

(ii) Application of Bell nonlocality for development of experimentally feasible methods for the certification of entangled quantum states and quantum measurements (so-called self-testing).

The research has a fundamental character and will be conducted in collaboration with ICFO in Barcelona.

Requirements:

- Master's degree in physics or mathematics
- Very good command of English
- Very good knowledge of quantum physics
- Familiarity with basic concepts of quantum information theory
- High motivation for scientific research
- Good programming skills
- Knowledge of mathematical methods in physics will be considered an asset
- Research experience in the field of quantum information will be considered an asset

Terms of Employment:

Scholarship: 4.700 zł net/month.

The employment period is 48 months, with the first 12 months funded under the SONATA BIS research project “Characterization and Certification of Quantum Resources”, based on grant agreement no. UMO-2019/34/E/ST2/00369 from the National Science Centre (NCN). The remaining 36 months will be financed from other sources.

The scholarship will be awarded in accordance with the applicable laws in Poland and in accordance with the Resolution of the NCN Council no. 25/2019 of March 14, 2019, regarding the Regulations for the Awarding of NCN Scientific Scholarships in Research Projects Funded by the National Science Center.

Required documents:

1. The scientific CV, including the progress in the university studies, scientific achievements (publications, participation in research projects and conferences), with the clause *"I agree to the processing of my personal data contained in the application documents for the purposes necessary for the implementation of the process recruitment by the doctoral school WARSAW-4-PhD"*.

2. A cover letter, including a brief overview of previous achievements and planned future research.
3. A copy of the Master's diploma or a statement from the supervisor confirming the planned date of the Master's thesis defense.
4. Copies of documents confirming scientific or professional achievements.
5. At least one letter of recommendation from an academic staff member with a doctoral degree or higher, evaluating the candidate and their previous research activity.
6. Application for admission to the Warsaw4PhD Doctoral School.

Application submission:

Documents must be submitted electronically through the recruitment system available at <https://warsaw4phd.eu/en/admissions/> between **July 25, 2025** and **August 8, 2025**.

All inquiries should be directed to the project leader at: augusiak@cft.edu.pl.

Selection Process:

Shortlisted candidates will be invited for an interview, which will be conducted via online communication platforms.

The final decision of the selection process will be announced by **September 15, 2025**. Candidates will be informed of the results by email.

Admission to the Doctoral School and the beginning of the fellowship are scheduled for **October 1, 2025**.

Magdalena Kacprzak
Deputy Director for General Affairs
Center for Theoretical Physics PAS



* Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46 / EC (general regulation on data pr