

Nonlinear Complementarity Problems - Smoothing Methods

Nataša Krejić

Department of Mathematics and Informatics
Faculty of Science, University of Novi Sad

Nonlinear complementarity problems arise in many mathematical models from economy, engineering, technology and optimization theory. Such problems are usually solved applying iterative methods to equivalent semismooth systems of nonlinear equations. A large class of iterative methods for solving semismooth systems is developed in recent years. The first class, known as nonsmooth methods uses some kind of generalized Jacobian. The second one are smoothing methods where the nonsmooth function is replaced by a smooth operator and a sequence of smooth problems is solved. The third class, in which we are interested here, is the class of Jacobian smoothing methods. Such methods try to solve the mixed Newton equation which combines the original semismooth function with the Jacobian of a smooth operator. The smoothing procedure is governed by a sequence of smoothing parameters that converges to zero. This way each iteration requires a solution of linear system determined by uniquely defined smooth Jacobian. In this talk an overview of recent results concerning local and global convergence of the Jacobian smoothing methods will be presented.