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Quantum state transfer in weakly Hadamard diagonalizable graphs

Graphs whose Laplacian matrix is diagonalized by a Hadamard matrix (a $\{-1, 1\}$-valued matrix H satisfying $H^T H = nI$) have been of interest in recent years, and in particular have been studied for their quantum state transfer properties. This concept has recently been generalized to the notion of weakly Hadamard diagonalizable graphs: graphs whose Laplacian matrix is diagonalized by a $\{-1, 0, 1\}$-matrix P such that PP^T is tridiagonal. We consider quantum state transfer properties of such graphs.