A Constrained Minimum Cost s-t Cutset Problem
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Given an undirected, weighted graph, and a pair of vertices, s and t, connected by a path, and an edge pq known not to lie on this path, what is the minimum set of edges to cut in the graph so that the path connecting vertices s and t necessarily includes edge pq? This is an instance of a constrained minimum cost s-t cutset problem, which is hard to solve but often occurs in the analysis of network flows within the telecommunication world. In this paper, we describe two novel techniques, called Graph Collapse and Path Revival, and show how they are combined to solve the problem heuristically.

Keywords: minimum cost, cutset, constraints, unweighted graph, undirected, path revival, graph collapse, network flow