



UNIVERSITY
OF TRENTO - Italy

Call for Doctoral positions at the

PhD Programme in

Physics

35th Cycle

ACADEMIC YEAR 2019/2020

N.B. Please note that only the Italian version of the present call issued by Rector's Decree no. 434 of 18.06.2019 is legally binding; the English version is provided for information only

Art. 1 – SUBJECT OF THE CALL

The University of Trento opens the call for positions for the 35th Cycle (Academic Year 2019/2020) of the Phd Programme in “Physics” jointly run with the National Institute for Nuclear Physics (INFN - Italy).

Positions: no. 23

Scholarships: no. 20

Positions without scholarship: no. 3

Supernumerary positions: no. 2 (see art. 7)

Scholarships are funded by:

	Financier of scholarships	No.	Topics of reserved scholarships¹
Positions	University of Trento	4	---
	University of Trento & Department of Physics	3	A - Nanosecond Repetitive Pulsed (NRP) discharges for CO ₂ conversion B - Space data science and technology C - Cellulose nanostructures as building block for functional materials
	University of Trento & CNR-INO	1	D - Quantum Gases and superfluidity
	Department of Physics	3	E - Development of coarse-grained modeling methods for biological macromolecules and their application (H2020-ERC StG VARIAMOLS - Potestio) F - Twin photons and single photon entanglement for QRNG and QKD (UE H2020 FET "QRANGE" Pavesi) G - Neuromorphic silicon photonics
	Department of Physics (Q@TN)	6	H - SOCCER (Superconducting Circuits for the Casimir Effect) I - Photonic Quantum Simulations of Dynamical Gauge Fields (PhoQuaSDyn) J - Quantum Information Transfer in Positronium Annihilation K - Second Order Nonlinearities in p-i-n Silicon waveguides for entangled photon generation towards MIR quantum sensing – SiPDC L - Machine Learning techniques FOR Quantum Gate Engineering (ML Q-FORGE) M - Machine learning for Quantum Many-Body Phases recognition (MalQuPh)
	INFN	3	N-O - Particle, astroparticle, nuclear, theoretical physics, related technologies and applications, including medical Physics P - 4D tracking for space application with fast silicon detectors (LGAD)
	Positions without scholarship	3	
	No. of positions:	23	
	Supernumerary positions	2	(see art.7)

The scholarships for specific research topics (reserved scholarships) are conditional on execution of a particular research topic for which specific skills are required. Candidates interested in one or more of these scholarships must carefully check the topic and the requirements listed on the selection webpage.

Any candidates selected by special committees for admission related to specific international mobility programmes in which the University of Trento participates, may also be admitted to the 35th Cycle on additional positions.

Deadline for application	August 29, 2019, hrs. 04.00 PM (Italian time, GMT +2)
Duration	three years
Start of the Academic Year	November 1, 2019
Selection website	https://www.unitn.it/en/ateneo/1940/announcement-of-selection

¹ Reserved scholarships can only be assigned to those candidates who will ask for and obtain the specific eligibility.

Programme website	https://www.unitn.it/drphys/en (information on the programme, admission to final examination and award of the degree)
Rights and duties of doctoral students	https://www.unitn.it/en/ateneo/52919/rights-and-duties-of-doctoral-students
Doctoral scholarships	https://www.unitn.it/en/servizi/1937/doctoral-scholarships
Official languages	English, Italian

Scientific Areas:

FIS/01 Experimental Physics

FIS/02 Theoretical Physics, mathematical methods and models

FIS/03 Physics of Matter

FIS/04 Nuclear and Sub nuclear Physics

FIS/07 Applied Physics (for the environment, biology, medicine and cultural heritage)

FIS/08 Teaching and History of Physics

The positions with scholarships or other forms of financial support may be increased after the publication of this call and the day before the assessment of qualifications. All the new available positions will be posted solely on the selection website.

N.B.

