

Algebraic K-Theory Seminar

Assembly maps for topological cyclic homology

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Abstract: Topological cyclic homology, a far-reaching generalization of Hochschild homology, is a powerful invariant of rings and plays an important role in algebraic K-theory. I will present joint work with Wolfgang Lück, Holger Reich, and John Rognes [arXiv:1607.03557], in which we use assembly maps to study the topological cyclic homology of group algebras. For any finite group G , for any connective ring spectrum A , and for any prime p , we prove that $TC(A[G];p)$ is determined by $TC(A[C];p)$ as C ranges over the cyclic subgroups of G . More precisely, we prove that for any finite group the assembly map with respect to the family of cyclic subgroups induces isomorphisms on all homotopy groups. For infinite groups, we establish pro-isomorphism, split injectivity, and rational injectivity results, as well as counterexamples to injectivity and surjectivity. In particular, for hyperbolic groups and for virtually finitely generated abelian groups, we show that the assembly map with respect to the family of virtually cyclic subgroups is split injective but in general not surjective—in contrast to what happens in algebraic K-theory.

Wednesday, March 29 at 1:00 PM in SEO 1227