



**Interdisciplinary call for admission  
to the 34<sup>th</sup> Cycle of the PhD Programmes  
as part of the Quantum Laboratory at Trento (Q@TN)  
A joint initiative among UniTN, FBK and CNR**

**ACADEMIC YEAR 2018/2019**

**N.B. Please note that only the Italian version of the present call issued by Rector's Decree no. 467 of 18.06.2018 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 position for the 34<sup>th</sup> Cycle (Academic Year 2018/2019) of the Phd Programmes involved in the Quantum Laboratory at Trento initiative.

The positions are related to the appropriate funds allocated within the above mentioned initiative with the financial support of the Fondazione Caritro, the Autonomous Province of Trento, and in collaboration with the Italian National Research Council (CNR) and the Fondazione Bruno Kessler (FBK) as partner institutions. Each position is on a specific topic (as reported below) and is therefore conditional on execution of that specific research topic for which certain skills, to be verified on the selection webpage, are required.

**Positions: no. 12**

**Scholarships no. 12**

	Research topic	Acronym	Supervisors	PhD Programme
A	Production and certification of cheap QRNG based on intra-particle entanglement and applications to QKD	Q-Random	Pavesi (Physics), Mazzucchi (MAT)	Physics
B	Coupling of SiV- centers in diamond to silicon-nitride cavities and waveguides	D-on-Si	Pucker (FBK - CMM), Chiappini (CNR-IFN)	Physics
C	Quantum topological photonics	QUANTOPHOT	Carusotto (CNR-INO), Pavesi (Physics), Bettotti (Physics)	Physics
D	Quantum simulator for open quantum systems	QOQS	Faccioli (Physics), Garberoglio (FBK - ECT*), Giorgini (Physics), Recati (CNR-INO)	Physics
E	Acceleration of nuclear physics calculations by quantum simulators	ANuPC-QS	Pederiva (Physics), Carusotto (CNR-INO), Dubois (LLNL Livermore), Quaglioni (LLNL Livermore)	Physics
F	Quantum droplets of ultra-cold atoms	Q-DROP	Recati (CNR-INO), Stringari (Physics), Wambach (FBK - ECT*)	Physics
G	Superconducting circuits for the Casimir effect	SOCCEr	Casse (FBK - CMM), Falferi (CNR-IFN), Carusotto (CNR-INO)	Physics
H	Cold atom manipulation on silicon chips	CAMSiC	Ferrari G. (CNR-INO), Ghulinyan (FBK - CMM)	Physics
I	Design of practical multi-hop Quantum Key Distribution networks: trading risk, security and costs	MultiHop	Siracusa (FBK CREATE-NET), Massacci (ICT)	ICT
J	Definition and simulation of algorithms on an adiabatic quantum computer	AdiabaticQC	Serafini (FBC ICT), Passerini (ICT), Moretti (MAT)	ICT
K	Quantum tribology and related engineering applications, such as sensors, devices, motors and NEMS.	QTribology	Pugno (DICAM), Carusotto (CNR-INO), Taioli (FBK - ECT*)	ICAM
L	Monolithic Quantum Random Number Generator	SET-FREE	Massari FBK), Pancheri (MMSE), Tomasi (FBK)	MMSE

