HYBRID VISCOSITY APPROXIMATION SCHEMES FOR EQUILIBRIUM PROBLEMS AND FIXED POINT PROBLEMS OF INFINITELY MANY NONEXPANSIVE MAPPINGS

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Abstract: Recently, Takahashi and Takahashi [S. Takahashi, W. Takahashi, Viscosity approximation methods for equilibrium problems and fixed point problems in Hilbert spaces, J. Math. Anal. Appl., 2006, doi: 10.1016/j.jmaa.2006.08.036] suggested and analyzed an iterative scheme by the viscosity approximation method for finding a common element of the set of solutions of an equilibrium problem and the set of fixed points of a nonexpansive mapping in a Hilbert space. In this paper, we introduce a new iterative scheme by the viscosity approximation method for finding a common element of the set of solutions of an equilibrium problem and the set of common fixed points of infinitely many nonexpansive mappings in a Hilbert space. Then, we prove a strong convergence theorem which is the improvements and extension of Takahashi and Takahashi's (2006) corresponding result. Using this theorem, we obtain two corollaries which improve and extend their corresponding results.

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