



## Public Competition for Admission to the Doctoral Research Programme in Physics, Astrophysics and Applied Physics a. y. 2020/2021.

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Dir. FD/FTL

**PUBLIC COMPETITION FOR ADMISSION TO THE DOCTORAL RESEARCH PROGRAMME IN PHYSICS, ASTROPHYSICS, AND APPLIED PHYSICS A.Y. 2020-2021**

**THE RECTOR**

- Having regard to Italian Ministerial Decree No. 270, dated 22 October 2004, entitled "Amendments to Regulation No. 509 containing rules governing the educational autonomy of Universities, passed by a Decree of the Ministry for Universities and Scientific and Technological Research on 3 November 1999";
- Having regard to Article 4 of Italian Law No. 210, dated 3 July 1998, as amended by art. 19, paragraph 1, of Italian Law No. 240 dated 30 December 2010;
- Having regard to Italian Regional Law No. 33, dated 13 December 2004, entitled "Rules governing Regional measures to ensure the right to study at university", which makes provisions for services in favour of students enrolled in doctoral programmes;
- Having regard to Italian Ministerial Decree No. 45 dated 8 February 2013, "Regulation containing the accreditation methods of the locations and doctoral programmes and the criteria for the institution of doctoral programmes by accredited bodies";
- Having regard to the Statute of the University of Milan, issued by Rector's decree of 15 March 2012, as amended;
- Having regard to the University Regulations regarding research doctorates issued by Rector's decree of 5 June 2015, as amended;
- Having regard to the Ministerial decree protocol No. 917 of 15 October 2019, whereby the Ministry of Education, Universities and Research (MIUR), pursuant to Ministerial Decree 45/2013, grants five-year accreditation to the doctoral research programmes proposed by the University of Milan, subject to the prescribed requirements;
- Considering that the University intends to institute a new cycle of doctoral programmes for academic year 2020/2021;
- Having regard to the note of MIUR protocol No. 7757 of 11 March 2020;
- Having regard to the decisions of the Academic Senate and of the Board of Directors in the session of 31 March 2020, concerning the institution of the 36th doctoral cycle;

**HEREBY DECREES**



## Art. 1 - Institution of the Doctoral Programme

The Doctoral Research Programme in Physics, Astrophysics and Applied Physics is instituted at the University of Milan for academic year 2020/2021 (36th cycle), subject to assessment of accreditation requirements by the Ministry of University and Research (MUR). A public competition for admission to the above doctoral research programme, based on qualifications and exams, is hereby announced by the University of Milan. The table annexed to this decree, which forms an integral part hereof, contains a brief description of the programme, the examination schedule, and the link to the university website providing information on the research topics identified by the Academic Board, in line with the objectives of the programme, its research and educational focus. The criteria on which the selection of research topics is based are set out in art. 21 of the University Regulations for Doctoral Study.

The number of scholarships may be increased should external funding become available before the deadline of the call for submission of applications.

Foreign candidates who are in receipt of scholarships issued by their country of origin may be admitted in excess of the enrolment quota if they pass the admission exams set out in this decree.

## Art. 2 - Admission Requirements

In order to apply for a place in the above doctoral research programme, students must hold a second-cycle degree (*Laurea Magistrale*) or equivalent qualification, or an equivalent qualification by study level (Master's Degree) from a foreign University.

The suitability of a foreign academic qualification in terms of content is appraised by the Examining Committee of the doctoral programme, in compliance with the regulations in force in Italy and in the country in which the academic qualification was issued, and the international treaties or agreements pertaining to the recognition of qualifications for the continuation of studies.

Those without a second-cycle degree may also apply. However, admission to the doctoral research programme is subject to completing the second-cycle degree by 31 October 2020, failing which, the candidate will be excluded from the programme.

## Art. 3 - Application for Admission

Applications must be submitted through the following procedure by no later than **2 pm on 20 July 2020**:

1. Register onto [the University portal](#). This operation is not required of those already registered on the portal or in possession of University access credentials (upcoming graduates or those who graduated from the University of Milan less than a year ago);
2. Login and submit an application for admission to the Doctoral programme admission services - [Servizio di ammissione dottorati di ricerca](#);
3. Pay a non-refundable fee of €50.00 for selection costs.



