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A Gysin sequence in noncommutative geometry

For a class of group actions on compact spaces, we construct an analogue of the Gysin sequence in classical topology (which computes the map on cohomology induced by the projection from the sphere bundle of a compact manifold, to the manifold). The noncommutative sequence computes the map on K-theory induced by the inclusion of the reduced C^*-algebra of G into the cross-product $C(X) \times G$. Applications are given to a problem in index theory: namely, we give a KK-theoretic proof of the theorem of Luck and Rosenberg identifying the class of the de Rham operator in equivariant KK, with the class of a certain combinatorial Euler class.