<b>Deadline for application</b>	<b>August 23, 2018, hrs. 04.00 PM (Italian time, GMT +2)</b>
<b>Duration</b>	three years
<b>Start of the Academic Year</b>	November 1, 2018
<b>Selection website</b>	<a href="https://www.unitn.it/en/node/70638/">https://www.unitn.it/en/node/70638/</a>
<b>Q@TN website</b>	<a href="https://www.quantumtrento.eu/">https://www.quantumtrento.eu/</a>
<b>PhD Programmes websites</b>	Physics: <a href="http://www.unitn.it/drphys/">http://www.unitn.it/drphys/</a> ICT: <a href="http://ict.unitn.it/">http://ict.unitn.it/</a> ICAM: <a href="http://www.unitn.it/dricam/">http://www.unitn.it/dricam/</a> MMSE: <a href="http://www.unitn.it/drmse/">http://www.unitn.it/drmse/</a> MAT: <a href="http://www.unitn.it/drmath/">http://www.unitn.it/drmath/</a> (information on the programme, admission to subsequent years and to final examination)
<b>Rights and duties of doctoral students</b>	<a href="http://www.unitn.it/en/ateneo/52919/rights-and-duties-of-doctoral-students">http://www.unitn.it/en/ateneo/52919/rights-and-duties-of-doctoral-students</a>
<b>Doctoral scholarship description</b>	<a href="http://www.unitn.it/en/ateneo/1956/announcement-of-selection">http://www.unitn.it/en/ateneo/1956/announcement-of-selection</a>
<b>Official languages</b>	English and Italian

#### N.B.

- The dates of the selection and 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.
- 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](mailto:phd.office-st@unitn.it)) promptly informed of any change of their email account.

#### Art. 2 – THE QUANTUM LABORATORY AT TRENTO

- Q@TN is a joint initiative of the University of Trento (UniTN), of the National Research Council (CNR) and of the Bruno Kessler Foundation (FBK), aimed at coordinating their activities and starting new ones in the field of Quantum sciences and technologies for research and technology transfer, on the one hand, and for teaching and training, on the other. Q@TN has as the following final objectives: (i) to develop a common strategy shared by all the Trentino players in the sector, (ii) to build a critical mass and (iii) to bring out Trentino as a reference point at European level.

#### Art. 3 - ADMISSION REQUIREMENTS

- Applications for doctoral positions are accepted from applicants, regardless of gender, age and nationality, who hold:
  - an Italian “Laurea Magistrale”, according to the Ministerial Decree no. 270 of 22.10.2004 and subsequent amendments, or
  - an equivalent Italian university degree (previous regulations in force, “specialistica”, AFAM), or
  - 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 Programme<sup>1</sup>.
- Applications are also accepted from students expecting to obtain the necessary degree **by October 31, 2018**. 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](mailto:phd.office-st@unitn.it)) **by November 6, 2018**, on penalty of exclusion, awarding certificate or a self-declaration (by using Annex A).

<sup>1</sup> Details at: <http://www.cimea.it/en/servizi/il-sistema-italiano-di-istruzione-superiore/qualifiche-del-sistema-universitario.aspx>.

3. Applicants with a foreign qualification that has not been officially recognised as equivalent<sup>2</sup> 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 Admission 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 suitability.

#### Art. 4 – APPLICATION PROCEDURE

1. The application<sup>3</sup> must be **completed and submitted by hrs. 04.00 PM Italian time (GMT +2) of August 23, 2018, solely by the online system:** <http://www.unitn.it/en/apply/dott>. Applicants who do not have an account at the University of Trento must register in advance at<sup>4</sup>: <http://www.unitn.it/account>.
2. The application is subject to the payment of an application fee - non-refundable - amounting to € 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. During the filling out of the application online candidates must choose which Research topics in previous art. 1 (max. 3, specifying the order of preference) they are interested to apply for. The order of preference is not binding for the final decision of the committee.
5. **MANDATORY ATTACHMENTS** (failure to upload one or more mandatory attachments results in automatic exclusion from the selection)

##### 1) Identifying document (ID):

- a copy of the applicant's valid **identity card** (only EU citizens) or **passport** (extra EU applicants), in particular of the pages reporting his/her photograph, personal data, number, place and date of issue, expiry date and signature.

