

Institut für Diskrete Mathematik

**Vortrag im Seminar für Kombinatorik und Optimierung**

Dienstag 6.12.2016, 14:15

Seminarraum AE06, Steyrergasse 30, Erdgeschoss

**Enumeration of combinatorial structures up to isomorphisms**

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This talk will be a gentle introduction to the field of enumerative combinatorics.

Generating functions are a standard tool in enumerative combinatorics. In order to count the objects in a given class of combinatorial structures, the numbers of objects of different sizes are represented in a formal power series. Constructive decompositions of the objects in the class correspond to certain functional operations for the power series. Tools for analysing such operations allow to determine the exact or asymptotic numbers of objects in the class. However, if one wants to count objects up to some type of isomorphism, this approach usually fails.

In this talk, we present a different formal representation of combinatorial classes that takes isomorphisms into account: cycle index sums. These formal sums represent not only the objects in a given class, but also the orbits of their automorphisms, which makes it possible to represent constructive decompositions by functional operations that depend on the orbit.

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