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Convergence theorems for fixed point iterative methods defined as admissible perturbations of a nonlinear operator

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ABSTRACT.

The aim of this paper is to prove some convergence theorems for a general fixed point iterative method defined by means of the new concept of *admissible perturbation* of a nonlinear operator, introduced in [Rus, I. A., *An abstract point of view on iterative approximation of fixed points*, Fixed Point Theory **13** (2012), No. 1, 179–192]. The obtained convergence theorems extend and unify some fundamental results in the iterative approximation of fixed points due to Petryshyn [Petryshyn, W. V., *Construction of fixed points of demicompact mappings in Hilbert space*, J. Math. Anal. Appl. **14** (1966), 276–284] and Browder and Petryshyn [Browder, F. E. and Petryshyn, W. V., *Construction of fixed points of nonlinear mappings in Hilbert space*, J. Math. Anal. Appl. **20** (1967), No. 2, 197–228].

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