PhD Colloquium

Mina Monadjem

Existence of post-Lie algebra structures and decompositions of Lie algebras

Post-Lie algebra structures have been studied in several areas of mathematics, such as affine actions on Lie groups, homology of generalized partition posets and Koszul operads, Rota-Baxter operators and the classical Yang-Baxter equation, étale and prehomogenous modules, deformation theory and quantum field theory. Existence questions for these structures often involve the study of decompositions of Lie algebras. By a *decomposition* of a Lie algebra we mean a decomposition as a *vector space* sum (not necessarily a Lie algebra sum) of two subalgebras. What can we say about the algebraic properties of a Lie algebra depending on the properties of its summands? Historically, questions related to decompositions of Lie algebras were first raised for groups. In this talk, we will introduce post-Lie algebra structures, give some basic properties and relate them to decompositions of Lie algebras. We will show some results on Lie algebras decomposing into the sum of two semisimple subalgebras and link them to the existence of post-Lie algebra structures on pairs of semisimple Lie algebras.

25 May, 14:00 – 14:45
SR13 (2nd floor)
Oskar-Morgenstern-Platz 1

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