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Enveloping Algebras and Geometric Representation Theory

Organised by
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March 8th – March 14th, 2009

Abstract. The meeting brought together experts investigating Lie theory from the geometric, algebraic and combinatorial points of view to discuss recent progress and bring forward the research in this area by fostering scientific interaction.

Mathematics Subject Classification (2000): 17Bxx, 20Gxx, 14Lxx.

Introduction by the Organisers

The workshop *Enveloping Algebras and Geometric Representation theory*, organized by Shrawan Kumar (Chapel Hill), Peter Littelmann (Köln) and Wolfgang Soergel (Freiburg) was held March 8th–March 14th, 2009. It continues a series of conferences on enveloping algebras, with the extension of the title indicating a direction the whole subject has taken by including with great success more and more geometric methods.

The meeting was attended by over 50 participants from all over the world, including quite a few younger researchers. The lectures covered a broad range of topics from algebraic Lie theory, with strongly interrelated focal points in the study from a geometrical and cohomological point of algebraic varieties arising in Lie theory on the one hand and the study of related combinatorial structures on the other.

We had reserved tuesday and thursday afternoon for four shorter talks each by younger participants and had one "open problem session" on thursday evening, which also was quite a success. Apart from that we had usually two talks in the morning and two in the afternoon, with the reglementary excursion on wednesday afternoon, leaving ample time for discussion among the participants.

Particularly exciting seemed to us the new results on decompositions of tensor products in the case of quantum affine algebras and its relation to cluster algebras; Bruhat graphs in representation theory and geometry; differential operators and rational Cherednik algebras; construction of semisimple tensor categories; quiver varieties and branching; GIT cones and applications; and the brand new solution of Luna's longstanding conjecture on the classification of wonderful spherical varieties.