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Improved Region Growing and Combinatorial Algorithms for k-Route Cut Problems

We study the k-route generalizations of various cut problems, the most general of which is k-route multicut, wherein we have r source-sink pairs and the goal is to delete a minimum-cost set of edges to reduce the edge-connectivity of every pair to below k. We present various approximation and hardness results that improve the state-of-the-art for these problems in several cases.

Our algorithms are based on combinatorial techniques and on a new, powerful region-growing approach.

Joint work with: Guru Prashanth Guruganesh and Chaitanya Swamy