Oberwolfach Seminar
Algebraic K- and L-theory and geometric group theory

Organizers

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Programme

The idea of this seminar is to bring together ideas and results from two different branches of mathematics, namely, geometric group theory and algebraic K- and L-theory. There has been a great deal of activity in both areas during the last decades and an introduction to both of them is of great value for any PhD-student or Postdoc.

We will cover the following topics

- Algebraic K- and L-theory of group rings, in particular the Farrell-Jones Conjecture.
- Applications to manifold theory, geometry and algebra. Discussion of proofs of known cases of the Farrell-Jones Conjecture.
- Geometric group theory. Hyperbolic groups, CAT(0)-groups, mapping class groups and Out (F_n), and their actions on interesting spaces.

Prerequisites

Basics about algebraic topology, modules, groups and group actions.

Introductory reading

For a short introduction to the Farrell-Jones Conjecture see [3], a much longer survey is [4]. An introduction to proofs of the Farrell-Jones Conjecture is [1]. For an introduction to geometric group theory see [2, 5] and the notes of lectures by Karen Vogtmann which can be found under
http://www2.warwick.ac.uk/fac/sci/maths/people/staff/karen_vogtmann/lectures/

Deadline for applications

References

[1] A. Bartels. On proofs of the Farrell-Jones Conjecture. Preprint, arXiv: 1210.1044 [math.GT], 2012.
[2] W. Lück. Survey on geometric group theory. *Münster J. of Mathematics*, 1:73–108, 2008.
[3] W. Lück. K- and L-theory of group rings. In *Proceedings of the International Congress of Mathematicians. Volume II*, pages 1071–1098, New Delhi, 2010. Hindustan Book Agency.
[4] W. Lück and H. Reich. The Baum-Connes and the Farrell-Jones conjectures in K- and L-theory. In *Handbook of K-theory. Vol. 1, 2*, pages 703–842. Springer, Berlin, 2005.
[5] K. Vogtmann. The cohomology of automorphism groups of free groups. In *International Congress of Mathematicians. Vol. II*, pages 1101–1117. Eur. Math. Soc., Zürich, 2006.