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T. Kyle Petersen* (tpeter21@depaul.edu), DePaul University, Department of Mathematical Sciences, 2320 N. Kenmore, Chicago, IL 60614. *Characterizing depth in a Coxeter group.*

The *depth* of an element in a Coxeter group is the minimal cost of a reflection factorization of the element, where each reflection is assigned a cost in a natural way. Depth of an element w is bounded above by the length of w and below by the average of length and reflection length.

In the case of the symmetric group, the depth of a permutation is a measure of the cost of sorting the permutation with transpositions, and we can characterize depth quite simply. This allows us to characterize, via pattern avoidance, the permutations for which depth equals length and for which depth equals reflection length. This is joint work with Bridget Tenner. More recently, Mathieu Guay-Paquet and I computed the generating function for depth in the symmetric group.

There are many open questions related to depth. Notably we have no combinatorial description of depth for the Coxeter group of type B , i.e., for signed permutations. (Received July 16, 2014)