GENERALIZED MONOTONE ITERATIVE TECHNIQUE TO PBVP FOR HYBRID CAPUTO FRACTIONAL DIFFERENTIAL EQUATIONS

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Abstract. In this paper we develop the method of generalized monotone iterative technique to periodic boundary value problem for Caputo fractional differential equations with fixed moments of impulse through the solutions of linear initial value problems of the given problem.

Keywords. Hybrid Caputo fractional differential equations, Generalized Monotone Iterative Technique, Existence.

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1 Introduction

At present a significant amount of work is being done on fractional differential equations, many researchers are now concentrating on this in view of its potential in applications related to fluid flow, dynamical processes in self-similar and porous structures, diffusive transport, electrical networks, probability and statistics, control theory of dynamical systems, viscoelasticity, electrochemistry of corrosion, optics and signal processing and many more areas. The works of Podlubny[1], Kilbas et al. [2], Lakshmikantham et al. [3] and the references [1,2,3,5,6,7,10,13] bear testimony to the continued interest in this area.

A lot of scope for the development of the theory of hybrid systems or impulsive differential systems has come due to the invaluable contribution of Lakshmikantham et al[4]. This is due to the fact that many evolution processes are characterized by the fact that they experience a change of state in a very short duration of time. This abrupt change can be considered as short term perturbations whose duration is negligible, that is these perturbations