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On Game-Theoretic Models of Networks

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On Game-Theoretic Models of Networks

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Abstract

In this paper, we study the complexity of deciding which player has a winning strategy in certain types of McNaughton games. These graph games can be used as models for computational problems and processes of infinite duration. We consider the cases (1) where the first player wins when vertices in a specified set are visited infinitely often and vertices in another specified set are visited finitely often, (2) where the first player wins when exactly those vertices in one of a number of specified disjoint sets are visited infinitely often, and (3) a generalization of these first two cases. We give polynomial time algorithms to determine which player has a winning strategy in each of the games considered.

Keywords: graph and network algorithms, complexity, infinite graph games, McNaughton games.

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