1077-05-91   **Andy Hardt** (`hardta@carleton.edu`) and **Justin M. Troyka*** (`troykaj@carleton.edu`).
Restricted Symmetric Signed Permutations.

The symmetry group $D_4 \oplus \mathbb{Z}_2$ acts on the set of signed permutations by rotations, reflections, and bar operations (flip the sign of each letter). Following Egge's work (2007) on unsigned permutations, we enumerate the signed permutations that, given a symmetry subgroup H and a set R of 2-letter signed patterns, are invariant under H and avoid R. Mansour and West (2002) began this work by enumerating the signed permutations that avoid R, not taking symmetries into account. Dukes and Mansour (2007) continued by enumerating signed involutions that avoid R. In this talk, we consider the remaining subgroups of $D_4 \oplus \mathbb{Z}_2$, thus completing the enumeration. The resulting sequences include the Catalan numbers and the central binomial coefficients, and many of them are given recursively. A few of the sets can be counted in two different ways, yielding combinatorial identities. (Received July 25, 2011)