

International Banach Prize PTM Conference

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Invited lecture

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Title:

Spectral gaps vs the Baum-Connes conjecture

Abstract:

Baum-Connes-type conjectures are a broadly successful attempt to generalize the Atiyah-Singer index theorem. The classical version of the conjecture is still open while there exists counterexamples to the coarse Baum-Connes conjecture and the Baum-Connes conjecture with coefficients.

In this talk I will describe how spectral gaps of cohomological Laplace operators can be used to construct new counterexamples by considering certain interesting classes in the K-theory of some natural C^* -algebras, and how do high-dimensional expanders fit into this picture.