##### 2) 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 (within 31 October 2018), 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 qualification<sup>5</sup>:**
  - already obtained: copy of the academic certificate accompanied by a list of exams with their credits and grades and, if available, the Diploma Supplement<sup>6</sup> / transcript of records or Declaration of value<sup>7</sup> or Rector's Decree of equivalence<sup>8</sup>;

<sup>2</sup> For further information see at <http://www.cimea.it/en/servizi/procedure-di-riconoscimento-dei-titoli/procedure-di-riconoscimento-accademico-dei-titoli.aspx>

<sup>3</sup> The candidate can choose either Italian or English to fill in the application online.

<sup>4</sup> 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.

<sup>5</sup> 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.

to be obtained:

- 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, 2018.

**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.

**3) curriculum vitae et studiorum** (in Italian or English), preferably using the Europass format:

<http://europass.cedefop.europa.eu/en/documents/curriculum-vitae> ;

**4) summary of the Master's thesis** in English (maximum 10.000 characters, spaces included) structured as follows: motivations of the thesis and final results;

**5) statement of purpose** (in English, max 5.000 characters, including spaces): it is required to fill in the form available in the application online clearly specifying: 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 research topic/s proposed.

#### **6. OPTIONAL ATTACHMENTS:**

- copy of the Bachelor's degree and transcript;
- the list of scientific publications, if any;
- any additional documents which may be useful for the assessment of qualifications (awards, scholarships, post-graduate research activity, etc.);
- up to two (2) names of contact persons (referees, experts in the fields of the PhD Programme), with details of their e-mail addresses. Once the section "referees" has been completed and saved by the candidate, the system automatically sends, within 24 hours, a notification email to the referees containing the instructions and modalities of transmission. Letters have to be issued on the base of a model sent directly to referees, and have to be uploaded on the website by them.  
It is strongly recommended that applicants verify with their referees that they have uploaded the Reference Letters **no later than August 30, 2018**.

7. The University will accept any additional documents to the submitted application if sent by email to [ateneo@unitn.it](mailto:ateneo@unitn.it) (**Subject:** "Application ID - Applicant's Surname and Name – Q@TN – 34<sup>th</sup> Cycle - Supplement to application") **by August 23, 2018, hrs. 04.00 PM (GMT +2) Italian time**. Additional documents submitted by different means will be disregarded.
8. Only documents in English, Italian, French and Spanish will be taken into consideration for the selection by the Admissions Committee; for all other languages it is compulsory to attach a translation into English signed by the candidate. The attachments required at previous points 4.4 and 4.5 must be submitted in English by all applicants.
9. 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. 5 – EVALUATION OF APPLICATIONS

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<sup>6</sup> 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](http://ec.europa.eu/education/resources/diploma-supplement_en)

<sup>7</sup> Further information about DoV and equivalence: <http://www.cimea.it/en/servizi/procedure-di-riconoscimento-dei-titoli/glossario.aspx>

<sup>8</sup> 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.

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 Committees, 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 general background and in the specific research topics in art. 1, his/her attitude to research, to discuss past research – included Master's thesis – and professional experience, the statement of purpose, and qualifications submitted. The committee will have the possibility to recognize the eligibility for one or more scholarships. During the interview, the candidate's knowledge of English language will be also verified. 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 – 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. The Admissions Committee will award each candidate a maximum of 100 points as follows:
  - 40 points: assessment of qualifications
  - 60 points: interview.
4. Candidates obtaining a minimum score of 25/40 for the assessment of qualifications will be admitted to the oral examination. The interview is successfully passed with a minimum score of 38/60. Applicants obtaining an overall score of 63/100 will be short-listed.
5. The examinations schedule will be published at least 20 days in advance on the website.

#### Art. 6 – RANKING

1. At the end of the selection procedure the Admissions Committee draws up one ranking.
2. Scholarships are assigned to short-listed applicants according to:
  - a) the position in the ranking;
  - b) the applicant's eligibility for that specific scholarship/research topic.  
Please note that scholarships are assigned at the discretion of the Admissions Committee and, where possible, according to the preference expressed by the applicant in the online application (art. 4 c. 4)
3. The non-allocation of scholarships on reserved topics concerning previous point b) will result in the reduction of the available positions.

