.
Universität zu Köln
Department Mathematik / Informatik
Abteilung Mathematik

Weyertal 86-90
50931 Köln, Germany
Prof. Dr. **Peter Mörters**
Telefon +49 221 470-**2891**
Telefax + 49 221 470-**6073**

Einladung
zum
Oberseminar Stochastik

ONLINE Vortrag über Zoom - (Zugangsdaten werden noch mitgeteilt)

am Donnerstag, 14.01.2021 ab **17:45 Uhr**

Dr. Alessandra Caraceni

(University of Oxford)

zum Thema

Polynomial mixing time for edge flips and rotations

A long-standing problem proposed by David Aldous consists in giving a sharp upper bound for the mixing time of the so-called "triangulation walk", a Markov chain defined on the set of all possible triangulations of the regular n-gon. A single step of the chain consists in performing a random edge flip, i.e. in choosing an (internal) edge of the triangulation uniformly at random and, with probability 1/2, replacing it with the other diagonal of the quadrilateral formed by the two triangles adjacent to the edge in question (with probability 1/2, the triangulation is left unchanged).

While it has been shown that the relaxation time for the triangulation walk is polynomial in n and bounded below by a multiple of $n^{3/2}$, the conjectured sharpness of the lower bound remains firmly out of reach in spite of the apparent simplicity of the chain. For edge flip chains on different models -- such as planar maps, quadrangulations of the sphere, lattice triangulations and other geometric graphs -- even less is known.
We shall present results concerning the mixing time of random edge flips on rooted quadrangulations of the sphere, partly obtained in joint work with Alexandre Stauffer. A "growth scheme" for quadrangulations which generates a uniform quadrangulation of the sphere by adding faces one at a time at appropriate random locations can be combined with careful combinatorial constructions to build probabilistic canonical paths in a relatively novel way. This method has implication for a range of interesting edge-manipulating Markov chains on so-called Catalan structures, from "leaf translations" on plane trees to "edge rotations" on general planar maps.

Alle Interessenten sind herzlich eingeladen.

Die Dozenten der Stochastik