De Luca, Tecla; **Facchinei, Francisco**; **Kanzow, Christian**

A theoretical and numerical comparison of some semismooth algorithms for complementarity problems. (English) Zbl 0964.90046

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Summary: We introduce a general line search scheme which easily allows us to define and analyze known and new semismooth algorithms for the solution of nonlinear complementarity problems. We enucleate the basic assumptions that a search direction to be used in the general scheme has to enjoy in order to guarantee global convergence, local superlinear/quadratic convergence or finite convergence. We examine in detail several different semismooth algorithms and compare their theoretical features and their practical behavior on a set of large-scale problems.

MSC:

90C33 Complementarity and equilibrium problems and variational inequalities (finite dimensions) (aspects of mathematical programming)
90C53 Methods of quasi-Newton type
90C06 Large-scale problems in mathematical programming

Keywords:

nonlinear complementarity problem; semismoothness; Newton's method; projected gradient method; large scale problem

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