

A Generalized Shannon Switching Game

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In the Shannon Switching Game two players play against each other on either the edges or the nodes of a network $G = (V, E)$ with a source s and a sink t . The nodes respectively the edges of the graph can either be colored by player Short or removed by player Cut in alternating moves. A decision on an edge cannot be altered by the other player. Short wins the game, if she creates a colored path between s and t , Cut wins by disconnecting s from t . If the game is played on the edges of an undirected network, it is efficiently computable, whether Short can win the game, and optimal strategies can also be computed. However, playing the game on a directed network or on the nodes it is PSPACE-complete to decide which player can assure her victory by playing optimally.

We will present a generalization of the Shannon Switching Game on a capacitated network, in which player short wants to establish a maximal flow between s and t . We will discuss strategies for both players in the generalized setting.