Institut für Diskrete Mathematik

Vortrag im Seminar für Kombinatorik und Optimierung

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Seminarraum AE06, Steyrergasse 30, Erdgeschoss

Lambda-terms enumeration and statistics

Danièle Gardy

(Université de Versailles Saint-Quentin)

Lambda-calculus is a well-known model of computation, whose statistical properties have been recently under investigation. From a syntactic point of view, the terms of lambda-calculus (lambda-terms) are interesting combinatorial structures: the underlying structure is a Motzkin tree to which are added edges from some unary nodes towards leaves, or equivalently whose nodes are colored, according to some specific set of rules. While trees are usually easy to enumerate, this enriched version is actually a class of directed graphs, and their combinatorial study gives rise to many interesting problems.

While the enumeration and statistical analysis of unrestricted lambda-terms still remains an open problem, different models, either redefining the notion of size of the lambda-term or restricting the set of lambda-terms under investigation (such as terms of restricted height or restricted node arity), have proved more amenable to study. We present enumeration and statistical behaviour for these models, using tools from analytic combinatorics.

(No previous knowledge either of lambda-terms or of analytic combinatorics is assumed.)

Mihyun Kang