Symmetric Functions and Partitions

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1 RS Algorithm

Let S_n be the permutation group of $\{1, \ldots, n\}$ and $\mathcal{P}_n$ be the set of partitions of n. RS Algorithm assigns each partition $\sigma \in S_n$ a pair of standard Young tableaux (P, Q) of the same shape $\lambda \in \mathcal{P}_n$.

To introduce the algorithm, we start with 2 empty partitions P_0, Q_0. A permutation $\sigma \in S_n$ can be represented by two row lines:

$$\sigma = \begin{pmatrix} 1 & 2 & 3 & \cdots & n \\ \sigma(1) & \sigma(2) & \sigma(3) & \cdots & \sigma(n) \end{pmatrix}$$

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