Extended reductive groups and representation theory.

An extended group for a connected reductive algebraic group $G$ is a group fitting into an exact sequence

$$1 \to G \to \Sigma G \to \Sigma \to 1,$$

with $\Sigma$ a finite group. I’ll discuss first some old ideas for using such an extended group to keep track of representations of (real forms of) $G$. (The magic question is, “how do you tell a holomorphic discrete series from an antiholomorphic discrete series?”) Then I’ll discuss some problems arising in recent joint work with Lusztig about the representation theory of extended groups themselves.