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Fredholm modules and boundaries of hyperbolic groups

We describe the construction of finitely summable Fredholm modules over the crossed-product C*-algebras of Gromov hyperbolic groups acting on their boundaries. These Fredholm modules are homologically nontrivial (yield nonzero maps on K-theory) and encode in an analytic way the canonical invariant Holder geometry that exists on the boundary of any such group. The degree of summability is computed, and shown to agree with the Hausdorff dimension of the boundary, and we will describe how to compute the induced maps on K-theory using several methods, e.g. via Connes' Chern character in cyclic cohomology, and, in the case of classical hyperbolic groups, via characteristic classes. This is joint work with Bogdan Nica.