Title: Homomorphisms, Symmetric Functions, and Permutation Enumeration.

Jeffrey. B. Remmel
Department of Mathematics
University of California, San Diego

Abstract. A large number of generating functions for permutation statistics for the symmetric group S_n, the hyperoctahedral group B_n, and wreath products of the form $G \wr S_n$ can be derived by applying a ring homomorphism on the ring of symmetric functions $\Gamma(x_1, x_2, \ldots)$ to simple symmetric function identities. This idea goes back to 1993 paper of Brenti and has been exploited in a number of papers by Beck, Langley, Wagner, Mendes and the speaker. In this talk, we will introduce some new families of bases of symmetric functions and show how one can derive some old and new generating functions for permutation statistics by applying ring homomorphisms to some simple indentities involving these new families of bases for $\Gamma(x_1, x_2, \ldots)$.