

JUNIOR RESEARCH POSITIONS AT CENTRE OF NEW TECHNOLOGIES, UNIVERSITY OF WARSAW

Newly established Quantum Technologies Laboratory at the Centre of New Technologies, University of Warsaw, Poland (www.cent.uw.edu.pl/en) led by Professor Konrad Banaszek seeks to fill five junior research positions supported by the project **Quantum Optical Communication Systems** starting on 1 December 2016.

The project will develop new concepts for optical communication systems using recent advances in quantum information science and quantum optics. The central idea is to reformulate the communication task as a decoding problem for non-orthogonal quantum states describing individual inputs rather than to transmit information in classical variables, such as intensity, phase, or quadratures, whose conventional measurements are bounded by standard quantum limits. Such a general approach opens up ways to enhance transmission rates through reduction of error probabilities and to attain superadditivity of accessible information through collective detection. A very brief introduction to this field of research has been given in [K. Banaszek, Nature Photonics 6, 351 \(2012\)](#). The project combines elements of optical physics, information theory, quantum optics, and photonics. Applicants are expected to demonstrate experience commensurate with their level of education in at least one of these areas.

The project, funded under the TEAM programme managed by the Foundation for Polish Science, will be carried out in close collaboration with the groups of Dr Christoph Marquardt at the Max Planck Institute for the Science of Light in Erlangen, Germany (www.mpl.mpg.de) and Professor Matteo G. A. Paris at the University of Milan, Italy (users.unimi.it/aqm). Internships at partner institutions are planned for junior members of the research team.

Available positions:

- One postdoctoral research fellowship, duration up to 3 years, monthly gross salary in the range 6,000 PLN – 9,000 PLN depending on candidate's qualifications. The fellowship is available to candidates who have held a doctoral degree for a period not longer than 5 years. The period begins in the year of obtaining the degree and expires in the year prior to the year of submitting an application in the competition for member of the research teams financed in the TEAM project.
- Two PhD scholarships, duration 3 years, monthly stipend 4,500 PLN.
- Two scholarships for students up to the Master level, duration 1 year, monthly stipend 1,500 PLN.

Applicants are requested to e-mail their curricula vitae, research records, and academic transcripts (in the case of students and PhD candidates) to qtlab@cent.uw.edu.pl before 19 October 2016, 23:59 CEST.

All the documents should be attached to a single e-mail as pdf files. An explicit consent to process personal data for the recruitment purposes pursuant to the Personal Data Protection Act dated 29 August 1997 (Journal of Laws of 2015, item 2135 as amended) needs to be given in the message body. The applications should specify the name of at least one senior researcher who may be contacted to provide a reference about the applicant. It is expected that the candidates will be notified by 24 October 2016 and those shortlisted will be interviewed (remotely or in person) on 27 October 2016.

