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GENERATING FUNCTIONS FOR ENUMERATING CHAINS OF PARTITIONS WITH DISTINCT PARTS

Renee Mirka

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This paper continues investigations by Stanley and Butler in which they enumerate chains of partitions. We consider pairs of partitions composed of distinct parts and their corresponding Young diagrams and look for interesting properties of their generating functions. A proof of the generating function is provided when the difference between a pair of diagrams is fixed in one of three ways: a single box, k boxes in a row, and one box added to two consecutive rows whose lengths differ by one. In particular, we provide an explicit, rational formula when these generating functions are divided by the generating function for partitions made of distinct parts. We conclude with a conjecture for the generating function of adding k disjoint boxes to a Young diagram with distinct parts.