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Combinatorics and Algebras

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Abstract

We discuss combinatorial aspects of the representation theory of the algebras $RS_n^{S_{n-k}}$, where R is a commutative ring. Here $n > k \geq 0$ are integers, S_n is the symmetric group and $RS_n^{S_{n-k}}$ is the subalgebra of elements in the group algebra RS_n which commute with every element of S_{n-k} . We are interested in the blocks and centre of $RS_n^{S_{n-k}}$ and the generating functions for their dimensions. We outline connections to the theory of symmetric functions, partitions and the Jacobi-triple product identity.