Expanders and ghost projections

Rufus Willett

Abstract: The Baum-Connes conjecture posits a connection between group (K-)homology and K-theory of certain algebras. It is important for its applications in topology, geometry, and operator K-theory. Expanding graphs cause problems for various versions of the Baum-Connes conjecture (e.g. via the Gromov monster groups that coarsely contain expanders in their Cayley graphs). This is roughly as expansion properties lead to the existence of so-called 'ghost idempotents' in the algebras appearing in the Baum-Connes conjecture.

I'll survey what happens here (mainly the underlying geometry, and a little analysis), and discuss the connection of 'ghosts' to coarse amenability (property A). Some of this is joint work with John Roe.