

The excedance set of a permutation: asymptotic enumeration

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(joint work with Rodrigo Ferraz de Andrade and Brendan Nagle)

The *excedance set* of a permutation π is the set of indices i for which $\pi_i > i$. In the symmetric group S_n , the most commonly occurring excedance set is $\{1, 2, \dots, \lfloor n/2 \rfloor\}$. Answering a question of E. Clark and R. Ehrenborg (2010), we provide asymptotics for the number of permutations having excedance set of the form $\{1, 2, \dots, r\}$ for integers r near $n/2$. We also discuss connections to pattern avoidance in permutations, Sharkovsky's theorem in dynamical systems, and a generalization of the Bernoulli numbers known as the poly-Bernoulli numbers.

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