

Postdoctoral Researcher (Adjunct) in Experimental Polariton Photonics and Neuromorphic Computing (f/m/x)

Reference number: MM/22/2026

Location: Warsaw, Poland

Salary: PLN 12,000-16,000 gross per month

Number of positions available: 1

Work mode: on-site

The position is available from 1 November 2026 at the earliest and for a maximum period of 9 months.

Important dates:

1. Application deadline: 1 October 2026
2. Candidates will be informed of the recruitment outcome by 1 November 2026.

Funding source:

Q-ONE project, "Quantum Optical Networks based on exciton-polaritons", funded by the European Commission (Grant Agreement No. 101115575).

Project website: <https://www.gone-project.eu/>

About us

The Center for Theoretical Physics, Polish Academy of Sciences (CTP PAS) is a research institute focused on theoretical physics. CTP PAS was established in 1980 and is based in Warsaw.

CTP PAS conducts research across various areas of physics, including quantum information, space and gravitational research, semiconductors, and atomic gases. The Institute's strategy is to recruit outstanding scientists and give them substantial research freedom. This has resulted in CTP PAS's strong position in Poland, world-class publications (including papers in Nature and Science), a large portfolio of grants (around 30 projects), and participation in international consortia. In terms of citations per researcher, CTP PAS ranks among the leading physics institutes in Poland.

CTP PAS also organizes a range of scientific events, including seminars, workshops, and conferences open to the public, and produces educational materials available on the Institute's [YouTube](#) channel.

About the position

We are looking for an experimental physicist to join an ambitious project aimed at developing neuromorphic computing accelerators based on exciton-polaritons.

We are looking for **a candidate with experience in experimental optics, photonics, semiconductor spectroscopy, or a related field.**

The position is primarily experimental. The successful candidate's main responsibility will be to develop and conduct optical experiments aimed at demonstrating neuromorphic functionalities in polaritonic systems.

The project combines nonlinear optics, semiconductor physics, and artificial intelligence. Its goal is to implement neural-network operations directly in a physical optical system. The successful candidate will participate in the design and experimental demonstration of polaritonic neural-network components and in the development of a platform enabling ultrafast, energy-efficient neuromorphic computing.

The research will focus on optical microcavities and photonic structures incorporating perovskite materials, operating in the strong light-matter coupling regime at room temperature. The project includes the study of nonlinear polariton phenomena and their use for optical information processing, pattern recognition, and neural-network tasks.

The successful candidate will join the Light-Matter Interaction Group at the Center for Theoretical Physics, Polish Academy of Sciences, led by Prof. Michał Matuszewski, and will collaborate closely with the experimental group of Prof. Barbara Piętka at the Faculty of Physics, University of Warsaw.

Employment will be at CTP PAS, while laboratory work will be carried out primarily at the Faculty of Physics, University of Warsaw. This arrangement provides direct access to the University of Warsaw's advanced experimental infrastructure while maintaining close collaboration with the theoretical and computational team at CTP PAS.

The project combines experimental physics, theory, numerical modelling, photonics, and neuromorphic computing. The successful candidate will work in an interdisciplinary and international environment and will have the opportunity to help establish a new research direction at the intersection of fundamental polariton physics and neuromorphic artificial-intelligence systems.

The successful candidate will participate in the full experimental workflow: from developing and optimizing optical setups, through characterization of semiconductor structures and investigation of nonlinear phenomena, to demonstrating the operation of polaritonic neural-network components. Numerical modelling and data analysis will be used as tools supporting the experiments.

Responsibilities:

- Conducting research using experimental optical setups with continuous-wave and pulsed lasers, microscopy, and spectroscopic techniques.
- Spectroscopic and optical characterization of semiconductor and photonic structures in the strong light-matter coupling regime.
- Investigation of nonlinear phenomena in polaritonic systems, including nonlinear optical response, polariton propagation, and condensation.
- Designing and conducting experiments demonstrating neuromorphic operations and neural-network functionalities in polaritonic systems.
- Analysis of experimental data and use of simple models and simulations to design experiments and interpret results.
- Preparing scientific publications and presenting results at conferences and workshops.
- Collaborating with the project's experimental and theoretical teams and participating in the scientific activities of CTP PAS and the Faculty of Physics, University of Warsaw.

Questions regarding the position or the recruitment process may be addressed to Prof. Michał Matuszewski (mmatuszewski@cft.edu.pl).

If you require reasonable adjustments or a more accessible format to apply for this position online, please contact recruitment@cft.edu.pl.

About you

Essential qualifications, experience and knowledge

- A PhD in physical sciences or a related discipline, particularly in optics, photonics, condensed matter physics, semiconductor physics, or photonic engineering, evidenced by a diploma or certificate issued by the degree-awarding body; candidates prior to formal conferral of the degree may apply, provided they document the current stage of the degree-award procedure and obtain the PhD before starting employment.
- Experience in experimental research in optics, photonics, or solid-state spectroscopy.
- Experience in building, aligning, modifying, or operating optical setups using continuous-wave or pulsed lasers.
- Ability to independently plan and conduct experiments and troubleshoot technical problems in optical setups.

