

Report on Habilitation Thesis by Libor Šnobl

Libor Šnobl is a respected scientist and the present habilitation thesis reflects this.

The thesis is devoted to some very interesting and important topics in the theory of Lie algebras, Lie groups and their applications in mathematical and theoretical physics.

The thesis is based on nine papers, all of them published in respectable journals. Some of them are written in collaborations with leading experts in the field (P. Winternitz, L. Hlavatý or M. Grundland). The papers are naturally divided into three groups. Papers in the first group are dealing with the structure of certain solvable and Levi decomposable Lie algebras, papers in the second group are devoted to symmetries of differential equations with anticommuting variables and papers in the third group are addressing the subject of Poisson-Lie T-duality and its generalization, the Poisson-Lie T-plurality. As already mentioned, the common theme is Lie groups/algebras, which are either the main subject of investigations themselves (papers in Section 2) or the main mathematical tool used in the study of differential equations (papers in Section 3) or sigma models (papers in Section 4). All papers contain highly non-trivial results and represent valuable contributions to the fields of mathematical and theoretical physics.

In addition to the papers comprising the main part of thesis, there is an excellently written introduction. This introduction contains a concise and rigorous overview of the theory of Lie algebras and Lie groups and its application to symmetries of differential equations and T-dualities of sigma models. It explains nicely the results contained in the papers and the methods used in order to achieve them. On a more fundamental level, it provides for links between the papers which, although devoted to different topics, have the same underlying theme.

The thesis shows that Libor Šnobl really masters the subject of symmetries, which is of the most importance to the physics. It also confirms his outstanding pedagogical skills.

Altogether, I recommend in the strongest possible terms that Libor Šnobl is awarded the docent title.



Branislav Jurčo

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