



A Non-monotone Conjugate Subgradient Type Method for Minimization of Convex Functions

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Abstract

We suggest a conjugate subgradient type method without any line search for minimization of convex non-differentiable functions. Unlike the custom methods of this class, it does not require monotone decrease in the goal function and reduces the implementation cost of each iteration essentially. At the same time, its step-size procedure takes into account behavior of the method along the iteration points. The preliminary results of computational experiments confirm the efficiency of the proposed modification.

Keywords Convex minimization problems · Non-differentiable functions · Conjugate subgradient method · Simple step-size choice · Convergence properties

Mathematics Subject Classification 90C25 · 90C30

1 Introduction

Given a convex and continuous, but not necessarily differentiable function defined on a finite-dimensional Euclidean space, we can consider the well-known general problem of minimizing this function over the whole space. There exist a great number of significant applications of convex minimization problems having just non-differentiable goal functions; see, e.g., [1–3] and the references therein. For this reason, their theory and methods were developed rather well. In particular, many different iterative methods were proposed for finding solutions of convex non-differentiable (non-smooth) minimization problems; see, e.g., [1–6] and the references therein. We recall that most

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