- a. All selection results (interim and final), the possible exclusion from the selection for incomplete application (art. 3), the exclusion for foreign qualification not recognized as suitable (art. 2 c.3), and any general advices will be published only on the selection webpage; the candidates will be identified through the application ID. The publication on the website is to all intents and purposes valid as official notification.
- b. Without exception, all possible communication from the University of Trento to applicants will be managed via e-mail to the email address specified in the application online. Candidates are advised to check their mail box regularly and keep the Doctorate Office S&T (phd.office-st@unitn.it) promptly informed of any change of their email account.

Art. 2 – ADMISSION REQUIREMENTS

1. Applications for doctoral positions are accepted from applicants, regardless of gender, age and nationality, who hold:
 - a. an Italian “Laurea Magistrale”, according to the Ministerial Decree no. 270 of 22.10.2004 and subsequent amendments, or
 - b. an equivalent Italian university degree (previous regulations in force, “specialistica”, AFAM), or
 - c. an equivalent foreign degree (*Master’s degree*) obtained at an officially acknowledged academic institution, valid for admission to PhD studies in the Country of issue (except for substantial differences) and similar (duration and level) to the Italian degree, recognized as equivalent by the Admissions Committee for the sole purpose of access to the present Phd Programme².
2. Applications are also accepted from students expecting to obtain the necessary degree **by October 31, 2019**. Admission to the Doctoral Programme for successful applicants who have not yet graduated will be “conditional” and the applicant will have to submit to the Doctorate Office S&T (via email to: phd.office-st@unitn.it) **by November 6, 2019**, on penalty of exclusion, awarding certificate or a self-declaration (by using Annex A).
3. Applicants with a foreign qualification that has not been officially recognised as equivalent³ to an Italian degree (*Laurea Magistrale/Specialistica/vecchio ordinamento*) will be considered as requesting equivalence in their application, attaching the necessary supporting documents. The eligibility of foreign academic degrees is assessed by the Admissions Committee, following the rules in force or the international treaties on recognition of academic qualifications. The Admissions Committee may require the applicant to provide additional documentation if deemed necessary for the purpose of assessing the eligibility.

² Details at: <https://www.cimea.it/en/servizi/il-sistema-italiano-di-istruzione-superiore/qualifiche-del-sistema-universitario.aspx>.

³ For further information see at <https://www.cimea.it/en/servizi/procedure-di-riconoscimento-dei-titoli/procedure-di-riconoscimento-accademico-dei-titoli.aspx>

4. Applicants who have already obtained the PhD degree will be admitted to attend a second PhD Programme, after passing the selection, provided that the prevailing subjects and scientific areas are different from those relating to the previous Doctorate degree. Applicants who have already benefited from a scholarship, even partially, cannot be assigned any scholarships in the new PhD Programme.

Art. 3 – APPLICATION PROCEDURE

1. The application⁴ must be **completed and submitted by hrs. 04.00 PM Italian time (GMT +2) of August 29, 2019, solely by the online system:** <https://www.unitn.it/en/apply/dott>. Applicants who do not have an account at the University of Trento must register in advance at⁵: <https://www.unitn.it/account>.
2. The application is subject to the payment of an application fee - non-refundable - of € 15 to be paid by credit card according to the instructions given in the appropriate section of the online application. The application online can be saved and modified several times until the submission. Afterwards it can no longer be changed.
3. It is the sole responsibility of the applicant to verify and submit with correct closure the online application (ensuring reception of the email notification). The University refuses any liability for all applications not properly submitted by candidates. The online application is considered to be a self-declaration of personal data and qualifications with full legal effect.
4. **MANDATORY ATTACHMENTS** (failure to upload one or more mandatory attachments results in automatic exclusion from the selection)
 - a) **Identifying document (ID):**
 - A copy of the applicant's valid **identity card** (only EU citizens) or **passport** (non-EU citizens), in particular of the pages reporting photograph, personal data, number, place and date of issue, expiry date and signature.
 - b) **Academic degree for admission to PhD:**
 - **Italian qualification:**
 - already obtained: a self-declaration, in accordance with Presidential Decree art. 46 no. 445 of 28.12.2000 and subsequent amendments, declaring the possession of a degree (art.2 of this Call), "*Classe di Laurea*", award date, issuing University, final grade, examinations taken, grades and credits obtained (by using Annex A); graduates from the University of Trento may only declare the place and the date of award as the other information can be collected ex officio;
 - to be obtained: a self-declaration, in accordance with Presidential Decree art. 46 no. 445 of 28.12.2000 and subsequent amendments, declaring the possible award date, issuing University, "*Classe di Laurea*", examinations taken, grades and credits obtained (by using Annex A); future graduate of the University of Trento may only declare the place and the foreseen date of award as the other information can be collected ex officio;
 - **foreign qualification⁶:**
 - already obtained: copy of the academic certificate accompanied by a list of exams with their credits and grades and, if available, the Diploma Supplement⁷ / transcript of records or Declaration of value⁸ or Rector's Decree of equivalence⁹;
 - to be obtained:

