Speaker

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Workshop

ALEA 2024

Title

Asymptotics of endhered patterns in perfect matchings

Abstract

In this talk, we discuss the behavior of patterns of some special type in perfect matchings. Here, by a *perfect matching* of size n, we mean a configuration of $2n$ points on a line, which are consecutively labeled with integers from 1 to $2n$ and connected into disjoint pairs by n edges. We are interested in patterns consisting of p edges, such that the set of starting points is an interval, and so is the set of ending points. The study of this type of patterns, which we call *endhered* (end-adhered), is motivated by its connections to RNA secondary structures with allowed pseudoknots.

Let $a_{n,k}$ be the number of perfect matchings of size n with k occurences of a given pattern. We show that in the case of $p = 2$ the corresponding bivariate exponential generating function has a closed exact form, which allows us to obtain the asymptotic behavior of $a_{n,k}$, as n tends to infinity, by simple means. In the general case, for obtaining generating functions 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.