The 23th 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 the international Winter School for undergraduate and graduate students in the village Janské Lázně (Krkonoše Mountains), January 26 – February 1, 2014.

The aim of the School was the same as in recent years: to give the students a unique opportunity to present the results of their research work in English and so contributed to the improvement of their communication skills in a very informal international setting. There were 40 participants coming from the University of Białystok (Poland) (8), University of Hradec Kralove (1), and Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague (31).

The varied topics dealt with in the Winter School were related to several fields of contemporary mathematical physics (see the Book of abstracts http://kmlinux.fjfi.cvut.cz/ ambrop1/wsmp/history/2014-proc.pdf).

Up to five daily lectures of the Winter School were held in the morning (9.00 – 13:00 a.m.) and late afternoons were devoted to discussions. The setting of spa Janské Lázně enriched the overall informal atmosphere of this fruitful meeting.

Prague, February 3, 2014

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

Lectures

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

- P. Baxant (m) : Spontaneous Parametric Down-Conversion as a Source of Quantum Entangled Photons

- I. Bezděková (d)" Stability of Point Spectrum for Three-state Quantum Walks on a Line

- A. Brus (m): p-Simplicial Geometry and Incidence Matrices

- T. Czyzycki (p): Linear Filtering, DCT and their Applications

- Z. Grabowiecka (m): Elements of Adjoint Order 2 of Simple Lie Groups

- L. Háková (p): Weyl Group Orbit Functions in Image Processing

- R. Jankowski (p): The Maximum in the Fixed Point

- M. Jex (d): Spectrum of Strong $\delta\prime$ interaction Supported by a Closed Loop

- M. Juránek (m): Sign Homomorphisms of Weyl Groups

- D. Karásek (d): Geometric Formulation of Time Dependent Hamiltonian Mechanics

- J. Kysela (m): Twirling Operations in Quantum Computation

- J. Lochman (m): Dimensional Reduction

- O. Löw (m): Quantum Walks – The Moment Method

- M. Malachov (m): Various Representations of Rotations and their Application in Crystallography

- A. Marchesiello (p): Superintegrability: Separability vs Higher Order Integrals

- Pavel Hoc (m): Search for Higgs boson

- J. Maryška (d): Asymptotic Properties of Size Scalling Qubit Networks

- J. Navrátil (d): Reaction-diffusion Equations and Pattern Formation

- R. Novák(d): Influence of Dimensions in Quantum Mechanics

- Petr Novotný (p): Graded Contractions of Lie Algebras and their Representations

- U. Ostaszewska (p): On Application of Gambling Team Technique to Waiting Time Problems in i.i.d. Sequences

- I. Petr (d): Plane Waves in General Relativity and String Theory

- J. Prokop (m): Calculating Invariants of Lie Algebras by Method of Moving Frames

- J. Schmidt (d): Lie Derivative of Nontensorial Objects

- L. Strmisková (d): Thermodynamics in Hydrogen Fuel Cells

- K. Šrámková: What You Can Do in Physics, When You Are Not a Theorist

- M. Tušek (p): Huygens' Principle in N Dimensions

- D. Vašata (d): Generalized Definition of Centroid for Certain Subclasses of Compact Sets with Zero Volume

- J. Vysoký (d): Inverting of Singular Matrices: A Counterpart of Nambu-Poisson Struc-tures?

- E. Wawreniuk (d): Reproducing Measure for the Basic Hypergeometric Series

- H. Zemanová(m): Electron Motion in Plasma with External Magnetic Field

- J. Zonenberg (d): Oscillatory Properties of Solutions of the Fourth Order Difference Equations with Quasidifferences