

# Probabilistic number theory on random permutations

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The central limit theorems for the number-of-prime-factors function of a random natural number (Erdős-Kac, 1939) and for the number-of-cycles of a random permutation in the symmetric group (Goncharov, 1942) had a potential to start simultaneous development of two parallel theories of general additive functions. It has taken much time to understand the parallelism, however. The purpose of the lecture is to illustrate analogies and differences by a few examples taken from the going research including author's repertoire. That will include moments and limit theorems for the combinatorial additive functions and approximation in the total variation metrics for the cycle counts. Enumeration of the permutations missing long or short cycles unavoidably will be also discussed.

The relevant results can be found in our joint papers with Robertas Petuchovas (*Electronic J. Comb.* (2016) and *Ramanujan J.* (2017)).

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