

Geometry and Topology

Periodic topological cyclic homology and the Hasse-Weil zeta function

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We propose a definition of periodic topological cyclic homology and show that, for schemes smooth and proper over a finite field, the infinite dimensional cohomology theory that results provides a natural vessel for Deninger's cohomological interpretation of the Hasse-Weil zeta function by regularized determinants. In this way, the theory may be seen as a non-archimedean analogue of the cohomological interpretation of the zeta function in the archimedean case in terms of cyclic homology given recently by Connes and Consani.