During the procedure applicants are required to **upload** the following **documents** as .pdf, .rtf or .jpg files, all under 10 MB:

- A. Diploma Supplement, issued by the University according to European Commission, Council of Europe and UNESCO/CEPES standards, or degree certificate in Italian or English from their home University, listing exams taken, corresponding grades and credits, and showing the statistical distribution of exam grades for their study programme. This document is not required of graduates/upcoming graduates of the University of Milan since it will be acquired internally.
- B. CV, describing any professional experience and other qualifications held by the applicant;
- C. Research project (using [Form 1 attached hereto](#));
- D. Copy of passport (foreign applicants only);
- E. Any publications;
- F. [Annex A](#).

**The online application cannot be modified or supplemented with further documentation once it has been confirmed.**

Self-certifications are accepted as and where provided for by the laws in force.

**Failure to submit any one of the above documents (A to C) will lead to exclusion from the competition.**

Qualifications and scientific publications may be submitted in Italian or English.

In addition to the above documentation, on request by the Academic Board and as specified in the programme table, applicants must provide two reference letters from qualified persons who have had a role in their education. The letters, to be drawn up according to [Form 2](#) attached hereto, shall be e-mailed as .pdf files directly by said persons to the address indicated in the doctoral programme sheet by the competition deadline. Reference letters are considered part of the candidate's CV and no point score is assigned to them.

#### **Art. 4 - Provisions for Disabled Applicants**

In compliance with Article 20 of Italian Law no. 104 dated 5 February 1992, disabled applicants may request special aids and/or additional time for the competition exam, if they deem it necessary. To this end, they must submit a specific declaration of disability or of Learning Disability (form available at the University webpage *Modulistica generale* - general forms), along with a medical certificate attesting to the validity of the request.

Scanned copies of the form and documentation must be uploaded during the online application procedure.



## Art. 5 - Admission Exam

Admission to the doctoral programme is through a public selection procedure involving the evaluation of qualifications and examinations for the comparative assessment of candidates. An Examining Committee set up and appointed in compliance with current regulations will carry out the procedure.

The selection procedure aims to ascertain the qualifications, abilities and aptitudes of candidates for scientific research and their personal motivations. It is based on assessment of the **CV**, a **research project**, which may be inspired by the second-cycle degree thesis work, and an **online interview**. The research project, which should be drawn up using a standard model (Form 1 attached hereto), is only for selection purposes and does not limit the choice of doctoral thesis in the case of admission.

The CV and research project are assessed before the interview. The outcome of the assessment is available on the University portal.

The CV is evaluated on the basis of the candidate's university studies, publications, professional experience and other qualifications, if any. A **maximum score of 20 points** can be assigned to the CV. In assigning the points the Committee considers the conditions and the period over which the candidate has obtained his/her qualifications.

A **maximum score of 10 points** can be assigned to the **research project**.

Candidates who obtain a score of at least 50% of the maximum points available for the CV and the research project can be called for interview.

The interview will take place in public session according to the schedule available on the University portal. The aim is to assess the candidate's knowledge in the field of the doctorate. The interview includes a seminar-style presentation of the research project, followed by general discussion to verify the candidate's expertise, scientific qualities and motivations. A maximum of 70 points may be assigned to the interview.

The interview is conducted in the language set out in the doctoral programme table. However, candidates may ask to be interviewed in English. English language proficiency will be, anyway, ascertained during the interview.

To sit for the examination, candidates must show one of the following identity documents:

- a) Identity card;
- b) Passport;
- c) Driving licence (Italian).

At the end of each interview session, the Committee makes a list of the candidates examined and their point scores. The list is signed by the President and the Secretary of the Committee and is published on the University portal.

At the end of the examinations, the Committee draws up a general ranking list according to the total score assigned to the candidates for their CV, research project and interview.



Candidates must obtain a **minimum score of 70/100** to pass the admission exam.

The ranking is published online on the page [Postgraduate admission rankings](#) in the days following the examinations.

The Committee must conclude its work no later than 6 August 2020.

