April 12: David Vogan (MIT), "Contragredient representations and Langlands parameters (after Jeff Adams)."

A fundamental notion in representation theory is the *contragredient*: if π is a representation of G, then the contragredient π^* is defined on the dual vector space V^*. Under reasonable conditions, this defines an involution on $\widehat{G}$. A first natural question is whether this involution must be implemented by an automorphism of G. Still under mild hypotheses, this question means **is there an automorphism C of G such that $C(g)$ is always conjugate to g^{-1}?** I'll give a counterexample for finite G (due to Kevin Buzzard). What's amazing is that the result is *true*—that there *is* such an automorphism—for a wide range of interesting infinite groups, starting with compact Lie groups.

The Langlands classification gives a (partly conjectural) concrete parametrization of irreducible representations of reductive groups over local fields. A natural (and even important) question is **how can one construct the Langlands parameter of π^* from that of π?** I'll explain Jeff Adams' answer to this question, and what it has to do with automorphisms like C.