

1117-05-240

Nicholas A. Loehr* (nloehr@vt.edu), Virginia Tech Dept. of Mathematics, 225 Stanger Street, 460 McBryde Hall, Blacksburg, VA 24061-0123. *Variants of the RSK algorithm adapted to combinatorial Macdonald polynomials*. Preliminary report.

We introduce variations of the Robinson-Schensted-Knuth (RSK) algorithm parameterized by positive integers p . Each variation gives a bijection between permutations and pairs of standard tableaux of the same shape. In addition to sharing many of the properties of the classical RSK algorithm, the new algorithms are designed to be compatible with certain permutation statistics introduced by Haglund in the study of Macdonald polynomials. In particular, these algorithms provide an elementary bijective proof converting Haglund's combinatorial formula for Macdonald polynomials to an explicit combinatorial Schur expansion of Macdonald polynomials indexed by partitions μ satisfying $\mu_1 \leq 3$ and $\mu_2 \leq 2$. We challenge the research community to extend this RSK-based approach to more general classes of partitions. (Received January 15, 2016)