## **Art. 6 - Admission to the Programme**

Applicants are admitted to the programme according to their position in the ranking list until the number of places available has been filled. Where applicants achieve the same score, preference will be given to the younger applicant, without prejudice to the right of priority for doctoral grants set forth in art. 8 hereof. The rankings of eligible applicants will be published in the days following the interviews on the University website- [Postgraduate admission rankings](#)

**The ranking list posted to the University website is equivalent to notice, and eligible applicants will not receive any written notice.**

Applicants admitted to the programme lose their entitlement if they fail to enrol by the deadline. Their place is then given to the next applicant in the ranking list. This also applies if an admitted applicant withdraws within three months of the beginning of the programme. If the withdrawing student has already received any monthly scholarship payments, he/she is required to return them. Takeover applicants will be contacted personally by email by the Doctoral Student Office (*Segreteria Dottorati*), which will provide instructions and deadlines for enrolment.

Once the final rankings are published, non-EU citizens residing abroad who have been admitted to the doctoral programme will receive an e-mail (from [international.students@unimi.it](mailto:international.students@unimi.it)) with the admission letter for obtaining a student visa.

## **Art. 7 - Enrolment**

Applicants admitted to the doctoral programme can enrol online **from 3 to 9 September 2020** using the [SIFA enrolment service](#) following the procedures published on the [University website](#).

Candidates are admitted to the programme conditionally and may be excluded from the programme if they are found not to meet the requirements.

Doctoral students are required to pay a € 980.00 fee for accessing and attending doctoral programmes, including the regional study tax, accident insurance premium and stamp duty. Students who withdraw from the doctoral programme are not entitled to reimbursement of enrolment fees already paid.

Beneficiaries of doctoral scholarships granted by the University are exempted from payment of the fee for accessing and attending doctoral programmes. A €156.00 fee covering the regional study tax and administrative fees will be deducted from the scholarship awarded.

Likewise, beneficiaries of scholarships from the Ministry of Foreign Affairs or from the regional education incentive programme (*Diritto allo Studio*), and applicants with invalidity greater than 66% and/or with recognised disability according to Law 104/92, are exempted from payment of the



doctoral programme admission and attendance fee, and are only required to pay the €156.00 fee covering the regional study tax, the accident insurance premium and stamp duty.

Applicants who hold a foreign academic qualification must also show the originals (and provide a copy) of the following documents to the International Student Office (Via Santa Sofia no. 9/1 - 20122 Milan) by the enrolment date.

- a) University qualification;
- b) Italian translation of the qualification, done by an official translator and certified in accordance with existing regulations;
- c) *Dichiarazione di valore in loco* (statement of validity) to be requested from the Italian diplomatic office in the country in which the qualification was awarded;
- d) Italian tax identification number (*codice fiscale*);
- e) residence permit (non-EU applicants only).

The documents in paragraph b) and c) may be replaced by a Diploma Supplement issued by the University in accordance with European Commission, Council of Europe and UNESCO/CEPES standards or by any other statement of validity issued by ENIC\_NARIC centres or by diplomatic offices in Italy. The University reserves the right to request the *Dichiarazione di valore in loco* (statement of validity) where any doubt arises regarding the validity of the qualification.

Verification of the validity of foreign qualifications is made on submission of the official documents.

## Art. 8 - Scholarships

The scholarship is granted, pursuant to existing regulations, in line with the ranking list and consists of an annual gross amount of **€ 16,350.00**. The amount of the scholarship is exempt from IRPEF income tax in accordance with art. 4 of Italian Law no. 476 of 13 August 1984, but subject to social security contributions pursuant to art. 2, paragraph 26 et seq., of Italian Law no. 335 of 8 August 1995, as amended.

In the event of equal merit, the scholarships are assigned on the basis of the candidates' financial position, as expressed by the indicator of equivalent financial position (ISEE).

A €156.00 fee covering the regional study tax and administrative fees will be detracted from the scholarship awarded.

Scholarships have a yearly duration and are renewed if the Academic Board promotes the doctoral student to the following year on the basis of yearly performance.

Starting from the second year, in addition to the scholarship and depending on the University's budgeted financial resources, each doctoral student is given an amount for research in Italy and abroad suited to the type of programme and in any case not less than 10% of the amount of the scholarship itself.