#### Art. 7 – ADMISSION TO THE DOCTORAL PROGRAMME AND ENROLMENT

1. Short-listed applicants are admitted to the PhD Programmes according to their position 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. Renunciation of the reserved scholarship implies the exclusion of the applicant from the right to enrol.
2. Admitted applicants must enrol following the instructions at <http://www.unitn.it/en/ateneo/1928/enrolment-1-2-3-year>:
  - **within 8 days** starting from the day following publication of the final ranking on the Selections website;

**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<sup>9</sup> 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, 2018**. The non-delivery may result in exclusion from the Doctorate.

3. The enrolment must include the payment of stamp duty and, where applicable, the payment of the "provincial tax for the right to higher education" - TDS<sup>10</sup>. At present, no fees are charged to doctoral students to access courses and attend them, with the exception of the aforementioned annual provincial tax for the right to study (TDS).
4. Admitted applicants **who do not accept the position by the above mentioned deadline** will lose their right to enrol and their places will be offered to the next applicants on the ranking with the same eligibility for the research topic.
5. If a successful applicant withdraws before the beginning of the PhD Programme (November 1, 2018), the next applicant on the 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.
6. If a successful applicant withdraws or is excluded after the beginning of the PhD Programme and during the first quarter of the first year (three months), the PhD Programme Committees may decide to fill the vacancy with the next applicant on the list.

#### 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. amendments), 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 other institutions involved.

#### Art. 9 – PERSONAL DATA

1. Pursuant to art. 13 of EU Regulation 2016/679 "General Data Protection Regulation (GDPR)", the University will process personal data within the scope of its institutional purposes exclusively for the performance of the present selection procedure (Article 6, paragraph 1, letter e) of the GDPR).
2. The Data Controller is the University of Trento, via Calepina n. 14, 38122 Trento, email: [ateneo@pec.unitn.it](mailto:ateneo@pec.unitn.it); [ateneo@unitn.it](mailto:ateneo@unitn.it). The contact details of the data protection officer are: Fiorenzo Tomaselli, via Verdi n. 8, 38122 Trento, email: [rpd@unitn.it](mailto:rpd@unitn.it)
3. The processing of personal data will be carried out by paper and / or computerized means only by personnel authorized to process the data in relation to the tasks assigned and in compliance with the principles of lawfulness, fairness, transparency, adequacy, relevance and necessity. The data may be communicated to the Ministry of Education, University and Research (MIUR), to the National Agency for the Evaluation of the University System and Research (ANVUR) and to any other public and private entities in execution of legal obligations as well as to any external financiers of the scholarships and/or fellowships in compliance with the related contractual obligations.
4. The data collected will not be transferred to non-EU countries.
5. The provision of personal data is essential for the present procedure and failure to provide it precludes participation in the procedure itself. The data will be kept for the period necessary for carrying out the procedure and for the fulfillment of all legal obligations. At any time the rights referred to in articles 15 and following of the GDPR and, in particular, access to personal data, rectification, integration, erasure,

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<sup>9</sup> Enic-naric website: <http://www.enic-naric.net/>

<sup>10</sup> Note that the total amount of TDS + stamp duty must be paid only by credit card following the instruction. Page <http://www.unitn.it/en/ateneo/1931/education-tax-tds-and-revenue-stamp> provides information on exemption from TDS.

restriction and the right to object to the processing. This is without prejudice to the right to lodge a complaint with the supervisory authority for the protection of personal data pursuant to art. 77 of the GDPR.

#### 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 with the 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 specific PhD Programme, 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 CERTIFICATE<sup>11</sup>**

(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 of<sup>12</sup> \_\_\_\_\_

(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.

<sup>11</sup> **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.

<sup>12</sup> Graduates of the University of Trento must only declare the date of awarding of the degree; other information will be collected automatically.

