

Noncommutative geometry and Hopf equivariant (co)homology theories

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Starting from Hilbert's Nullstellensatz and Gelfand-Neumark Theorem, we will give a brief account of how algebraic methods permeated topology and geometry leading to different notions of noncommutative geometry (NCG). In various incarnations of NCG, these ideas gave way to a new concept of symmetry where one replaces a group with a Hopf algebra. Following this theme, we will explain how modern Hopf algebraic methods can be incorporated into the study of (co)homology theories of noncommutative spaces in several directions, specifically for cyclic and Hochschild (co)homology of algebras.