

AN INERTIAL SUBGRADIENT EXTRAGRADIENT METHOD FOR APPROXIMATING A SOLUTION TO AN EQUILIBRIUM PROBLEM IN AN HADAMARD MANIFOLD

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ABSTRACT. In this work we consider the iterative approximation of a solution to an equilibrium problem in the framework of an Hadamard manifold. We introduce a subgradient extragradient-type method with self-adaptive step sizes. We use a monotone sequence of step sizes in order to avoid the dependence of our method on the Lipschitz constant of the underlying operator. It is known that the weaker notion of the monotonicity condition imposed on the underlying operator, the more applicable the result will be. Using an inertial-viscosity technique, we establish a strong convergence result for a pseudomonotone equilibrium problem under some appropriate assumptions. As applications, we use our method for solving several optimization problems. Finally, some numerical illustrations are given. They demonstrate the quantitative efficiency and superiority of our proposed method over some iterative methods which can be found in the literature.

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