1035-22-1764   **B. Binegar*** (`binegar@okstate.edu`), Dept of Mathematics, Oklahoma State University, Stillwater, OK 74078. *Tau signatures, cells and nilpotent orbits.* Preliminary report.

The notion of a *tau signature* is defined for the special nilpotent orbits of a simple complex Lie group G. The tau signature of an orbit effectively specifies where a special nilpotent orbit sits within the Hasse diagram of the special nilpotent orbits by specifying the minimal Richardson orbits that contain it and the minimal Richardson orbits that contain its Spaltenstein dual. Next, a *tau signature* is defined for cells of irreducible Harish-Chandra modules of regular integral infinitesimal character using the tau invariants of the Harish-Chandra modules within the cell. Such cells and their tau invariants are explicitly computable for any real form of G using the Atlas for Lie Groups software. By identifying and correlating these two notions of tau signature, the exhaustive catalogs of the irreducible admissible representations of regular integral infinitesimal character of real forms of G, that are currently produced by the Atlas software, can now be enhanced so as to include the specification of the associated varieties of the representations. (Received September 21, 2007)