### **Art. 9 - Obligations of Doctoral Students**

The doctoral research programmes entail 1500 hours of training-education and research activities per year. The duties and rights of students are set out in art. 22 of the University Regulations on Doctoral Research.

### **Art. 10 - Awarding of Qualification**

The qualification of Doctor of Philosophy, abbreviated as "Dott. Ric." or "Ph.D.", is awarded under the conditions set forth in art. 23 of the University Regulations on Doctoral Research.

### **Art. 11 - Personal Data Processing**

Pursuant to Legislative Decree no. 196 of 30 June 2003, as amended by Legislative Decree no. 101 of 10 August 2018, as well as EU Regulation no. 679/2016 (General Data Protection Regulation, GDPR), the University undertakes to safeguard the confidential nature of the information provided by applicants. All data provided is processed solely for purposes related to the competition and possibly for managing the applicant's relationship with the University, in compliance with current legislation.

### **Art. 12 - Relevant Regulations**

Any items for which no specific provision has been made in this call for applications are regulated in accordance with Italian legislation and regulations governing doctoral research.

### **Art. 13 - Procedure Manager and Contacts**

Pursuant to Law no. 241 of 7 August 1990, the person in charge of the competition hereunder is Ms. Monica Delù (Head of Sector *Post-Graduate Programme Admissions and Communications Sector*)

For further information and clarification you are kindly requested to use the [Infostudenti](http://www.unimi.infostudente.it) service, ([www.unimi.infostudente.it](http://www.unimi.infostudente.it)) selecting the category: Postgraduate/Doctoral research students.

Milan, 18 June 2020

THE RECTOR  
(Elio Franzini)





## Doctoral Programme in Physics, Astrophysics and Applied Physics

### Learning objectives

The focus of this doctoral programme is on physics in advanced sectors of pure and applied research. Research covers all areas of modern physics, as set out in the five curricula that aim to facilitate the placement of doctoral students in specific sectors.

The required basic training is ensured by a combination of courses specific to this programme and others exceptionally borrowed from the second-cycle degree programme, with examinations at the end of the first year. Moreover, doctoral students are required to attend an International School, with final assessment through a public seminar. The programme also provides opportunities for discussion and exchanges among students in different curricula, particularly during a workshop at the end of the academic year.

Training is supplemented by coordinated series of subject-specific conferences ("Physics Colloquia"). At the same time, doctoral students will have to undertake original research under the guidance of a tutor and a co-tutor, and report on their progress through annual seminars during which students present their findings to the University's scientific community. This programme also offers internships in Fundamental Physics or High Technology at National and International Laboratories and private Research Laboratories.

The doctoral programme is entirely in English.

### Academic disciplines

02/A (Physics of Fundamental Interactions)

02/B (Material Physics)

02/C (Astronomy, Astrophysics, Earth and Planetary Physics)

02/D (Applied Physics, Teaching and History of Physics)

09/E (Electric and Electronic Engineering and Measurements)

### Research topics

Research topics are available on the [University website](#)

### Duration

3 years

### Places available

14

### Scholarships

11 granted by the University of Milan



3 funded by INFN - Istituto Nazionale di Fisica Nucleare

### Doctoral Programme Coordinator

Prof. Matteo Paris, full professor in academic field (SSD) FIS/03 [matteo.paris@unimi.it](mailto:matteo.paris@unimi.it)

### Curricula

1. Astrophysics
2. Material physics
3. Nuclear and particle physics
4. Fundamental theoretical physics
5. Applied physics

### Admission requirements

Academic qualifications obtained in one of the following classes under Ministerial Decree 270/2004, or one of the corresponding classes under Ministerial Decree 509/99:

- LM-6 Biology;
- LM-8 Industrial Biotechnology;
- LM-9 Medical, Veterinary and Pharmaceutical Biotechnology;
- LM-11 Cultural Heritage Conservation Studies;
- LM-17 Physics;
- LM-18 Computer Science;
- LM-20 Aerospace and Astronautical Engineering;
- LM-21 Biomedical Engineering;
- LM-22 Chemical Engineering;
- LM-25 Automation Engineering;
- LM-27 Telecommunication Engineering;
- LM-28 Electrical Engineering;
- LM-29 Electronic Engineering;
- LM-30 Energy and Nuclear Engineering;
- LM-32 Computer Engineering;
- LM-33 Mechanical Engineering;
- LM-40 Mathematics;
- LM-44 Mathematical and Physical Modelling in Engineering;



LM-53 Materials Science and Engineering;  
LM-54 Chemistry;  
LM-58 Universe Sciences;  
LM-71 Industrial Chemistry;  
LM-74 Geological Science and Technology;  
LM-75 Environment and Land Science and Technology;  
LM-79 Geophysics;  
LM-82 Statistics.

