1035-08-1117 **Constance G. Baltera*** (`cbaltera@email.smith.edu`), **Kathryn A. Brenneman** and **Ashley E. Hatfield**. *Combinatorics and Characterizations for Involutions and Twisted Involutions of Weyl Groups.*

Weyl groups generalize permutation groups and have many interesting properties. For a Weyl group W, the set of involutions is $I = \{w \in W | w = w^{-1}\}$, and the set of twisted involutions is $I_\theta = \{w \in W | \theta(w) = w^{-1}\}$ for a group automorphism θ. Although the partially ordered set, or poset, of involutions has undergone some previous study, the twisted case is not as well understood. In this work we examine posets of involutions and twisted involutions in several families of Weyl groups. We present rank formulae for the posets of twisted involutions in A_n, D_{2n+1}, and D_{2n}. We also offer more results about I and I_θ in D_{2n}, and formulae for the number of elements in each of these sets. (Received September 18, 2007)