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92093-0112. *Extending Generating Functions to $S_k \wr S_n$.*

Ira Gessel was the first to give a multivariate generating function involving the descent, major index, and inversion statistics over the symmetric group S_n in his thesis and in a later paper with Garsia. Mendes and Remmel proved that the Garsia-Gessel formula could be proved by applying a certain ring homomorphism defined on the ring of symmetric functions in infinitely many variables to a simple symmetric function identities and gave analogues for the groups B_n and D_n .

There are several natural ways to extend these formulas to groups of the form of the wreath product of S_k with S_n , $S_k \wr S_n$ for any $k \geq 3$. We give results for generating functions of the above statistics on these groups, and we also describe other statistics than can be obtained by modifying the methods of Mendes and Remmel. (Received September 11, 2008)