

Coarse embeddability into Hilbert spaces and its consequences

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Abstract: Coarse embeddability into a Hilbert space is a natural generalisation of quasi-isometric embeddability. It is very hard to construct a group which does not coarsely embed in a Hilbert space: there is no explicit counterexample given in terms of generators and relations. It is surprising that such a weak property satisfies strong index-type conjectures (the Novikov and the Coarse Baum–Connes conjectures). However, coarse embeddability is a difficult property to check, for example it does not behave very well under group extensions. G. Yu introduced coarse amenability (or property A), a closely related property that behaves much better and implies coarse embeddability.

In this talk we shall explore coarse embeddability into Hilbert spaces, and its relation to coarse amenability. We will also study equivariant coarse embeddings for groups (the Haagerup property) and its relation to amenability. This is joint work with Dennis Dreesen.