# JOB OFFER no. Postdoc_MP_2023_11

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| Position in the project: | **Postdoctoral Researcher in project CHIST-ERA Call 2022 [ MoDIC] no. DEC-2023/05/Y/ST2/00005** |
| Scientific discipline: | quantum physics |
| Job type: | **Full-time employment** |
| Number of positions offered: | 2 |
| Remuneration: | PLN ~ up to 10.500 gross per month |
| Position starts on: | **January 1st 2024** (negotiable) |
| Maximum period of contract | 36 months |
| Institution: | **International Centre for Theory of Quantum Technologies, University of Gdansk, Poland** |
| Project leader: | **dr hab. Marcin Pawłowski, prof. UG** |
| Project title: | **Modern Device Independent Cryptography (MoDIC)** *The project financed within the Chist-ERA Call 2022 program by the National Science Center.* |
| Project description: | **About ICTQT** We are looking for **two Postdoctoral Researchers** to work in Quantum Cybersecurity and Communication Group at the International Centre for Theory of Quantum Technologies (ICTQT), funded by the Foundation for Polish Science, and hosted by the University of Gdansk. 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 consists of 6 groups:** Multiphoton Quantum Optics for Quantum Information (leader Marek Żukowski); New Quantum Resources (leader Paweł Horodecki); Foundational Underpinnings of Quantum Technologies (leader Ana Belen Sainz); New Quantum Resources and Thermodynamics (leader Michał Horodecki); Quantum Cybersecurity and Communication (leader Marcin Pawłowski); Quantum Open Systems in Relation to Quantum Optics (leader Łukasz Rudnicki). **About the group** The broad aim of the Quantum Cybersecurity and Communication Group would be 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 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 cryptanalysis 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.

About the "Modern Device Independent Cryptography (MoDIC) "project

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 post-doc 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.

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| Key responsibilities include: | 1. Active scientific research.<br>2. Presentation and discussion of ideas and results with a diverse audience at the ICTQT and at the external events.<br>3. Active participation in seminars, group meetings, etc. organized by the ICTQT. |
| Profile of candidates/requirement | 1. PhD degree in physics, mathematics or computer science (obtained in 2017 or later).<br>2. Proven scientific record.<br>3. Experience in doing numerics on such platforms like Python.<br>4. Good written and oral communication skills are appreciated.<br>5. The candidate should be committed to working collaboratively within inclusive and diverse environment. |
| We offer: | 1. Full time employment in a rapidly developing unit  the International Centre for Theory of Quantum Technologies at the University of Gdansk.<br>2. Monthly salary together with social security and health insurance.<br>3. Scientific and organizational support.<br>4. Basic equipment and core facilities.<br>5. Travel funds for scientific collaboration and participation in conferences.<br>6. Friendly, inspiring, interdisciplinary environment. |

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| Required documents: | All required documents should be prepared in English:<br>1. [Recruitment form](#).<br>2. Curriculum vitae.<br>3. A research resume with a list of publications and a list of ongoing research projects (with specification of candidate role in the research if unclear);<br>4. PDF files (or links if open access) of 3 most relevant publications authored by the candidate.<br>5. A list of talks at conferences and workshops, and a list of prizes and awards.<br>6. Documents confirming academic degrees (a copy of a PhD diploma or a certificate of obtaining the title. NOTE: Before signing the employment contract, the person selected in the competition will be requested to submit to the University of Gdańsk the original of the PhD diploma. At the stage of employment, other documents will not be honoured).<br>7. Reference letters about the candidate sent directly by two senior researchers (the candidate is expected to contact the referees and ask them to send reference letters directly to [mailto:ictqt-careers@ug.edu.pl](mailto:ictqt-careers@ug.edu.pl). The letters must be sent before the deadline). |
| Recruitment process: | 1. The recruitment procedure has two stages: The pre-selection of candidates by the Selection Commission (SC) (based on the application form), and the Interview of the pre-selected candidates.<br>2. A postdoctoral position can be offered to candidates who received their PhD degree in 2017 or later.<br>3. An interview is expected in December, 2023.<br>4. ICTQT Selecting Commission (SC) reserves the right to invite for the interview only pre-selected candidates.<br>5. SC's decision is final and is not subject to appeal.<br>6. SC reserves the right to close the competition without selecting a candidate.<br>7. The decision will be made by SC within 1 months from the date of recruitment completion.<br>8. In the event of resignation from accepting the position of the selected candidate, the SC has the right to send the offer to the person placed on the reserve list, and in the absence of such a list, the SC has the right to reconsider the applications submitted to the competition and to indicate a new candidate application submitted to the competition and to indicate a new candidate. |
| Please submit the documents to: | [ictqt-careers@ug.edu.pl](mailto:ictqt-careers@ug.edu.pl) |
| Application deadline: | December 11, 2023 |