Mathematisches Forschungsinstitut Oberwolfach

Report No. 29/2006

Quadratic Forms and Linear Algebraic Groups

Organised by
Detlev Hoffmann (Nottingham)
Alexandr Merkurjev (Los Angeles)
Jean-Pierre Tignol (Louvain-la-Neuve)

June 25th – July 1st, 2006

ABSTRACT. Topics discussed at the Oberwolfach workshop *Quadratic Forms and Linear Algebraic Groups*, held in June 2006, included besides the algebraic theory of quadratic and Hermitian forms and their Witt groups several aspects of the theory of linear algebraic groups and homogeneous varieties where geometric methods have proved successful in recent years, notably Chow motives and the essential and canonical dimensions of algebraic groups.

Introduction by the Organisers

The workshop was organized by Detlev Hoffmann (Nottingham), Alexandr Merkurjev (Los Angeles), and Jean-Pierre Tignol (Louvain-la-Neuve), and was attended by 52 participants. Funding from the Marie Curie Programme of the European Union provided complementary travel support for young researchers, and it also allowed for the invitation of six PhD students in addition to established researchers.

The workshop followed a long and illustrious tradition of Oberwolfach meetings on quadratic forms initiated by M. Knebusch, A. Pfister and W. Scharlau in the 1970's. Initially, the topics ranged from the arithmetic theory of quadratic forms and lattices to real algebraic geometry. In the last decade, however, the algebraic theory of quadratic forms sustained a vigorous development of its own, under the influence of geometric methods, and new connections with linear algebraic groups over arbitrary fields appeared. Recently, striking new results, such as Voevodsky's proof of the Milnor conjecture, were obtained by an infusion of new techniques from motivic cohomology and algebraic topology.

The schedule of the meeting comprised 22 lectures of 45 minutes each, which presented recent progress and interesting new directions in various topics where the algebraic theory of quadratic forms, Galois cohomology, algebraic geometry and the theory of linear algebraic groups mutually stimulate each other, notably Witt groups of triangulated categories, Chow motives of homogeneous varieties, and the essential and canonical dimensions of algebraic groups. Some new connections with representation theory were also discussed.