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Minimax Under Transportation Constrains

Series: Applied Optimization

Transportation problems belong to the domains mathematical programming and operations research. Transportation models are widely applied in various fields. Numerous concrete problems (for example, assignment and distribution problems, maximum-flow problem, etc.) are formulated as transportation problems. Some efficient methods have been developed for solving transportation problems of various types. This monograph is devoted to transportation problems with minimax criteria. The classical (linear) transportation problem was posed several decades ago. In this problem, supply and demand points are given, and it is required to minimize the transportation cost. This statement paved the way for numerous extensions and generalizations. In contrast to the original statement of the problem, we consider a minimax rather than a minimum criterion. In particular, a matrix with the minimal largest element is sought in the class of nonnegative matrices with given sums of row and column elements. In this case, the idea behind the minimax criterion can be interpreted as follows. Suppose that the shipment time from a supply point to a demand point is proportional to the amount to be shipped. Then, the minimax is the minimal time required to transport the total amount. It is a common situation that the decision maker does not know the tariff coefficients. In other situations, they do not have any meaning at all, and neither do nonlinear tariff objective functions. In such cases, the minimax interpretation leads to an effective solution.

1999, X, 310 p.

Printed book

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