BROGGI LUCA	Time evolution of Vlasov-Poisson spherical systems and related entropy candidates.
7	CABINI RAFFAELLA FIAMMA	Application of Machine Learning techniques to Magnetic Resonance Fingerprinting.
8	CAGLIARI MARINA SILVIA	Caratterizzazione e sviluppo del metodo della spettroscopia media per la misurazione delle distribuzioni di redshift in contesto cosmologico.

*Wednesday 5<sup>th</sup> August 2020 - from 9:00 to 12:30 of the Milan (Summer) time zone*

N°	candidate	project title
1	ABUJAMI MOHAMMED	Radiomics and Machine learning analysis of Pulmonary diseases.
2	CHANDRAN ANJU	Theoretical Investigation of how spin currents generated in one dimensional Quantum Spin Liquids can be effectively used in the field of spin injection.
3	HASHEMINASAB FATEMEH	Protostellar discs - Planet formation-Dustbusters- Dust and gas in planet forming discs-WP1-WP7.
4	HELMY SALLY	Biophysical Characterization of Extracellular Vesicles and their Cellular Internalization Mechanism.
5	M ANJANA	Study of Open Star Clusters.
6	OCAMPO INDIRA	Bounce Solutions in Brans Dicke Model.
7	CALVI GIACOMO	Feasibility study of an innovative approach for range monitoring in Hadrontherapy.
8	CAPECCI CHIARA	Quantum computation and electronic structure algorithms.

*Wednesday 5<sup>th</sup> August 2020 - from 14:00 to 17:30 of the Milan (Summer) time zone*

N°	candidate	project title
1	CARRARA PIETRO	Time-resolved fine analysis of low-energy excitations in magnetic and functional materials.
2	CEPPI SIMONE	Multiplicity signatures in accretion discs.
3	CERVATO BEATRICE	Sviluppo dei rivelatori a pixel per l'esperimento ATLAS a HL-LHC.
4	CINNIRELLA EMMANUELE GESUALDO	Studio di modelli di Ising con campi periodici nello spazio nell'ambito dell'Informazione Quantistica.
5	CORSO ROBERTO	Termodinamica quantistica in sistemi optomeccanici e stati quantistici per applicazioni di laboratorio.
6	CROVA FEDERICA	Investigating the role of atmospheric aerosol properties and sources on human health.
7	CURONE PIETRO	Protoplanetary discs around very low mass stars and brown dwarfs: study of their substructures and implications on planet formation.

The President of the Committee  
Prof. Luigi Guzzo