

A Diagram-like Basis for the Multiset Partition Algebra

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Abstract

There's a classical connection between the representation theory of the symmetric group and the general linear group called Schur-Weyl Duality. Variations on this principle yield analogous connections between the symmetric group and other objects such as the partition algebra and more recently the multiset partition algebra. The partition algebra has a well-known basis indexed by graph-theoretic diagrams which allows the multiplication in the algebra to be understood visually as combinations of these diagrams. I will present an analogous basis for the multiset partition algebra and show how this basis can be used to construct representations for the algebra.