

Secondary invariants for two-cocycle twists

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We consider Dirac operators, on the universal covering of a closed manifold, that are invariant under the projective action associated to a two-cocycle of the fundamental group.

These operators give interesting invariants analogous to those studied in L^2 -index theory for covering spaces, or more generally higher index theory. The key property of this setting is that the twist by a two-cocycle naturally yields a C^* -algebraic bundle of arbitrary small curvature.

We will describe the construction of eta and rho invariants, prove an Atiyah–Patodi–Singer index theorem in this setting, and discuss some of their geometric properties. This is based on joint work with Charlotte Wahl.

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