https://ictqt.ug.edu.pl/job/phd-position-in-quantum-cybersecurity-and-communication/

PhD position in Quantum Cybersecurity and Communication Group

Description

PhD position in Quantum Cybersecurity and Communication Group

Project title: Towards easier tests of quantum phenomena

One of the main issues hindering the progress in both: our understanding of the laws of the quantum world and their application in emerging technologies are the high requirements on the precision and efficiency of the necessary hardware. For experiments realized with photons (which are the most common in quantum information processing) the crucial requirement is the minimal efficiency of the detection, which is typically very high. The main aim of the project is to change this. The goal of the PhD student will be to use expertise from the field of quantum optics and quantum information in order to advance on the research problems delineated in this description. Keywords: Device independent quantum information; quantum protocols; tests of nonclassicality; quantum cryptography; randomness generation.

The broad aim of the Quantum Cybersecurity and Communication group (QCC) is to perform research concerning quantum phenomena which could be used for quantum methods for information transfer, coding and processing, aimed towards applied physics and possible commercialization.

The goals of the QCC group are:

- Development of self-testing protocols.
- Security analysis of information processing protocols.
- Research towards increasing efficiency and reliability of quantum protocols.
- Studies of general rules for information processing.
- Studies on quantum hacking and cryptoanalysis to identify possible attacks and ways of preventing them.
- Investigations of the role of information processing protocols as a tool to analyze the fundamental laws of Nature.
- Finding experimental, applied physics, and industrial partners and collaborating with them towards building commercial quantum devices, prototypes, or obtaining patents.

Responsibilities

1. Active scientific research.
2. Presentation of project results to internal and external parties.

Hiring organization
International Centre for Theory of Quantum Technologies

Employment Type
Full-time

Beginning of employment
May 4th, 2022

Duration of employment
6 months

Industry
quantum physics

Job Location
Jana Bażyńskiego 1A, 80-309, Gdańsk, Poland

Base Salary
PLN 4500

Date posted
2022-02-22

Valid through
02.05.2022

3. Active involvement in seminars, group meetings etc.
4. Participation in organizational activity of ICTQT.

Qualifications

1. MSc degree in physics (MSc in computers science or mathematics is also acceptable).
2. Interest in mathematical and conceptual foundations of quantum mechanics and quantum information, and related topics, especially those which are within the research agenda of ICTQT.
3. Basic knowledge of quantum information theory.
4. Interest in the subject and motivation to scientific work

Job Benefits

1. Scholarship monthly 4500 PLN.
2. Work in a rapidly developing unit, the International Centre for Theory of Quantum Technologies at the University of Gdańsk.
3. Scientific and organizational support.
4. Basic equipment and core facilities.
5. Friendly, inspiring, interdisciplinary environment, including “entanglement” with National Centre for Quantum Information (KCIK) and Institute for Theoretical Physics and Astrophysics (IFTiA) at UG.

Required documents

1. Curriculum vitae;
2. Research resume with a list of research projects in which the candidate took part (with specification of the role); Authored publications in PDF format; A list of talks at conferences and/or workshops, and a list of prizes and awards.
3. Motivation letter (including statement of current scientific interests) – up to 2 pages in PDF format.
4. Documents confirming scientific degrees (copy of diploma).
5. 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 marcin.pawlowski@ug.edu.pl. The letters must be sent before the deadline). ICTQT may also contact the referees directly.

Recruitment process

The recruitment procedure has two stages:

1. Interview of pre-selected candidates by the Selection Commission (SC);
2. SC reserves the right to invite for the interview only pre-selected candidates;
3. SC’s decision is final and is not subjected to appeal;
4. SC reserves the right to close the competition without selecting the candidate;

Contacts

Please submit the documents via email to **marcin.pawlowski@ug.edu.pl**

In the event of resignation from accepting the position of the selected candidate, the SC has the right to reconsider the applications submitted to the competition and to indicate a new candidate.