December 8: David Vogan (MIT), "The Kazhdan-Lusztig conjecture and signatures of invariant Hermitian forms: case of $Sp(4, \mathbb{R})$."

Suppose G is a real reductive group. The Kazhdan-Lusztig conjecture (in conjunction with the Jantzen conjecture, which is also supposed to be proved but which is much less well documented) provides (almost) an algorithm for computing the signature of the invariant Hermitian form on any irreducible representation of G (and in particular for deciding whether the representation is unitary). The "almost" part is that certain signs in the algorithm are not determined, and therefore one arrives at a finite collection of possible formulas for the signature. On the other hand, signatures are dimensions, and are therefore non-negative; so one can discard possible formulas that lead to negative numbers. In this talk I will look at the example of $Sp(4, \mathbb{R})$, to see what ambiguities remain after this simple requirement is taken into account. (The short answer is, not many.)