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Smoothing Newton and quasi-Newton methods for mixed complementarity problems. (English) Zbl 1168.90623

Comput. Optim. Appl. 17, No. 2-3, 203-230 (2000).

Summary: The mixed complementarity problem can be reformulated as a nonsmooth equation by using the median operator. In this paper, we first study some useful properties of this reformulation and then derive the Chen-Harker-Kanzow-Smale smoothing function for the mixed complementarity problem. On the basis of this smoothing function, we present a smoothing Newton method for solving the mixed complementarity problem. Under suitable conditions, the method exhibits global and quadratic convergence properties. We also present a smoothing Broyden-like method based on the same smoothing function. Under appropriate conditions, the method converges globally and superlinearly.

MSC:

90C33 Complementarity and equilibrium problems and variational inequalities (finite dimensions) (aspects of mathematical programming)
90C53 Methods of quasi-Newton type

Cited in **19** Documents

Keywords:

mixed complementarity problem; smoothing function; Newton's method; quasi-Newton method

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