INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Název projektu: Mezinárodní centrum pro informaci a neurčitost

Registrační číslo: CZ.1.07/2.3.00/20.0060

Zpráva z účasti na stáži

Datum konání stáže:	2.03.2014 – 29.03.2014
Navštívené pracoviště:	Danish Technical University, Lyngby, Dánsko
Zahraniční garant:	prof. Ulrik Andersen
Účastník stáže:	Vladyslav Usenko, Ph.D.

Stručný popis navštíveného pracoviště

Danish Technical University (DTU) was founded 1829 and since then has become one of the Europe's leading engineering institutions, it is also the leading technical university in Europe in terms of the number of publications. DTU is particularly strong in international scientific collaboration and education, half of its PhD students are from abroad. The Quantum Physics and Information Technology (QIPT) section of Physics Department of DTU is conducting the research for the quantum information technology and quantum sensing. The section is very active on the international level; it participates in the numerous research projects. The section leader, Prof. Ulrik Andersen, is active mainly in the fields of quantum optics and quantum information with the outstanding results, being regularly published in top-ranked international peer-reviewed journals. The stuff of the section includes 2 associate professors, several post-docs and numerous Ph.D.-students.

Průběh stáže

The visit was dedicated to the joint research project aimed at the demonstration of possibility to completely decouple an eavesdropper from the Gaussian quantum channel by using properly modulated squeezed states, i.e. the methods of state engineering, following by the previously suggested theoretical results. The experiment was performed by the Master student, Mr. Christian Jacobsen under the supervision of Prof. Ulrik Andersen and became the continuation of the experiment, started by Dr. Lars Madsen (now at the University of Queensland, Australia). The new experimental data for the strong channel attenuation and the presence of detection noise was analysed and the effect was confirmed in such realistic conditions. The work on the upcoming manuscript was also performed during the visit. The visit was accomplished together with the Ph.D.-student of the Department of Optics Mgr. Ivan Derkach, who was also involved in the discussions.

Publikace rozpracované během stáže
The experimental results are currently being prepared for the publication, scheduled to submission in summer 2014.

Navázání kontaktů
The visit led to further intensification of the collaboration between the Department of Optics of the Palacky University in Olomouc and the experimental QIPT group in Lyngby. The fruitful contact on the level of young researchers was also established between Mgr. Christian Jacobsen, who had recently become a Ph.D. student at the QIPT group, and Mgr. Ivan Derkach, who is the Ph.D. student at the Department of Optics.

Shrnutí stáže
The visit indeed achieved its goals, the scientific collaboration with one of the leading institutions in the field of quantum optics and quantum information was successfully continued and intensified. The new knowledge on the current methods and challenges in the field of experimental quantum information was obtained and will be further disseminated to the target group within the scientific seminars.

Fotografická dokumentace

Photo taken during the scientific discussion within the stay, depicted are and Prof. Andersen (left) and Dr. Usenko (right).

Photo taken during the scientific discussion within the stay, depicted are Dr. Usenko (left), Prof. Andersen (centre) and Mr. Derkach (right).

Vladyslav Usenko, Ph.D.