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Derived K -invariants and the derived Satake transform

The classical Satake transform gives an isomorphism between the complex spherical Hecke algebra of a p -adic reductive group G , and the Weyl-invariants of the complex spherical Hecke algebra of a maximal torus of G . This provides a way for understanding the K -invariant vectors in smooth irreducible complex representations of G (where K is a maximal compact subgroup of G), and allows one to construct instances of unramified Langlands correspondences. In this talk, I'll present work in progress with Cédric Pépin in which we attempt to understand the analogous situation with mod p coefficients, and working at the level of the derived category of smooth G -representations.