⁴ The candidate can choose either Italian or English to fill in the application online.

⁵ Candidates are advised to register well in advance of the deadline as the issue of the username and password (sent via email), necessary to enter UNITN's online services, may require up to 2 working days.

⁶ It is in the interest of the applicant to provide all information relevant for the assessment, especially if the country where the qualification was obtained has an education system not comparable to the Italian one.

⁷ The Diploma Supplement accompanies a higher education diploma, providing an improvement in international "transparency" and promotion of the academic and professional qualifications obtained (diploma, degrees, certificates, etc.). The Diploma Supplement must be issued by the same institution that issued the qualification. Further information at <http://www.cimea.it/en/servizi/il-sistema-italiano-di-istruzione-superiore/diploma-supplement.aspx> and http://ec.europa.eu/education/resources/diploma-supplement_en

⁸ Further information about DoV and equivalence: <http://www.cimea.it/en/servizi/procedure-di-riconoscimento-dei-titoli/glossario.aspx>

⁹ Delivery of the Diploma Supplement, Declaration of value or decree of equivalence, optional at the application stage, will be mandatory for the winners at the time of actual enrolment.

- a certificate of enrolment with a list of the examinations successfully passed and marks and credits obtained in each examination; if this document is not in English, the applicant must provide, in the same file, a translation of the same duly undersigned;
 - a statement declaring that the student will complete his/her degree by October 31, 2019, with the Institution and the official length of the programme.
N.B.: if the university studies carried out abroad are divided into first and second level, the Bachelor's degree and the list of exams taken for the achievement of the relative degree (academic transcript of records of Bachelor's) should also be attached.
- c) **summary of the Master's thesis** (in Italian or in English) explaining the reasons for the choice of the subject, the research methodology and the results obtained (max. 4 pages);
- d) **curriculum vitae** (in Italian or in English), preferably according to the [Europass model](#), clearly accounting for the applicants previous experience (Bachelors, prizes, researches, any university enrolments in progress, etc.);
- e) **statement of purpose** (In Italian or in English, max 2 pages): it is required to clearly specify: 1. your scientific motivations avoiding generic statements 2. your personal motivations and your interest towards research in general; 3. the reason why you have chosen the Doctoral Programme in Physics at the University of Trento with reference to the research activities which are carried on there.

