

Partitions, Durfee Symbols and the Atkin-Garvan Moments of Ranks

George Andrews,
Pennsylvania State University, USA.

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In 1944, Freeman Dyson defined the rank of a partition with the object of providing a combinatorial interpretation of the Ramanujan congruences for the partition function, $p(n)$. Dyson's discoveries and conjectures have led to an extensive field of research with exciting discoveries by Atkin, Garvan, Swinnerton-Dyer, Ono, Bringmann and Mahlburg and others. In this talk, we consider moments that Atkin and Garvan associated with the ranks defined by Dyson. We shall reveal the objects they enumerate and shall discuss implications and possibilities.