

We study the interaction between a network designer and an adversary over a dynamical network. The network consists of nodes performing continuous-time distributed averaging. The adversary strategically disconnects a set of links to prevent the nodes from reaching consensus. Meanwhile, the network designer assists the nodes in reaching consensus by changing the weights of a limited number of links in the network. We formulate two Stackelberg games to describe this competition where the order in which the players act is reversed in the two problems. Although the canonical equations provided by the Pontryagin's maximum principle seem to be intractable, we provide an alternative characterization for the optimal strategies that makes connection to potential theory. Finally, we provide a sufficient condition for the existence of a saddle-point equilibrium for the underlying zero-sum game.