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Euler's partition theorem: a new bijection between the odd and distinct partitions of n

Abstract

Euler's partition theorem is that the number of odd partitions of n equals the number of strict partitions of n . Schur's partition theorem implies that the number of odd-and-strict partitions of n equals the number of spin-regular partitions of n . Bijective proofs of these theorems were discovered by Sylvester and Glaisher (for Euler) and Bressoud (for Schur).

In order to determine the 'quadratic type' of the irreducible modules of the double covers of alternating groups we construct a new bijection between the odd partitions of n and the strict partitions of n which restricts to Bressoud's bijection on the odd-strict partitions.