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ALGEBRAIC GRAPH JOIN OPERATION AND ITS APPLICATION

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Abstract: In this article, we have investigated some algebraic structures of graphs and propose some non-conventional graph algorithms for dealing with network-like systems. The algebraic graph operation, namely *graph join* is used to find the optimal virtual networks and the shortest path with a sequence of vertices connecting source (say, least) and destination (say, greatest) vertices. We also represent graphs algebraically and propose related algorithm to simplify complicated network/decision problems using semiring axioms.

Keywords and Phrases: Graph Operations, Semiring, Graph Algorithms, Decision-Making, Joining Networks.