Lattices and applications in number theory

organised by

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The theory of Euclidean lattices is stimulated by its interaction with other important and active mathematical fields. This workshop will focus specifically on the interaction of lattices with number theory. Some areas we plan to cover include:

(1) Application of modular forms, finite group theory, and algebraic number theory to the construction of interesting lattices, and the application of tools from linear and semidefinite optimisation to improve upper bounds for sphere packing.
(2) Applications of lattice theoretic methods to the investigation of algebraic structures, for instance the use of Voronoi's algorithm in the investigation of arithmetic groups.
(3) Arakelov geometry, a natural setting for the geometry of numbers.
(4) Algebraic modular forms and Hecke operators, especially for orthogonal groups where lattice theoretic concepts play a major role.

The workshop aims to bring together experts from these mathematical areas strongly related to the theory of lattices in Euclidean spaces. The talks in this conference will reflect the different backgrounds of the participants and should be accessible to a broad mathematical audience.