Oberseminar

Wednesday, October 2, 2024, 17:00 c.t.

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Approximation algorithms for Flexible Graph Connectivity

The model of Flexible Graph Connectivity (FGC) was introduced by Adjiashvili, Hommelsheim and Mühlenthaler, IPCO 2020, and, a generalization called (p,q)-FGC was introduced by Boyd et al. Note that p and q are non-negative integers. The (p,q)-FGC model is related to (but differs from) well-known models in the area of Capacitated Network Design.

In an instance of the (p,q)-FGC problem, we have an undirected connected graph $G=(V,E)$, a partition of E into a set of safe edges and a set of unsafe edges, and nonnegative costs c on the edges. A subset F of edges is called feasible if the subgraph $(V, F \setminus F')$ is p-edge connected, where F' is any set of unsafe edges such that $|F'| \leq q$. The algorithmic goal is to find a feasible solution F of minimum cost.

A key question in the area is to design an O(1)-approximation algorithm for (p,q)-FGC when both p and q are O(1), or, show that this is not possible.

The talk will present recent results and techniques for approximation algorithms for (p,q)-FGC, and will discuss open questions in the area.

(Joint work with Ishan Bansal, Sharat Ibrahimpur, Logan Grout, and others.)

The Oberseminar takes place in the Seminarraum, 1st floor. Participants are invited to have coffee or tea in the lounge before.

S. Held, S. Hougardy, B. Korte, V. Traub, L. Vargas Koch, L. Végh, J. Vygen