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Abstract

In this note, we analyze a bilevel interdiction problem, where the follower's program is a parametrized continuous knapsack. Based on the structure of the problem and an inverse optimization strategy, we propose for its solution an algorithm with worst-case complexity $O(n^2)$.

Key words: Bilevel programming, Continuous knapsack problem, Polynomial time.

1. Model

Recently, a number of papers have been devoted to bilevel programs involving integer-valued knapsacks at the lower level [2]–[6],[9], all of them NP-hard. A question that arises naturally is the complexity of the continuous variants of these problems. More precisely, we consider a *continuous bilevel knapsack problem with interdiction constraints* that consists in a relaxation of the problem analyzed by Caprara et al.[4], where the goal of the leader is to minimize the value of the follower's knapsack,

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