

# Sequential interdiction with incomplete information and learning

Borrero, Juan S.

Prokopyev, Oleg A.

Sauré, Denis

© 2019 INFORM. We present a framework for a class of sequential decision-making problems in the context of general interdiction problems, in which a leader and a follower repeatedly interact. At each period, the leader allocates resources to disrupt the performance of the follower (e.g., as in defender-attacker or network interdiction problems), who, in turn, minimizes some cost function over a set of activities that depends on the leader's decision. Although the follower has complete knowledge of the follower's problem, the leader has only partial information and needs to learn about the cost parameters, available resources, and the follower's activities from the feedback generated by the follower's actions. We measure policy performance in terms of its time-stability, defined as the number of periods it takes for the leader to match the actions of an oracle with complete information. In particular, we propose a class of greedy and robust policies and show that these policies are weak