

# **Post-doctoral Researcher for the research group New Quantum Resources I at the International Centre for Theory of Quantum Technologies, ICTQT, University of Gdansk, Poland**

Tue, 2018-10-02 14:29 - [Jolanta Rejniak](#) [1] **At:** University of Gdansk, International Centre for Theory of Quantum Technologies (ICTQT), Poland

**Deadline:** 14 October, 2018

## **Location**

International Centre for Theory of Quantum Technologies (ICTQT) Wita Stwosza 63  
Gdańsk 80-308 Poland  
Phone: +48 (58) 523 2230

## About project

We are looking for Post-doctoral Researchers to work in the newly created International Centre for Theory of Quantum Technologies (ICTQT), funded by the Foundation for Polish Science, and hosted by the University of Gdansk. The founders of ICTQT are Marek Zukowski as the director, and Pawel Horodecki as a co-applicant. The Centre's official foreign partner is IQOQI-Vienna of the Austrian Academy of Sciences. Gdansk is the pioneering and leading center of quantum information research in Poland. Gdansk, and the whole Tri-City, is one of the most beautifully located urban areas in Poland, with sandy sea beaches, lakes, and woods within in it and in the nearby area. It is the birthplace of Polish jazz and rock festivals, and vibrant in many fields.

The Centre will consists of 6 groups: Multiphoton Quantum Optics for Quantum Information (leader M. Zukowski), New Quantum Resources I (leader P. Horodecki), New Quantum Resources II, Quantum Cybersecurity and Communication, Quantum Open Systems, Quantum Computation, Quantum Error Correction and Many-body Systems. For description of expected activities of the groups see [link](#) [2].

## About the research group

The broad aim of New Quantum Resources I group would be to perform research concerning quantum phenomena which could be used for quantum information processing.

Examples of possible initial specific topics are:

- Connections between quantum computational speedup and contextuality/Bell-“nonlocality”.
- New protocols on randomness amplification.
- Research on communication networks.
- Connections between violations of Bell inequalities and of non-contextuality and the quantum advantage in communication complexity.
- Quantum thermodynamics with state transitions by Thermal Operations.
- Relativistic quantum information processing.

**Keywords:** quantum entanglement, quantum contextuality, quantum computational speedup, quantum capacity, quantum channels, quantum reduction of communication complexity, violations

of local realism, Bell's theorem, resource theory of thermodynamics, resource theories, quantum networks, private bits, quantum privacy, quantum randomness, randomness amplification, device-independent randomness amplification, randomness extraction.

## Key responsibilities

- Active scientific research.
- Presentation of project results to internal and external parties.
- Active procurement of new research grants from external sources.
- Participation in mentoring of PhD and Master students.
- Participation in organizational activity of ICTQT.
- Active involvement in seminars, group meetings etc.

## Additional Information [3]

### **Benefits**

- employment in a rapidly developing unit, the International Centre for Theory of Quantum Technologies at the University of Gdansk, Poland;
- full-time employment from 1 December 2018 till 30 November 2021 (36 months). **The start date of employment is negotiable**; the employment period may be extended after an evaluation;
- gross monthly salary up to 12 500 PLN (depending on candidate's qualifications);
- scientific and organizational support;
- basic equipment and core facilities;
- friendly, inspiring, interdisciplinary environment, including "entanglement" with National Centre for Quantum Information (KCIK) and Institute for Theoretical Physics and Astrophysics (IFTiA) at UG.

### **Selection process**

#### **General rules of the recruitment process**

- Candidates may simultaneously apply for other postdoctoral positions offered by ICTQT. This must be declared in the application form. The final choice may be made in the course of negotiations between the leaders and the candidates.
- **A postdoctoral position is offered to candidates who received PhD degree obtained in 2014 or later.**
- The decision will be made by the ICTQT Selecting Commission (SC) within 2 months from the deadline for submission of applications.
- An interview is expected. The SC reserves the right to invite only pre-selected candidates for the interview.
- The SC's decision is final and is not subject to appeal.
- The SC reserves the right to close the competition without selecting the candidate.

#### **Required documents**

- filled-in [recruitment form](#) [4];
- curriculum vitae;
- a research resume with a list of publications, and a list of research projects (esp. those in which the candidate was the principal investigator); PDF file of three most important papers by the candidate (or just web links, in the case of open access publications); a list of invited talks at conferences and workshops, and a list of academic prizes and awards;
- motivation letter (including statement of current scientific interests)- up to 2 pages;
- documents confirming scientific degrees (copy of PhD diploma, or equivalent);

- name and contact details (e-mail addresses) to two senior researchers who may provide reference for the candidate (the candidate is expected to contact the referees and ask them to send reference letters directly to ictqt [at] ug [dot] edu [dot] pl. The letters must be sent before the deadline.). ICTQT may also contact the referees directly, to request the letters, or to send reminders.

## Offer Requirements

- REQUIRED LANGUAGES
- ENGLISH: Good

## Skills/Qualifications

- PhD degree preferably in physics (PhD degree obtained in 2014 or later).
- Interest in mathematical and conceptual foundations of quantum mechanics, quantum optics and quantum information theory.
- Written and oral communication skills.
- Candidates with a record of successful grant applications are preferred.
- Skills in leading, coordinating, and/or supervising the work of others.
- Ability to work effectively with people from diverse cultural backgrounds.

Work location(s)

**1 position available at International Centre for Theory of Quantum Technologies, University of Gdansk** Poland, Gdansk 80-308, Wita Stwosza 63 Street

- [Postdoc](#) [5]

## Source URL:

<http://qurope.eu/db/jobs/post-doctoral-researcher-research-group-new-quantum-resources-i-international-centre-theory->

## Links:

[1] <http://qurope.eu/users/jolanta>

[2] [https://studugedu-my.sharepoint.com/:b:/g/personal/prac105606\\_prac\\_ug\\_edu\\_pl/EUwBses1MyVKtU8iTe6JR4oBOhP958u1LtiWB-Ou6Mp1dg?e=03JO2k](https://studugedu-my.sharepoint.com/:b:/g/personal/prac105606_prac_ug_edu_pl/EUwBses1MyVKtU8iTe6JR4oBOhP958u1LtiWB-Ou6Mp1dg?e=03JO2k)

[3] <https://euraxess.ec.europa.eu/jobs/337667#bootstrap-fieldgroup-accordion-item--additional-information-0>

[4] [https://studugedu-my.sharepoint.com/:b:/g/personal/prac105606\\_prac\\_ug\\_edu\\_pl/EWc2wM0yafNHiqbBW0oJnMgBc1o4sxtsnSjpYa74wYeKwg?e=3yCHRa](https://studugedu-my.sharepoint.com/:b:/g/personal/prac105606_prac_ug_edu_pl/EWc2wM0yafNHiqbBW0oJnMgBc1o4sxtsnSjpYa74wYeKwg?e=3yCHRa)

[5] <http://qurope.eu/db/jobs/type/postdoc>