

The 19th 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 24 – 30, 2010.

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 44 participants coming from the University of Białystok (Poland) (8), University of Hradec Kralove (1), Masaryk University Brno (5) and Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague (30).

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 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, 2010

Goce Chadzitaskos, (on behalf of the Organizing Committee)

List of lectures:

- J. Hrivnák: Reflection groups and orbit functions I, II
- J. Kříž: Quantum waveguide - an overview.
- H. Hernandez: Geometric phases and quantum waveguides
- H. Lavička: EPC model
- A. Gabris : Quantumness witnesses

Student presentations:

- L. Strmisková : Shadowing theorem
- H. Šediváková: Quantum waveguides: Effective Hamiltonian
- V. Štěpán: Supermanifold
- K. Klouda: An algorithm for computing the least trimmed squares estimate
- V. Potoček: Computing with quaternions
- L. Motlochová: 2D Generalization of symmetric and antisymmetric sine functions
- D. Karásek: Classification of outer derivatives of Lie algebras
- V. Zatloukal: Supersymmetric quantum mechanics
- B. Planková : Mathematical modeling of spherical interfaces
- T. Hejda: Substitutions fixing non-degenerate 3iet words
- D. Dombek: Non-standard numeration systems I
- T. Vávra: Non-standard numeration systems II
- M. Šarbot: Representation of motion in central potential by non-Euclidian surfaces
- J. Vysoký: Living in the superworld
- M. Mysliwiec: Magri method for the restricted trace - class operators
- S. Siemien: Operations and effects

J. Wasiliew: Toeplitz algebras

E. Pryzmont: The homotopy of topological groups related to Hilbert space

I. Petr : Homology group and an integral in C^2