A quasi-Newton strategy for the Linear-Programming-Newton Method

María de los Ángeles Martínez and Damián Fernández

Abstract

We consider a method to solve constrained system of nonlinear equations based on the Linear-Programming-Newton method replacing the first order information with a quasi-Newton secant update, providing a computationally simple method. The proposed strategy combines good properties of two methods: the least change secant update for unconstrained system of nonlinear equations with isolated solutions and the Linear-Programming-Newton for constrained nonlinear system of equations with possible nonisolated solutions. We analyze the local convergence of the proposed method under a standard error bound condition proving its linear convergence for nonisolated solutions. Numerical experiments show linear convergence and superlinear convergence in some problems.