

**EXISTENCE THEOREMS FOR GENERALIZED NONLINEAR
PERTURBED ABSTRACT MEASURE INTEGRODIFFERENTIAL
EQUATIONS**

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Abstract: In this paper, we prove the relevance and local existence theorems for a class of generalized nonlinear perturbed abstract measure integrodifferential equations via classical hybrid fixed point theorems of Dhage (1992,2003) under mixed weaker Lipschitz and Carathéodory conditions. The existence of extremal solutions is obtained between the given lower and upper solutions under certain monotonicity conditions. Our natural hypotheses and claims have also been illustrated with a couple of numerical examples.

Keywords and Phrases: Abstract measure integrodifferential equation, Relevance theorem, Dhage fixed point principle, Existence theorem.

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1. Statement of the Problem

Let X be a real Banach space with a convenient norm $\|\cdot\|_X$ and let $x, y \in X$ be any two elements. Then the line segment \overline{xy} in X is defined by

$$\overline{xy} = \{z \in X \mid z = x + r(y - x), 0 \leq r \leq 1\}. \quad (1.1)$$

Let $x_0 \in X$ be a fixed point and $z \in X$. Then for any $x \in \overline{x_0z}$, we define the sets S_x and \overline{S}_x in X by

$$S_x = \{rx \mid -\infty < r < 1\}, \quad (1.2)$$