Goldberg, Andrew V.; Karzanov, Alexander V.
Path problems in skew-symmetric graphs. (English) Zbl 0867.05037

This paper concerns path problems in skew-symmetric graphs. A skew-symmetric graph is a digraph $G = (V, E)$ together with a mapping $\sigma$ of $V \cup E$ onto itself such that (i) $\sigma$ is an involution ($\sigma(x) \neq x$ and $\sigma(\sigma(x)) = x$); (ii) $\sigma(v) \in V$ for every $v \in V$; (iii) $\sigma(\sigma(v), \sigma(u))$ for every $e = (u, v) \in E$.

Generalizations of the standard graph reachability and shortest path problems are studied. The authors establish combinatorial solvability criteria and duality relations for skew-symmetric path problems and use these to design efficient algorithms for these problems. The algorithms are competitive with the fastest algorithms for the standard problems.

Reviewer: J.Bang-Jensen (Odense)

MSC:
05C38 Paths and cycles
05C85 Graph algorithms (graph-theoretic aspects)

Keywords:
skew-symmetric graphs; digraph; graph reachability; shortest path; duality; path problems; efficient algorithms

Full Text: DOI

References:


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.