5. OPTIONAL ATTACHMENTS:

- any additional documents which may be useful for the assessment of qualifications (degree thesis, awards, scholarships, post-graduate research activity, etc.);
 - Bachelor's degree certificate (or equivalent), with academic transcript of exams and grades obtained.
 - 1 reference letter by a referee, expert in the research fields of the Doctoral Programme, from a University or a National/ International Research Institution. Reference letters must not to be sent by candidates. Once the Referee section has been completed and saved by the candidate, the system automatically sends, within 24 hours, a notification email to the referee containing the instructions and modalities of transmission. Letter has to be issued on the base of a model sent directly to referee, and have to be uploaded on the website by him/her. It is strongly recommended that applicants verify that the referee has uploaded the Reference Letter **no later than September 3, 2019**.
6. The University will accept any additional documents to the submitted application if sent by email to ateneo@unitn.it (Subject: "Application ID - Applicant's Surname and Name – PhD Programme in Physics – 35th Cycle - Supplement to application") **within August 29, 2019, hrs 04.00 PM (GMT +2) Italian time**. Additional documents submitted by different means will be disregarded.
7. Only documents (originals or copies) in English and Italian will be taken into consideration by the Admissions Committee; for all other languages it is compulsory to attach a translation into English undersigned by the candidate.
8. All applicants are admitted to the selection procedure conditionally upon ascertainment that they fulfill the admission requirements. The University of Trento has the right to verify the documents delivered pursuant to articles 71 et seq. of the Presidential Decree no. 445 of 28.12.2000. The University can at any time, even after enrolment and upon justified reasons, decide the exclusion of candidates lacking the requirements specified in the present call.

Art. 4 – EVALUATION OF APPLICATIONS

1. The evaluation is made by an Admissions Committee for access to the PhD Programme appointed by the Rector upon advice of the PhD Programme Committee, in accordance with the University doctoral regulations. The Committee sets the evaluation criteria during the preliminary meeting.
2. The selection procedure is designed to ensure, comparatively, the knowledge and aptitude of the candidates to carry out research in areas related to the PhD programme. The selection is made on the basis of the assessment of:
 - the applicant's qualifications according to previous art. 3

- an interview. The oral examination is designed to assess the candidate's background about the Doctorate scientific areas, to discuss past research – included Master's thesis - and professional experience, and qualifications submitted. The level of knowledge of English will also be assessed. In order to be allowed to oral examination the candidate must provide a valid ID/passport with photo. Applicants residing or domiciled abroad, or otherwise unable to proven reasons to take the interview in person, may be authorized – upon request in the application online – to conduct the oral examination in another seat by video-conference. The Committee will guarantee that all the regularity requirements are fulfilled during the examination (verifying the candidate's identity and the accuracy of the interview).
3. Applicants who wish to be eligible also for the reserved scholarships must make an explicit request to the Admissions Committee before the interview, at the time of identification. Competences on the specific subject of the reserved scholarship/s will be assessed during the interviews of interested applicants.
N.B.! The choice made by the candidate to compete also for the reserved scholarships implies a preference on his/her part for the allocation of that specific scholarship with respect to the others.
 4. The Admissions Committee may assign each candidate 100 points as follows:
 - 30 points: assessment of qualifications, optional attachments and reference letters included.
 - 70 points: interview.
 5. Candidates obtaining a minimum score of 15/30 for the assessment of qualifications will be admitted to the oral examination. The interview is successfully passed with a minimum score of 30/70. Applicants obtaining an overall score of 60/100 will be short-listed.
 6. The assessment of qualifications will be held from September 4; interviews will be held in the period September 12-18, 2019.

Art. 5 – RANKING

1. At the end of the selection procedure the Admissions Committee draws up one ranking.
2. Scholarships are assigned to short-listed applicants following:
 - a) the position in the ranking;
 - b) for reserved scholarships, the applicant's eligibility for that specific scholarship.
3. The non-allocation of scholarships on reserved topics concerning previous point b) will result in the reduction of the available positions.

Art. 6 – ADMISSION TO THE DOCTORAL PROGRAMME AND ENROLMENT

1. Short-listed applicants are admitted to the PhD Programme according to their place in the final ranking until all available places have been filled. The applicant who has been awarded a scholarship on a specific reserved topic must accept it. The renunciation of the reserved scholarship implies the exclusion of the applicant from the right to enrol in the PhD programme.
2. Should two candidates obtain the same score, as regards the awarding of the scholarship, the candidates' economic situations shall be the deciding factor, in accordance with the criteria established by the Italian Prime Minister's Decree of 9 April 2001 and subsequent amendments and integrations. As regards positions without scholarships, the younger of the two candidates will be selected.
3. Admitted applicants must enrol following instructions at <http://www.unitn.it/en/ateneo/1928/enrollment-1-2-3-year>:
 - **within 8 days** starting from the next day of the publication of the final ranking on the Selections website for **positions with scholarships**;
 - **within 14 days** starting from the next day of the publication of the final ranking on the Selections website for **positions without scholarships**.

