

1154-60-875

Jacopo Borga, Enrica Duchi and Erik Slivken* (eslivken@dartmouth.edu), Dartmouth College, Kemeny Hall, HB 6188, Hanover, NH 03755. *Almost square permutations are typically squares.*

A (almost-) square permutation is a permutation where (almost) all points are records, either maximums or minimums, from the left or the right. We give a probabilistic approach to computing the first-order enumeration of almost-square permutations of size $n + k$ with n records and k non-records. We use the language of permutation limits to describe the points of an almost-square permutation scaled to fit in the unit square. A uniformly random almost-square permutation has a permutation limit with a simple geometric description. If k is fixed, the permutation can be viewed as a rectangle embedded in $[0, 1]^2$ whose edges have slope ± 1 and whose bottom corner is given by a $\beta(k + 1, k + 1)$ random variable. The bottom corner is uniform if $k = 0$ and concentrated at $1/2$ if k is large. If k is increasing but small relative to n , then the permutation limit is a square. (Received September 11, 2019)