

Institut für Optimierung und Diskrete Mathematik

Vortrag im Seminar Diskrete Mathematik und Optimierung

Dienstag 01.07.2014, 15:00

Seminarraum C208, Steyrergasse 30, 2. Stock

Efficient algorithms for the maximum s-t-flow problem in planar graphs

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(TU Graz)

We will discuss an algorithm for the single source single sink maximum flow problem in planar graphs with running time $O(n \log n)$ based on the work of Glencora Borradaile and Philipp N. Klein [2009]. The algorithm uses a shortest path tree in the dual planar graph and the corresponding interdigitating tree in the primal graph. Updates in these trees are handled by a dynamic tree data structure to obtain the mentioned running time.

The analysis of the algorithm presented in this talk will be based on a simplified version by Jeff Erickson [2010]. It uses observations of changing crossing numbers during the iterations of the algorithm to bound the number of iterations.

We will also see an overview of some new results by Mozes, Nussbaum and Weimann [2014] which can be used to improve the running time to $O(n \log p)$, where p is the minimum number of edges on any path from the source to the sink.

Eranda Dragoti-Cela