

BOSTON UNIVERSITY NUMBER THEORY SEMINAR

# The K-theoretic Brauer homomorphism

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Tuesday, Feb 16 at 4:15 pm  
111 Cummington Street, MCS B21  
Tea and cookies in MCS 219 at 4:00 pm

**Abstract:** Smith theory is an old technique from algebraic topology that relates the mod  $p$  cohomologies of a space and its fixed points by a  $\mathbf{Z}/p$ -action. Venkatesh and I used it, and a “Brauer homomorphism” between Hecke algebras, to prove  $\mathbf{Z}/p$ -base change and some other cases of Langlands functoriality for cohomological automorphic forms mod  $p$ . There can be no simple analog of this argument for forms of characteristic zero, but I wonder if more recent tools (1960s instead of 1930s) from algebraic topology can do something. In particular if one works with complex K-theory in place of cohomology, there is a fixed point theorem that does not require you to reduce mod  $p$ . The talk will present some of my work with Venkatesh, and some of my half-baked ideas about “K-theoretic automorphic forms”.