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Ranks for n -marked Durfee symbols and quantum modular forms.

In 2007, G.E. Andrews introduced notion of n -marked Durfee symbols, and n associated notions of rank. When $n = 1$, the symbols reduce to classical partitions and the rank is exactly Dyson's rank. Andrews offered an $n + 1$ -variable generating function R_n for ranks of n -marked Durfee symbols, an $(n + 1)$ -multisum generalizing the ordinary two-variable partition rank generating function. Since then, it has been a problem of interest to understand its automorphic properties. In certain cases, when viewed as a function on the upper half-plane, the function has been shown to possess modular, quasimodular, and mock modular properties, by work of authors including Bringmann, Garvan, Mahlburg, Ono, and the authors, in a series of papers from 2009-2013. Quantum modular forms, defined by Zagier in 2010, are similar to (mock) modular forms but are defined on the rational numbers as opposed to the upper half-plane, and exhibit modular transformations there up to suitably analytic error functions in the real line. Here, we establish quantum modular properties of R_n . This is joint work with M-J Jang (U. Hong Kong), S. Kimport (Stanford U.), and H. Swisher (Oregon State U.), and was partly established during the Women in Numbers 4 Workshop at Banff International Research Station (Received September 11, 2019)