https://ictqt.ug.edu.pl/job/offer-ictqt-2026-5/

Student position for the SONATA-BIS 14 project, offer no. ICTQT_2026_5

Hiring organization
International Centre for Theory of Quantum Technologies

Stipend contract start date
July 1st, 2026. The starting date is negotiable.

Duration of stipend
12 months (with the possibility of extension)

Stipend amount
PLN 2 000 (gross stipend)

Job Location
prof. Marii Janion 4, 80-309, Gdańsk, Poland

Date posted
2026-06-15

Valid through
22.06.2026

Description

We are looking for **a Student** to work in the International Centre for Theory of Quantum Technologies (ICTQT) hosted by the University of Gdańsk.

The position is offered in the SONATA-BIS project No. UMO-2024/54/E/ST2/00316, entitled: *Efficient higher-order quantum computations* led by **Michał Studziński**. The project is financed by the National Science Centre (NCN)

About the SONATA-BIS 14 project No. UMO-2024/54/E/ST2/00316

The proposed research project aims to achieve significant advancements in the field of higher-order quantum operations (HOQO), the quantum analogue of functional programming. Our investigation will cover critical areas such as the storage and retrieval of quantum programs in quantum memory and the transformation of unknown quantum programs. Additionally, the research seeks to improve the efficiency of quantum unitary programming techniques and quantum machine learning for quantum processes by exploring the theory of universal programmable quantum processors. The project will also address the problem of noisy universal programmable quantum processors, with the goal of developing practical efficiencies and operational frameworks that bring us closer to real-world quantum computing environments.
The project will explore the design of quantum strategies aimed at reducing resource requirements, while simultaneously addressing both practical scenarios and fundamental theoretical limits. This dual approach aims to enhance potential practical implementations and provide insights into the foundational constraints imposed by quantum theory.
A core component of this research involves utilizing symmetries and applying semidefinite programming (SDP) methods. We will focus on reducing the complexity of SDP through symmetry reduction techniques, which are expected to yield significant computational savings and offer valuable theoretical insights into the structure of solutions.
By addressing both the practical and theoretical aspects of quantum computation, the project aspires to make substantial contributions to the advancement of the theoretical foundations and practical applications of quantum computing. The mathematical techniques developed in this research are expected to have broader applicability across other branches of physics and may also provide novel insights of interest to the mathematical community.

Keywords: quantum information, quantum information processing, quantum teleportation, quantum comb, higher-order quantum programming and computing, indefinite causal order, semidefinite programming, advanced numerical symulations,symmetries and representation theory.

Responsibilities

1. Active conduct of research in connection with the implementation of the project.
2. Fulfilling student obligations in accordance with the study programme, independently of the tasks carried out within the project.
3. Presentation and discussion of ideas and results with a diverse audience at ICTQT and at external events, including participation in seminars, group meetings, and other activities of scientific exchange.

Qualifications

1. The stipend is intended for individuals who hold student status in first-cycle, second-cycle, or long-cycle master's degree programs conducted at universities located in Poland.
2. The stipend is not intended for individuals who are students but already hold a doctoral degree.
3. The candidate should be interested in the research topic of the project and possess basic knowledge in this area.
4. Good written and oral communication skills are appreciated.
5. Knowledge of English sufficient to enable free communication.
6. The candidate should be committed to working collaboratively within an inclusive and diverse multicultural environment.

Required documents

1. filled-in recruitment form;
2. Curriculum vitae (including a list of publications, a list of ongoing research projects, a list of talks at conferences and workshops, and a list of prizes and awards – if applicable).
3. Motivation letter (including statement of current scientific interests) – up to 1 page.
4. Documents confirming student status (scan of the student status certificate).
5. Reference letter for the candidate sent by at least one senior researcher = is welcomed (the candidate is expected to contact the referee and ask him/her to send reference letter directly to ictqt-careers@ug.edu.pl. The letters must be sent before the deadline for submitting applications).
6. All required documents should be prepared in English.
7. **Final date of documents submission is June 22, 2026, 23:59 CET**

Contacts

Job offer details, click here.
Recruitment form, click here.

Application deadline: June 22, 2026 CET (inclusively).

Contacts

Please submit the documents via email to ictqt-careers[at]ug.edu.pl, in the email subject, please include reference code: ICTQT_2026_5

Note

We would like to inform you that the University of Gdańsk has implemented an internal procedure for reporting violations of law and taking follow-up actions, which constitutes Annex No. 1 to Ordinance No. 85/R/24 of 17 September 2024. The procedure has been published in the Public Information Bulletin of the University of Gdańsk in the Legal Acts Database.