

The 21th Student Conference
“Winter School on **MATHEMATICAL PHYSICS**”

The Department of Physics and the Doppler Institute of the Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague together with the Department of Mathematics and Informatics, University of Białystok have organized an international student conference for undergraduate and graduate students in the village Horní Polubný (Jizera Mountains), January 22 – 28, 2012.

The aim of the meeting was the same as in recent years: to give the students a unique opportunity to present results of their research work in English and to contribute in this way to an improvement of their communication skills in a very informal international setting. There were 40 participants coming from the University of Białystok (Poland) (9), University of Hradec Kralove (1), Comenius University in Bratislava (3) and Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague (27).

The varied topics dealt with during the conference were related to several fields of contemporary mathematical physics (see the program below). Up to five daily lectures were held, mostly in the mornings (9.00 – 13:00 a.m.), and late afternoons were devoted to discussions. The setting of the Jizera mountains covered with snow enriched the overall informal atmosphere of this fruitful meeting.

Prague, February 1, 2012

Goce Chadzitaskos and Libor Šnobl,
(on behalf of the Organizing Committee)

Program

Doctoral students are marked with (d), master students with (m).

Monday

- Václav Potoček (d): Stimulated Raman adiabatic passage and deterministic single-photon manipulation
- Radek Novák (m): Birman–Schwinger principle
- Dalibor Karásek (d): Category theory – the art of arrows
- Helena Šediváková (d): Repeated interaction quantum systems

Tuesday

- Marián Fecko: Conservation laws in Nambu mechanics
- Ivo Petr (d): Constrained Hamiltonian systems, part I
- Jan Fuksa (m): Generating function for $SU(2)$ Clebsch-Gordon series
- Dominik Šafránek (m): Free-will experiment (application of delayed choice quantum eraser experiment)
- **Special evening lecture:** Ivo Petr (d): Constrained Hamiltonian systems, part II

Wednesday

- Jan Vysoký (d): Nambu–Poisson structures
- Antonín Hoskovec (m): Transfer of excitations on perturbed networks
- Iva Bezděková (m): Localization and spreading of quantum walks
- Jan Smotlacha (d): Coherent states of deformed parafermionic oscillator

Thursday

- Robert Jankowski (d): Time delay of replicator dynamics
- Mateusz Anisierowics (d): Problem of false coin
- Michal Jex (m): One–point interaction in quantum graphs
- Samuel Kováčik (m): Quantum mechanics in noncommutative space
- Pavel Hoc (m): Search for Higgs boson

Friday

- Elvira Wawreniuk (m): Fundamental grupoid
- Joanna Zonenberg (d): Classical Lie symmetries and integrable equations
- Barbara Pietruczuk (d): One–sided invertibility of weight shift operator generated by linear map
- Barbora Planková (d): Fluid simulations
- Jakub Železný (d): Density functional theory and Kohn–Sham equations