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Monica A Nevins* (mnevins@uottawa.ca), Department of Mathematics and Statistics,
University of Ottawa, 585 King Edward Ave., Ottawa, ON K1N 6N5, Canada. *Admissible
Nilpotent Coadjoint Orbits of Exceptional Real and p -adic Lie Groups*. Preliminary report.

The orbit method conjectures a deep relationship between the set of admissible coadjoint orbits of a Lie group G and the unitary dual of G . When G is a reductive Lie group, one can reduce to the cases of (admissible) semisimple and nilpotent orbits. The orbit correspondence has been realized (via parabolic and cohomological induction) for semisimple orbits. What remains to consider are the admissible nilpotent orbits, which will conjecturally be associated with the most singular unitary representations of the group. The notion of admissibility was first introduced by Duflo around 1980. In her PhD thesis, the author extended admissibility to p -adic linear algebraic groups, and computed the admissible nilpotent coadjoint orbits of classical p -adic Lie groups. In all cases, they coincided with the Lusztig-Spaltenstein special nilpotent orbits. In this talk, we describe the admissible nilpotent orbits of real and p -adic split Lie groups of types G_2 , F_4 , E_6 and E_7 . All special orbits are admissible, but there are some nonspecial admissible orbits, and these in turn are related to Lusztig's "special pieces". This suggests that admissibility is the true geometric analogue of specialness for finite Lie groups. (Received September 12, 2000)