

An inexact and nonmonotone proximal method for smooth unconstrained minimization

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Keywords: Proximal point algorithms, regularization, nonconvex problems, unconstrained minimization, global convergence, nonmonotone line search, numerical experiments.

Abstract

An implementable proximal point algorithm is established for the smooth nonconvex unconstrained minimization problem. At each iteration, the algorithm minimizes approximately a general quadratic by a truncated strategy with step length control. The main contributions are: (i) a framework for updating the proximal parameter; (ii) inexact criteria for approximately solving the subproblems; (iii) a nonmonotone criterion for accepting the iterate. The global convergence analysis is presented, together with numerical results that validate and put into perspective the proposed approach.