

Topological Hochschild homology of algebras in characteristic p

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December 3, 2002

Abstract: We compute the topological Hochschild homology modules of finitely generated algebras over finite fields provided their singularities are sufficiently mild. AMS subject classification: 19D55 19E08

0 Introduction

Topological Hochschild homology is a functor from the category of rings with unit to that of spectra, or alternatively, a sequence of functors

$$\mathrm{THH}_i = \pi_i^S(\mathrm{THH}(-)), \quad i \geq 0,$$

from the category of rings with unit to that of abelian groups. Viewed in the latter way, it arises naturally in several different contexts—as a spectrum analogue of the Hochschild homology construction in [?] and [?], as stable K-theory [?], and as MacLane homology [?].

The first approach, that of constructing a spectrum analogue of the Hochschild homology complex, was suggested by T. Goodwillie and first carried out by M. Bökstedt. It provides an obvious linearization map from

*Partially supported by NSF Grant DMS94-00833 and the Sloan Foundation