Speaker

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Title

Asymptotics of consecutive patterns in permutations and matchings

Abstract

The first part of this talk is devoted to consecutive patterns in permutations. Our attention is focused on very tight patterns (aka Hertzsprung patterns) where consecutive permutation entries appear in consecutive positions. We start by recalling the enumerative results of Myers and Claesson and then move on to the asymptotics that we found using Borinsky's approach. Along the way, we establish the complete asymptotics of self-overlapping permutations that play an important role in the study of consecutive patterns in permutations.

In the second part, we study the behavior of so-called endhered (end-adhered) patterns in matchings, which was motivated by connections to RNA secondary structures with allowed pseudoknots. Here, by a *matching* of size n, we mean a configuration of $2n$ points on a line that are consecutively labeled with integers from 1 to $2n$ and connected into disjoint pairs by n edges. An *endhered pattern* of size p consists of p edges, such that the set of starting points is an interval, and so is the set of ending points. In the case of $p = 2$, we show that the corresponding bivariate exponential generating function has a closed exact form, which allows us to obtain the asymptotic behavior by simple means. In the general case, for obtaining enumerative results we apply the Goulden-Jackson cluster method, while the asymptotics come from Borinsky's approach.

This talk is based on the ongoing work with Célia Biane and Sergey Kirgizov.