Limit theorems for patterns in ranked tree-child networks

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Abstract

Studying properties of shape statistics for random models which describe the evolutionary relationship between species is an important topic in biology. For phylogenetic trees, which are used to model non-reticulate evolution, many such studies have been performed. On the other hand, for phylogenetic networks, which are used to model reticulate evolution, very little is known about the occurrence of patterns when networks are randomly sampled. In this talk, we will explain our results on limit laws for patterns in ranked tree-child network, a class which was recently introduced by Bienvenu, Lambert, and Steel (2022). Our results extend the limit law for cherries proved by Bienvenu et al. and yield a conjecture for the limit law of any pattern. This is a joint work with Michael Fuchs and Hexuan Liu.

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