

The 26th 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 organized the international student conference for undergraduate and graduate students in Janské Lázně (Krkonoše Mountains) from January 22 to January 28, 2017.

The aim of the conference was to provide students a unique opportunity to present results of their research work in front of an international audience. This opportunity to present a talk in the English language contributed to the improvement of communication skills of each student. There were 37 participants from the University of Białystok (Poland) (4), Comenius University in Bratislava (2) and the Czech Technical University in Prague (31).

Topics of the presentations were related to several fields of contemporary mathematical physics — see Book of abstracts <http://kmlinux.fjfi.cvut.cz/ambrop1/wsmf/history/2017-proc.pdf>. The program comprised five blocks and each consisted of up to five lectures. The detailed program is included below. The setting of spa Janské Lázně enriched the overall informal atmosphere of this fruitful meeting.

Prague February 2, 2017

David Břeň, Jiří Hrivnák and Petr Novotný  
on behalf of the Organizing Committee

## Monday, January 23

Morning session

Chairperson: J. Hrivnák

- 09:00 – 09:50 **Daniel Vařata**  
*Duality between the spectra of Schrödinger operators on quantum graphs and discrete Laplacians on underlying combinatorial graphs.*
- 10:00 – 10:30 **Josef Navrátil**  
*Critical and bifurcation points for equations with Lipschitz nonlinearities*
- 10:35 – 11:05 **Helena Koleřová**  
*Unbearable lightness of neutrinos*
- 11:05 – 11:25 *Intermission*
- 11:25 – 11:50 **Stanislav Skoupý**  
*State transfer by means of discrete-time quantum walks*
- 11:55 – 12:20 **Daniel Gromada**  
*Classification of Lie algebra realizations*

## Tuesday, January 24

Morning session

Chairperson: M. Fecko

- 09:00 – 09:50 **Ivo Petr**  
*Lattice-based cryptography*
- 10:00 – 10:30 **Václav Zatloukal**  
*Generalizing Complex-Plane Integration Formulas to Higher Dimensions*
- 10:35 – 11:05 **Radek Novák**  
*Grushin problem*
- 11:05 – 11:25 *Intermission*
- 11:25 – 11:50 **Jan Kotrbatý**  
*Lie fields and representations of the Poincaré groups*
- 11:55 – 12:20 **Tereza Štefková**  
*Trapping in quantum walks*

Afternoon session

Chairperson: G. Chadzitaskos

- 16:00 – 16:30 **Lenka Motlochová**  
*Application of Burnside’s lemma in discrete Fourier-like analysis*
- 16:35 – 17:00 **Jan Vábek**  
*Full Saddle Point Approximation For Single Active Electron Response During High Harmonic Generation*
- 17:05 – 17:30 **Patrik Urban**  
*Introduction to conformal theory of gravity*
- 17:35 – 18:00 **Filip Garaj**  
*Cotton tensor*

## **Wednesday, January 25**

excursions, skiing

## Thursday, January 26

Morning session

Chairperson: L. Hlavatý

- 09:00 – 09:50 **Marián Fecko**  
*Electrodynamics and non-inertial frames*
- 10:00 – 10:25 **Marie Fialová**  
*Direct Integral and Landau Hamiltonian*
- 10:30 – 11:00 **Matěj Tušek**  
*On some extensions of the Iwatsuka model*
- 11:00 – 11:25 *Intermission*
- 11:25 – 11:50 **Vojtěch Teska**  
*Orthogonal Subalgebras and Finite Quantum Systems*
- 11:55 – 12:20 **Kateřina Zahradová**  
*How to frame a curve*

## Friday, January 27

Morning session

Chairperson: A. Odziejewicz

- 09:00 – 09:50 **Václav Potoček**  
*Orbital Angular Momentum of Light*
- 10:00 – 10:30 **Martin Malachov**  
*Numerical Analysis of Chaos in Entanglement Purification of Mixed States*
- 10:35 – 11:05 **Peter Mészáros**  
*CMB anisotropies in the presence of elastic matter*
- 11:05 – 11:25 *Intermission*
- 11:25 – 11:50 **Bernard Rybołowicz**  
*Continuous curves*
- 11:55 – 12:20 **Krzysztof Bardadyn**  
*Introduction to Cuntz algebras*