N.B.! Admitted applicants with a foreign qualification must deliver the Diploma Supplement (qualifications obtained in countries of the European Research Area) or the Declaration of Value together with the copy of the final Diploma with a complete transcript of records, translated and authenticated by the Italian diplomatic

representatives in the country of issue; the Declaration of Value may be replaced by a certificate issued by [ENIC-NARIC](#) centers containing all the information necessary for the assessment of the qualification. If these documents are not available at the time of the acceptance of the position, they must be delivered **by November 6, 2019**. Their non-delivery may result in exclusion from the Doctorate.

4. The enrolment must include the payment of stamp duty and, where applicable, the payment of the "provincial tax for the right to higher education" - TDS¹⁰. To date no fees are charged to doctoral students to access courses and the frequency thereof, with the exception of the aforementioned annual provincial tax for the right to study (TDS).
5. Admitted applicants who do not enrol within the above mentioned deadlines will lose their right to enrol and their places will be offered to the next applicants on the ranking.
6. If a successful applicant withdraws before the beginning of the course (November 1, 2019), the next applicant on the reference ranking will be offered the place. The latter must submit his/her enrolment within 4 days starting from the day after the day in which the communication from the Doctorate Office S&T is sent.
7. If a successful applicant withdraws or is excluded after the beginning of the courses and during the first quarter of the first year (three months), the PhD Programme Committee may decide to fill the vacancy with the next applicant on the list.

Art. 7 – SUPERNUMERARY POSITIONS

1. According to art. 20, par. 3 of the University Regulations for Doctoral Programmes, no more than **3 (three)** supernumerary applicants may be admitted without scholarships paid by the University, after passing the selection procedure, if they fall within one of the following categories:
 - a) shortlisted foreign candidates who are granted scholarships by other entities;
 - b) shortlisted candidates from countries with which a specific inter-governmental agreement has been signed, and with which an ad-hoc agreement with the University is then made, without the University of Trento being required to assume any financial obligations;
 - c) research fellows (*Assegnisti di ricerca*) whose contract lasts for a minimum of 24 months as from the starting date of the Programme and researching a subject relevant to the PhD Programme; such relevance has to be determined by the Doctoral Programme Committee;
 - d) Italian civil servants or under Italian public law regime. Admission is subject to placement on leave under Art. 2 of the Law of 13.08.1984 no. 476 and subsequent amendments.
2. Short-listed applicants who wish to assert their requirements for supernumerary positions shall request for such admission by submission of appropriate documentation proving their status via e-mail to phd.office-st@unitn.it, such admission **within 8 days** from the next day of the publication of ranking lists. Supernumerary admission is disposed within the limit of the number of supernumerary positions listed in the specific Research Area in art. 1.
3. After verification of the documents referred to in par. 2, applicants admitted to supernumerary positions will receive an email notification from the Doctorate Office S&T and must deliver their acceptance within the deadline specified in the email text itself.
4. Any candidates selected by special committees for admission related to specific international mobility programmes in which the University of Trento participates, may also be admitted to positions additional with respect to the quota specified in art. 1.

Art. 8 – INTELLECTUAL PROPERTY RIGHTS ON RESEARCH RESULTS AND PUBLICATIONS

1. Without prejudice to the Italian legislation on copyright (Legislative Decree no. 633/1941 and suc. Mod.), Intellectual and industrial property rights on the results eventually achieved by the student, including, but not limited to, software, patentable industrial inventions or not, know-how, models, data and data collection, are regulated in accordance with applicable laws and University regulations and, if necessary, according to the provisions in the individual agreements with universities, companies or bodies involved.

Art. 9 – PROCESSING OF PERSONAL DATA

¹⁰ Please note that the total amount of TDS + duty stamp must be paid only by credit card following the instruction. At page <https://www.unitn.it/en/ateneo/1931/education-tax-tds-and-revenue-stamp> you can check if you can be exempted from TDS.

