IMPLICIT ITERATION SCHEME WITH PERTURBED MAPPING FOR COMMON FIXED POINTS OF A FINITE FAMILY OF LIPSCHITZ PSEUDOCONTRACTION MAPPINGS

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Abstract. Let E be a real Banach space, \{T_i\}_{i=1}^N be a finite family of continuous pseudocontractive self mappings of E and G : E \to E be a mapping which is both \(\delta\)-strongly accretive and \(\lambda\)-strictly pseudocontractive of Browder-Petryshyn type such that \(\delta + \lambda \geq 1\). We propose a new implicit iteration scheme with perturbed mapping G for the approximation of common fixed points of \{T_i\}_{i=1}^N. For an arbitrary initial point \(x_0 \in E\), the sequence \(\{x_n\}_{n=1}^\infty\) is defined by

\[x_n = \alpha_n(x_{n-1} - \lambda_n G(x_{n-1})) + (1 - \alpha_n)T_n x_n\]

where \(T_n = T_n \mod N\), \(\{\alpha_n\}_{n=1}^\infty \subset [a, b] \subset [0, 1]\) and \(\{\lambda_n\}_{n=1}^\infty \subset [0, 1]\). We establish some weak convergence theorems for this implicit iteration scheme. Also, necessary and sufficient conditions for strong convergence of this implicit iteration scheme are obtained.


Key words and phrases: Continuous pseudocontractive mapping, Implicit iteration process with perturbed mapping, Strictly pseudocontractive mapping, Common fixedpoint, Demiclosedness principle.

REFERENCES


