

A POLYNOMIAL ALGORITHM FOR SOLVING A RESOURCE ALLOCATION PROBLEM WITH BOX CONSTRAINTS

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Abstract

In this paper, we consider a convex separable resource allocation problem subject to a linear inequality constraint and two-sided bounds on the variables (box constraints). This type of problems is interesting from both theoretical and practical point of view because such problems arise in some mathematical programming problems and in various practical problems. Necessary and sufficient condition is proved for a feasible solution to be an optimal solution to the problem under consideration. An efficient iterative algorithm of polynomial complexity for solving such problems is proposed and its convergence is proved. Some results of numerical experiments and an illustrative example are also presented.

Key Words : *Convex programming, Separable programming, Resource allocation, Polynomial algorithms, Computational complexity.*

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