Abstract

Let $P$ be a monotone decreasing graph property, let $G = (V,E)$ be a graph, and let $q$ be a positive integer. In this paper, we study the $(1 : q)$ Maker-Breaker game, played on the edges of $G$, in which Maker’s goal is to build a graph that does not satisfy the property $P$. It is clear that in order for Maker to have a chance of winning, $G$ must not satisfy $P$. We prove that if $G$ is far from satisfying $P$, that is, if one has to delete many edges from $G$ in order to obtain a graph that satisfies $P$, then Maker has a winning strategy for this game. We also consider a different notion of being far from satisfying some property, which is motivated by a problem of Duffus, Luczak and Rödl.