Asymptotic determinism of Robinson-Schensted-Knuth algorithm

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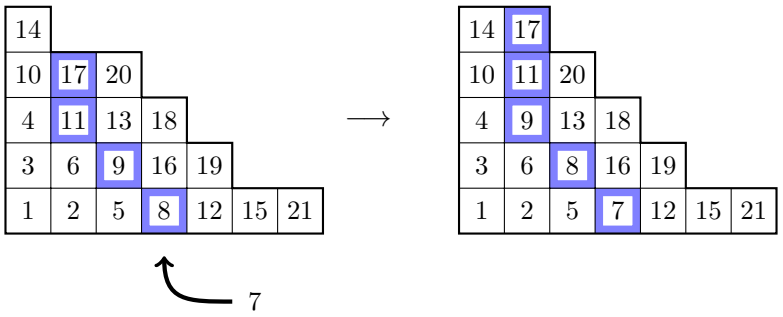
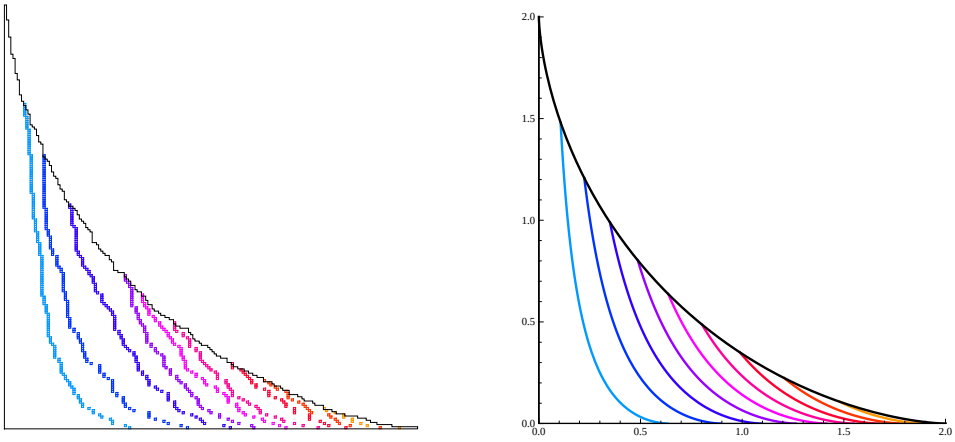
joint work with Dan Romik

What can we say when *Robinson-Schensted-Knuth algorithm* (RSK) is applied to *random data*? This algorithm is fundamental for algebraic combinatorics, in particular to representation theory of the symmetric groups.



It takes as an input a sequence of symbols, and iteratively inserts them into a *tableau* (the symbols increase from left to right and from bottom to top). The new symbol is inserted into the first row of the tableau (as far to the right as possible so that the row remains increasing and no gaps are created), bumping an existing entry from the first row into the second row, which results in an entry of the second row being bumped to the third row, and so on, until finally the entry being bumped settles down in an unoccupied position. The bumped elements form the *bumping route*.



I will show that asymptotically, as the length of the random sequence tends to infinity, *bumping routes* converge to deterministic, explicit curves.