

Computer investigation of the dynamics of insertion tableaux of RSK correspondence

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The Robinson-Schensted-Knuth (RSK) correspondence is a bijection between a set of permutations of integers and a set of pairs of standard Young tableaux of the same shape: insertion tableaux P and recording tableaux Q . The procedure of transforming the input permutation into tableaux is also known as the RSK algorithm or the RSK transformation. The RSK algorithm has many important applications in algebra, combinatorics and representation theory. In this study, we examine a generalized version of the RSK algorithm. Consider an infinite sequence of random uniformly-distributed real numbers from the interval $[0,1]$. Such a sequence can be sent to the input of the RSK algorithm. In this case, RSK produces a pair of infinite semi-standard Young tableaux. We are interested to investigate the dynamics of the insertion tableau under the action of RSK correspondence and the trajectories of certain values in this tableau during the process. Also we study the paths along which bumpings of boxes of tableau P occur and construct so called bumping trees. Some problems about the dynamics connected to the RSK correspondence and its generalizations will be discussed as well.

Keywords

RSK correspondence, recording tableau, Plancherel measure, bumping tree