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Vector resource allocation problems in communication networks

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Abstract

We consider a problem of optimal allocation of a homogeneous resource in spatially distributed systems such as communication networks, where both utilities of users and network expenses must be taken into account. The network is divided into zones which leads to a two-level vector optimization problem and involves non-differentiable functions whose values are computed algorithmically. We propose several approaches to find a solution. Also, new simple subgradient type methods for non-differentiable Pareto optimization problems are suggested. Their performance is illustrated by computational results on test problems. © 2013 IFIP.

Keywords

communication networks, multi-objective optimization, non-differentiable functions, Resource allocation, spatial systems, subgradient methods