## Higher index theory for spaces with an FCE-by-FCE structure

The coarse Novikov conjecture claims that a certain assembly map from the K-homology of a metric space to the K-theory of its Roe algebra is injective. It has significant applications in geometry and topology of manifolds.

Let  $(1 \to N_m \to G_m \to Q_m \to 1)_m$  be a sequence of extensions of finite groups. Assume that the coarse disjoint unions of  $(N_m)_m$ ,  $(G_m)_m$  and  $(Q_m)_m$  have bounded geometry. The sequence  $(G_m)_m$  is said to have an FCE-by-FCE structure, if the sequence  $(N_m)_m$  and the sequence  $(Q_m)_m$ admit fibered coarse embeddings into Hilbert spaces. In this talk, I will talk about the coarse Novikov conjecture for a space with an FCE-by-FCE structure. This is based a joint work with L. Guo, Q. Wang and G. Yu.