A search game with a non-additive cost

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Abstract. We treat a zero-sum two-person game, what is called, a search game between the hider and the seeker, in which there is a cost for searching a region. If the seeker searches two regions, it is usual that the total cost for two regions is the sum of each cost for a region. However, there may be a saving of the setup cost for the second region when the seeker decides in advance two regions efficiently, and plans to change from one region to another region efficiently. If we take into mind this kind of saving, the cost may not be non-additive. In this paper, we analyze a search game when the cost is not necessarily additive.