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ANALYTICAL SIGNATURES AND PROPER ACTIONS

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Abstract. We compare Mishchenko's definition of non-commutative signature for an oriented manifold with an orientation preserving proper action of a discrete, countable group G with the (more analytical) counterpart defined by Higson and Roe in the series of articles "Mapping surgery to analysis". A generalization of the bordism invariance of the coarse index is also addressed.

1. Introduction

There are different notions of non-commutative signatures that can be applied to oriented proper co-compact G-manifolds for a discrete group G. Higson and Roe studied a relation between a signature of C^*-algebras, an analytic signature and the coarse index of the signature operator, they also showed that these signatures are bordism and homotopy invariants.

For these definitions, they considered two types of so-called Hilbert–Poincaré complexes: *algebraic complexes* of finitely generated projective modules over a C^*-algebra C and *analytically controlled complexes* of Hilbert spaces. Both kinds of complexes are required to satisfy suitable versions of Poincaré duality. The *algebraic* signature has values in the K-theory $K_*(C)$ of the algebra C,

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