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Investigation of the Stability of the F* Iterative Algorithm on Strong Peudocontractive Mappings and Its Applications

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Abstract : This paper is centered on conducting an inquiry into the stability of the F* iterative algorithm to the fixed point of a strongly pseudo-contractive mapping in the framework of uniformly convex Banach spaces. To achieve the desired result, certain existing inequalities in convex Banach spaces were utilized, as well as the stability criteria of Harder and Hicks. Other necessary conditions for the stability of the F* algorithm on strong pseudo-contractive mapping were also obtained. Through a numerical approach, we prove that the F* iterative algorithm is H-stable for strongly pseudo-contractive mapping. Finally, the solution of the mixed-type Volterra-Fredholm functional non-linear integral equation is estimated using our results.

Keywords : stability, F* -iterative algorithm, pseudo-contractive mappings, uniformly convex Banach space, mixed-type Volterra-Fredholm integral equation
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