

This thesis investigates the multicommodity min-cost flow (MMCF) problem. We aim to contribute to the search for a combinatorial algorithm for MMCF. The simplex method is employed to examine the vertices of the polyhedron of feasible solutions using experimental analysis on a set of publicly available MMCF instances. To achieve this, we develop a solver capable of tracing solutions in each iteration of the algorithm in exact arithmetic, which was not available in existing solvers. Our investigation focuses on the fractionality of MMCF problems and the impact of different pivoting rules, particularly whether the fractionality is exponential or polynomial with respect to increasing dimension. Our findings suggest that fractionality exhibits exponential behavior.