JOB OFFER

Position in the project:	**PhD student in project Maestro no. 2021/42/A/ST2/0035**
Scientific discipline:	quantum physics
Job type (employment contract/stipend):	Stipend *financed by the National Science Center*
Number of job offers:	2
Remuneration/stipend amount/month:	monthly stipend 4 500,00 PLN (gross stipend, tax included)
Position starts on:	01.10.2022 (for candidates who already have MSc degree and candidates who plan to defend their MSc thesis no later than July 31, 2022) For candidates who are already doctoral students the starting date is negotiable.
Maximum period of contract/stipend agreement:	up to 48 months
Institution:	International Centre for Theory of Quantum Technologies at the University of Gdansk, Poland
Project leader:	Paweł Horodecki
Project title:	"Relativistic causality and information processing" (in Polish: Przyczynowość relatywistyczna a przetwarzanie informacji)
Project description:	We are looking for one PhD students to work in the International Centre for Theory of Quantum Technologies (ICTQT), funded by the Foundation for Polish Science, and hosted by the University of Gdańsk (UG) - pioneering and leading center of quantum information research in Poland. 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). More about the research groups please find at you will find here: https://ictqt.ug.edu.pl/ **About the group** The broad aim of the New Quantum Resources Group would be to perform research concerning quantum phenomena which could be used for quantum information processing. **Exemplary goals of the group 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 batteries as open quantum systems – Relativistic quantum information processing **About the "Relativistic Causality and Information Processing" project:** The project's central goal is to study the information-processing properties within the broad framework of „within-and-beyond-quantum" theories (relativistic quantum physics, PR-boxes, GPTs, etc.). To this end and intergrative methodology combining the tools from i.a. quantum information, quantum field theory, relativity and cryptography will be developed. Finally, protocols for physical implementations and/or simulations of some of the theoretical findings will be developed.

	PhD students positions are offered by the International Centre for Theory of Quantum Technologies of the University of Gdansk within the implementation of the Maestro project entitled "Relativistic causality and information processing. The project is financed by the National Science Centre (NCN).
Key responsibilities include:	1. Active scientific research. 2. Discussion and presentation of ideas and results with a diverse audience at ICTQT and at external events. 3. Participation in seminars, group meetings, and other activities of scientific exchange. 4. Participation in activities organized by ICTQT.
Profile of candidates/requirements:	1. The candidate should hold a MSc degree in physics (preferable), computer science or mathematics. 2. The candidate should be interested in mathematical and conceptual foundations of quantum mechanics and quantum information, and related topics, especially those which are within the research agenda of ICTQT (visit https://ictqt.ug.edu.pl/). 3. The candidate should be committed to working collaboratively within an inclusive and diverse environment. 4. Basic knowledge of quantum information theory is appreciated. 5. Experience in programming (C++, Python or Matlab) is appreciated.
Required documents:	All required documents should be prepared in English: 1. filled-in recruitment form; 2. curriculum vitae (including, e.g., awards and publications); 3. Optional: a research resume with a list of research projects in which the candidate took part (with specification of the role); PDF files of publications; list of talks at conferences and workshops, list of prizes and awards; 4. motivation letter (including statement of current scientific interests) – up to 2 pages; 5. documents confirming scientific degrees (copy of diploma); General rules of the recruitment process: 1. The recruitment procedure has three stages: ○ Pre-selection candidates by the Selection Commission (SC), based on send documents; ○ Interview of pre-selected candidates by SC; ○ Recruitment to the UG Doctoral School of Natural Sciences (a formal UG procedure). 2. PhD student positions are offered to candidates who have received a MSc degree and who are already PhD students at other Universities/Institutions. 3. PhD student positions are also offered to candidates who plan to defend their MSc thesis no later than July 2022. 4. The decision will be made by the SC within 1 month from the date of recruitment completion. 5. SC reserves the right to invite for the interview only pre-selected candidates. 6. SC's decision is final and is not subject to appeal. 7. 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. 8. SC reserves the right to close the competition without selecting the candidate.
We offer:	1. Monthly stipend; 2. Work in a rapidly developing, world class research centre; 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: https://kcik.ug.edu.pl/) and Institute for Theoretical Physics and Astrophysics (IFTiA) at UG.
Please submit the documents to:	ictqt@ug.edu.pl
Application deadline:	July 13, 2022