- Ability to perform quantitative analysis of experimental data and basic scientific programming skills, e.g. in Python, MATLAB, or an equivalent environment.
- Very good command of English and the ability to work both independently and as part of a team.

Desirable qualifications and experience

- Experience in research on excitons, exciton-polaritons, or systems in the strong light-matter coupling regime.
- Experience with semiconductor microcavities, perovskites, thin films, microcrystals, or photonic microstructures.
- Experience in nonlinear, time-resolved, spatially resolved, or angle-resolved spectroscopy.
- Experience in studies of light propagation, waveguides, or photonic networks.
- Experience in experimental automation and control of measurement instrumentation.
- Experience in numerical modelling of optical or nonlinear systems.
- Interest in neuromorphic photonics and optical neural networks.

Previous experience in polariton physics, perovskite materials, or machine learning will be an advantage but is not required. We encourage candidates with a background in experimental optics who are interested in developing expertise in these areas to apply.

What we offer

- The opportunity to contribute to the development of a **pioneering exciton-polariton-based neuromorphic accelerator for AI computing**.
- Work on a project combining fundamental nonlinear optics and semiconductor physics with emerging optical-computing technologies.
- Access to advanced laboratory infrastructure at the Faculty of Physics, University of Warsaw.
- Close collaboration between experimental and theoretical teams at the University of Warsaw and CTP PAS.
- The opportunity to publish results in reputable international journals.
- Participation in an international consortium and collaboration with scientific and technology partners in Poland and abroad.
- The opportunity to file patent applications within the project.
- Funding to participate in scientific events such as conferences and workshops to disseminate project results, as well as for research visits to partner institutions.
- Access to CTP PAS computing resources.
- A full-time, fixed-term employment contract,
- Salary: PLN 12,000-16,000 gross per month; employees are entitled to a seniority allowance subject to the conditions set out in the CTP PAS Remuneration Regulations. The employee may also receive a discretionary or task-based bonus under the CTP PAS Bonus Regulations.
- A scientifically stimulating research environment,

- A friendly and flexible working environment,
- Knowledge and experience sharing,
- Funding for professional training and certification
- Flexible working hours,
- A diverse and inclusive culture in which mutual support, teamwork, and respect are highly valued,
- A subsidized MultiSport card,
- Access to an additional medical package,
- Holiday subsidy,
- Social benefits, including subsidies for holidays for employees and their children, as well as for nursery and kindergarten fees.

We will consider applications for part-time or flexible working arrangements where possible. We encourage you to discuss your flexible working needs during the interview.

How to apply

Applications should be sent to recruitment@cft.edu.pl by 1 October 2026, with the reference number ("MM/22/2026") in the email subject line.

Required documents:

1. An academic CV outlining your education to date and any scientific achievements (publications, participation in research projects, conference presentations), including the following statement: "I consent to the processing of my personal data contained in the application documents for the purposes necessary to conduct the recruitment process by the Center for Theoretical Physics, Polish Academy of Sciences."
2. A cover letter.
3. A copy of the PhD diploma or an official certificate issued by the appropriate degree-awarding body confirming that the doctoral degree has been conferred. For candidates whose doctoral degree has not yet been conferred as of the application date, a document issued by the degree-awarding body confirming the current stage of the doctoral degree-award procedure (e.g. a scheduled defense date). Employment is conditional upon submitting a document confirming that the doctoral degree has been conferred no later than before the employment start date.
4. Copies of documents confirming scientific or professional achievements (optional).
5. At least one letter of recommendation from a researcher holding at least a doctoral degree, concerning the candidate and their previous scientific activity, sent directly by the referee to recruitment@cft.edu.pl.
6. A signed personal data protection statement ([link to the applicable clause](#)).

We will contact selected candidates only.

How we recruit

We carefully review every application. Candidates whose experience and skills match our needs and requirements are invited to an interview (usually held online).

Throughout the process, we stay in contact with candidates, ensure that interviews take place in a friendly atmosphere, and provide feedback after interviews. We approach each person individually, including accommodating the needs of people with disabilities.

We appreciate all feedback submitted after the recruitment process. It motivates us to continually improve our recruitment practices.

Our commitment to equality, diversity and inclusion

CTP PAS is committed to an inclusive environment regardless of personal, physical, or social characteristics. We highly value teamwork, recognize and appreciate individual strengths, and support the career development of every employee.

Equality, respect, and openness are fundamental values in an academic environment, where diversity is essential. We strive to provide a safe and inclusive space for all members of our scientific community.

CTP PAS has Regulations on Reporting Breaches of Law and the Protection of Whistleblowers in force.