

Stanford Department of Mathematics Colloquium

ON THE BOREL CONJECTURE AND RELATED TOPICS

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Abstract

The Borel Conjecture predicts for two closed aspherical manifolds M and N that they are homeomorphic if and only if their fundamental groups agree and that in this case every homotopy equivalence is homotopic to a homeomorphism. This may be viewed as the topological version of Mostow rigidity. It is more or less closely related to the Farrell-Jones Conjecture about the algebraic K - and L -theory of group rings and the Baum Connes Conjecture about the topological K -theory of reduced group C^* -algebras. We present the recent work together with Bartels, where we prove the Farrell-Jones Conjecture and hence the Borel Conjecture in dimension greater or equal to 5 for a large class of groups which includes word-hyperbolic groups and $CAT(0)$ -groups and is closed under directed colimits, taking subgroups and direct products. This implies that these conjectures are true for certain interesting groups (Tarsky monsters, groups with expanders, limit groups) and those exotic aspherical manifolds constructed by Mike Davis.

Thursday, February 28
4:15 p.m.
Room 380-F

<http://math.stanford.edu/coll/0708/>