Classification via index theory on the mapping torus

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Abstract

Given a class of topological dynamical systems, we study the associated mapping torus from the point of view of foliated spaces. By studying the interaction between the leafwise Dirac operator and the invariant transverse measures, we completetely reframe in a geometric fashion the Elliott invariant for the crossed poduct of the dynamical system, and prove a rigidity result for the mapping torus, lifting leafwise homotopy equivalences to isomorphism of the noncommutative leaf space.