

A minimization method with approximation of feasible set and epigraph of objective function

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Abstract

© 2016, Allerton Press, Inc. For a convex programming problem we propose a solution method which belongs to the class of cutting-plane methods. When constructing approximate solutions to the problem, this technique concurrently approximates its feasible set and the epigraph of the objective function. Planes for cutting the iteration points are being constructed with the help of subgradients of the objective function and left-hand sides of constraints. In this connection, one can find each iteration point by solving a linear programming problem. As distinct from most other well-known cuttingplane methods, the proposed technique allows the possibility to periodically update approximating sets by dropping accumulated constraints. We substantiate the convergence of the proposed method and discuss its numerical realization.

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Keywords

approximating set, convergence, convex programming, cutting plane, cutting-plane methods, sequence of approximations