1. Pursuant to art. 13 of Regulation (EU) 2016/679 (General Data Protection Regulation), applicants are advised that their personal data will be processed, wholly or in part also by automated means, only for purposes related to the present PhD selection procedures.
2. The **joint controllers** of the data processing are both:
 - the University of Trento, legal headquarters in via Calepina, 14, 38122 Trento (Italy), emails: ateneo@pec.unitn.it; ateneo@unitn.it. The data subjects may contact the **Data Protection Officer** (DPO or RPD) writing to: via Verdi n. 8, 38122 Trento, email: rpд@unitn.it;
 - and**
 - the National Institute for Nuclear Physics (INFN - Italy). via Enrico Fermi n. 40, 00044 Frascati (Roma); email: Lab.Naz.Frascati@pec.infn.it; dirlnf@Inf.infn.it. The contact of the **Data Protection Officer** (DPO or RPD) is: dpo@infn.it.
3. The personal data provision is a mandatory requirement for participation in the present selection.
4. At any time the rights as per art. 15 and seq. of DGPR (access, rectification, erasure, restriction, objection) can be obtained by the University of Trento, without prejudice to lodge a complaint with the supervisory authority.
5. The University complete GDPR Privacy notice is available at: <https://www.unitn.it/en/node/79953>

Art. 10 – REFERRAL RULES

1. For matters not explicitly mentioned in the present call, refer to Law no. 398 of 30.11.1989, art. 4 of Law no. 210 of 3.07.1998 as amended by art.19, par. 1, of the Law no. 240 of 30.12.2010, to Ministerial Decree no. 45 of 08.02.2013 and to the University Regulations for Doctoral Programmes issued by Rector's Decree no. 742 of 28.10.2016, to the Code of Ethics of the University of Trento, to the Internal Regulations in force of the Doctoral Programme in Physics, and to the other relevant provisions contained in the current legislation.
2. This call, accompanied by its translation into English, is published on the University website, on the website of the Italian Ministry of Education and on Euraxess. Any changes or additions to the call will be made available only on the selection website specified in art. 1.

On behalf of
The Rector

The Head of Education and Student Services
Dott. Paolo Zanei

Declaration substituting
DEGREE CERTIFICATE¹

(Article 46 - letters l, m, n - D.P.R. 28 December 2000, No. 445)

The undersigned _____

place of birth (*city+country*) _____ date of birth _____

official address (*street, number, zip code, city, country*) _____

Mob. _____ e – mail _____

aware of the penal sanctions pursuant to Article 76 of the Italian Presidential Decree no. 445 of 28.12.2000 for falsifying documents and making mendacious declarations

DECLARES

A) TO HAVE GRADUATED (degree for admission to PhD, click the corresponding box):

Type of degree Laurea magistrale/specialistica
 Italian University degree of the previous regulations in force (*vecchio ordinamento*)

in: _____

Specialization (*Classe di laurea* ID code): _____

on __dd__ / __mm__ / __yy__ from University of² _____ (town

_____ - Italy) with mark _____ out of _____

AND TO HAVE PASSED THE FOLLOWING EXAMS (**fill out the following Section C**)

Alternately:

B) TO HAVE NOT YET GRADUATED and to be aware that admission to the Doctoral Programme is conditional upon submission of the degree diploma/certificate by the date cited in the announcement.

Graduating in: _____

Specialization (*Classe di laurea* ID code): _____

University of: _____ in Italy.

Expected graduation date: _____

¹ **To be noted:** self-declarations can be delivered only if concerning facts and information which can be verified by an Italian public administration. In case of non-European citizens this is possible only if they are in possession of a valid stay permit, which must be attached to the declaration.
- The self-declaration shall provide all the information required, and data related to the mark, date and place of obtainment of the degree are mandatory;

- The self-declaration shall be duly signed and dated.

² Graduates of the University of Trento must only declare the date of awarding of the degree; other information will be collected automatically.

