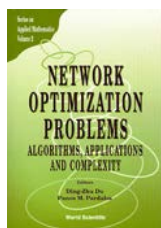


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**Greedly Solvable Transportation Networks and Edge-Guided Vertex Elimination**

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The greedy algorithm for the transportation problem repeatedly picks an edge, maximizes flow on it and updates the supplies and demands. If, with the same order of edges, the greedy algorithm gives an optimal (resp., feasible) solution for every feasible supply and demand functions, we call that order an optimality (resp., feasibility) sequence. We show that with a feasibility sequence, one can guarantee a feasible solution which is also a spanning tree, or give a certificate on infeasibility. Furthermore, with an optimality sequence, one can guarantee an optimal basic solution for every feasible problem. We also show how to obtain a spanning tree with a given signature or a dual feasible basis with a given signature, using feasibility and optimality sequences. Our results build on some interesting properties of vertex elimination algorithms which are guided by edge orders.

