

The 18th Student Winter School on  
**MATHEMATICAL PHYSICS**

The Doppler Institute of the Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague and the Department of Mathematics and Informatics, University of Białystok have organized the international Winter School for undergraduate and graduate students in the village Horní Polubný (Jizera Mountains), January 25 – 31, 2009.

The aim of the School was the same as in the past: to present the mathematical principles of modern physical theories in review lectures based on simple examples. Further, the school gave 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 35 participants coming from the University of Białystok (Poland) (6), University of Hradec Kralove (1), Masaryk University Brno (3) and Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University (25).

The varied topics dealt with in the Winter School were related to several fields of contemporary mathematical physics (see the appended list of contributions).

Up to five daily lectures of the Winter School were held in the morning (9.00 – 13:00 a.m.) and Wednesday afternoon, other 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 3, 2009

Goce Chadzitaskos, (on behalf of the Organizing Committee)

**List of lectures:**

- L.Šnobl: Symmetry methods and solution of ODEs I,II,  
T. Brougham: Nonlinear Hamiltonians in Quantum Optic  
L. Hlavatý:  $SL(2,Z)$  and its fundamentals region  
G. Chadzitaskos : Two boson interaction and orthogonal polynomials  
M. Štefaňák: Quantum random walks on a line  
Gabris : Introduction to linear quantum optics and quantum random walks  
Dobrogowska: Integrable systme coinduced from Banach space of trace classe operators

**Student presentations:**

- L. Strmisková : Shadowing theorem  
J. Günther: Particle spaces  
V. Štěpán: Poincare superalgebra in 1+1 dimension I, II  
M. Tušek: Introduction to the stability of selfadjointness  
D. Vašata: Krein formula  
V. Potoček: Quantum random walks in an optical interferometer  
E. Kubalová: ADM (3+1) formalism  
S. Petr: Toy supersymmetry  
M. Bureš: Atoms in compactified universes  
M. Karwowska: Bihamiltonian manifold Magri Metod I.  
W. Maleszewski: Bihamiltonian manifold Magri Metod II.