SFB-Seminar

ZEIT:
16.11.2010, 16:00 Uhr - 19:00 Uhr

ORT:
HU
Institut für Sportwissenschaft
Philippstr. 13, 10115 Berlin (Mitte)
Haus 11, Hörsaal 5

PROGRAMM:

16:00 - 17:00 **Prof. Dr. Holger Reich**

Rigidity and dynamics
The Borel conjecture says that closed aspherical manifolds are topologically rigid, i.e. if two such manifolds are homotopy equivalent, then they are already homeomorphic. The Kaplansky conjecture says that there are no nontrivial idempotents in the group ring of a torsionfree group. The Bass conjecture is concerned with the prolongation of character theory from finite to infinite groups.
The talk will try to indicate how these and other conjectures are related to algebraic K-theory and how they are subsumed in the so called Farrell-Jones conjecture, which can be formulated for an arbitrary discrete group. The Farrell-Jones conjecture is known for many groups but it is completely open in general.
All known proofs of the Farrell-Jones conjecture assume that the group is acting by isometries on a suitable geometry, in the simplest case a Riemannian manifold. Dynamical properties of the geoemtry are used in the proofs.
We will give an overview of known results and indicate future directions.

17:00 - 17:30 Kaffeepause

17:30 - 18:30 **Ilarion Melnikov (AEI)**

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Heterotic strings and deformed quantum geometry

Compactifications of the ten-dimensional heterotic string to four dimensions are a well-known source of interesting particle physics models. Their structure also has interest for the mathematicians---for instance, the phenomenon of mirror symmetry was first described in this context. Despite being a rather venerable subject, we know surprisingly little about the general structure of these compactifications. In my talk I will describe some recent developments that have allowed for some new insights and have led to some new mathematical structures. In particular, I will focus on deformations of quantum cohomology, a structure familiar from the mathematics of mirror symmetry.

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