The Tikhonov Regularization Method Extended to Equilibrium Problems Involving Pseudomonotone Bifunctions

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Abstract: We extend the Tikhonov regularization method widely used in optimization and monotone variational inequality to equilibrium problems. It is shown that the convergence results obtained from the monotone variational inequality remain valid for monotone equilibrium problems. For pseudomonotone equilibrium problems, the Tikhonov regularized subproblems have a unique solution only in the limit, but any Tikhonov trajectory tends to the solution of the original problem, which is the unique solution of the strongly monotone equilibrium problem defined by the regularization bifunction. The obtained result suggests that the limit of any Tikhonov trajectory can be obtained by solving a strongly monotone equilibrium over the solution set of the original problem. Applications to multivalued pseudomonotone variational inequality are discussed.

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