# MASTERCLASS:
# INTRODUCTION TO RANDOM PERMUTATIONS

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During these lectures we will prove some results about the longest increasing subsequence of a (uniform) random permutation. More precisely, let $\sigma \in S_N$ be a permutation of the set $\{1, 2, \ldots, N\}$. An increasing subsequence $i_1 < i_2 < \cdots < i_k$ of $\sigma$ is a subset of $\{1, 2, \ldots, N\}$ such that $\sigma(i_1) < \sigma(i_2) < \cdots < \sigma(i_k)$. $\ell(\sigma)$ is defined as the length of the longest increasing subsequence of $\sigma$. Using different approaches coming from combinatorics, analysis and probability we will study the asymptotic behavior of $\mathbb{E}[\ell(\sigma)]$, for $\sigma \in S_N$ chosen uniformly and $N \to \infty$.