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*A Combinatorial Polynomial Algorithm for Weighted Abstract Cut*

Hoffman and Schwartz developed Lattice Polyhedra and proved that they are totally dual integral (TDI). They abstract the cut packing dual of Shortest Path and so we call it Weighted Abstract Cut Packing (WACP). We develop the first combinatorial algorithm for WACP. It uses relaxation by a scalar parameter, and then solves a restricted abstract cut packing subproblem by using greedy cut packing and breadth-first search. This plus scaling yields a polynomial combinatorial algorithm.