1   Group Inverses of Matrices with Path Graphs

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A simple formula for the group inverse of a 2×2 block matrix with a bipartite digraph is given in terms of the block matrices. This formula is used to give a graph-theoretic description of the group inverse of an irreducible tridiagonal matrix of odd order with zero diagonal (which is singular). Relations between the zero/nonzero structures of the group inverse and the Moore-Penrose inverse of such matrices are given. An extension of the graph-theoretic description of the group inverse to singular matrices with tree graphs is conjectured.