### Reference letters

The Academic Board requires that two reference letters, drawn up according to [Form 2](#) attached hereto, be sent by email to [phd@fisica.unimi.it](mailto:phd@fisica.unimi.it)

### Doctoral programme selection phases

*CV and research project assessment outcome*

Available from 29 July 2020 on the University website

*Examination schedule*

**Online interview:** starting on 30 July 2020.

The interview will be in Italian or English, as elected by the candidate. English language proficiency will be, anyway, assessed during the interview.

The interview date and time, and the project title for each candidate will be posted to the [University website](#).

Such posting is equivalent to notice to the candidate.

**Annex A**

**DICHIARAZIONE SOSTITUTIVA DI ATTO NOTORIO**

Self drafted affidavit  
(art. 47 del DPR n° 445/2000)  
(art. 47 Presidential Decree n. 445/2000)

Il sottoscritto/the undersigned

cognome/surname \_\_\_\_\_ nome/name \_\_\_\_\_

nato a/born in \_\_\_\_\_ il/on \_\_\_\_\_

consapevole delle sanzioni penali richiamate dall'articolo 76 del Dpr 445/2000 in caso di  
dichiarazioni non veritiere e falsità in atti

aware that providing false data and using fake documents are crimes punishable by law (art. 75  
and 76 of the Presidential Decree n. 445/2000)

**dichiara sotto la propria personale responsabilità  
declares under his/her own responsibility**

che le pubblicazioni/ i titoli sotto elencati, prodotti in copia tramite upload, sono conformi  
all'originale:

that the publications and the qualifications listed below, produced as copies, comply with the  
originals:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Milano, \_\_\_\_\_

Data/date

\_\_\_\_\_

Firma/Signature

Ai sensi dell'art. 3 del DPR 445/2000 l'autocertificazione può essere utilizzata solo dai cittadini appartenenti all'Unione Europea. I  
cittadini non europei devono produrre documenti originali o in copia autenticata secondo la normativa vigente.

According to art. 3 of Presidential Decree no. 445/2000, only Eu citizens are entitled to use this form. Non-Eu citizens must submit the  
original documentation or photocopies authenticated in compliance with the law in force.

## Form 1

### PROGETTO DI RICERCA / RESEARCH PROJECT

Cognome e nome del candidato  
Applicant's Name

Corso di dottorato  
Doctoral Programme

1) Titolo del progetto / Project title

2) Sommario / Abstract

3) Obiettivi e rilevanza dei risultati ottenibili nel contesto dello stato dell'arte / Project goals and their relevance in the context of the state of the art

4) Descrizione del progetto / Project description

5) Bibliografia / References

Il progetto dovrà avere almeno 2.000 e non più di 4.000 parole, bibliografia esclusa.

The project should be 2,000-to-4,000-word long, excluding references.

**Form 2**

**REFEREE FORM**

<b>Applicant's Name</b>		<b>PhD</b>	
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To be completed in all areas

<b>Referee's name</b>		<b>Position/Title</b>	
<b>Institution/Company</b>			
<b>Address</b>		<b>City</b>	
<b>Zip code</b>		<b>Country</b>	
<b>Phone contact</b>		<b>Email</b>	
<b>Date</b>			

On the following scale, please rank the applicant against other students in comparable fields and indicate the comparison group used.

Bottom 50%	Top 50%	Top 25%	Top 10%	Top 5%	Top 2%

Please rate this applicant in overall promise for the doctorate (check one)

Unable to evaluate	Below Average	Average	Good	Outstanding	Exceptional

**Give your comments here**  
Your personal evaluation of the candidate