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Roe algebras, coarse geometry, and exactness.

vendredi 2 juin 2017 10:55 (45 minutes)

Roe algebras are C*-algebras associated to possibly open manifolds, or more general metric spaces; they are invariants of the large-scale geometry. Roe algebras are motivated by the fact that (nice enough, e.g. Dirac type) differential operators on a Riemannian manifold have higher indices in the K-theory of the Roe algebra; if the manifold happens to be closed, the Roe algebra is just the compact operators and one recovers the classical integer index this way. For 'good' spaces, the Roe algebra remembers essentially all the large-scale geometry of the space X, while in 'bad'ones, analytic difficulties arise leading to counterexamples to Baum-Connes type conjectures. I'll try to survey what makes a space 'good'versus 'bad'in this context, and some of the consequences.

Parts of this talk will be based on joint work with several people: Paul Baum, Erik Guentner, John Roe, Jan Spakula, Stuart White, and Guoliang Yu.

Orateur: M. WILLETT, Rufus