

On random minimal factorizations of large n -cycles

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Abstract

We study minimal factorizations of the n -cycle, which are factorizations of the permutation $(1, \dots, n)$ into a product of $n - 1$ transpositions. We implement an algorithm that generates a uniformly distributed minimal factorization by using a bijection between these factorizations and Cayley trees. With this generator, we are able to observe behavior of random minimal factorizations predicted by Kortchemski & Feray [?]. We are also interested in primitive minimal factorizations, which are minimal factorizations where the sequence of the smallest elements of transpositions is non decreasing. We construct an algorithm that generates a random primitive minimal factorization uniformly by using bijections with Dyck paths and 231-avoiding sequences. With this generator, we observe the behaviour of these random factorizations and we establish an explicit formula for the law of the first transposition of this factorization.