

Some New Results on Fuzzy Differential and Difference Equations

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ABSTRACT

Fuzzy differential and differences equations appear as natural ways to model the uncertainty in dynamical environments. When a real world problem is transformed into a deterministic ordinary differential equation, or a difference equation, we cannot usually be sure that the model is perfect. For example, the initial values may not be known exactly and the functions may contain uncertain parameters. Therefore, it is natural to consider differential equations and difference equations in the fuzzy concept. For the initiation of this aspect of fuzzy theory, the necessary calculus of fuzzy functions such as fuzzy derivatives and fuzzy integrals has also been studied. Consequently, the study of the theory of fuzzy differential and difference equations has recently been growing rapidly as an independent discipline [2,3]. In the recent years, the concept of Fuzzy Initial Value Problems (FIVPs), Fuzzy Partial Differential Equations (FPDEs), Fuzzy Fractional Differential Equations (FFDEs) and Fuzzy Difference Equations [1] has been proposed. Some new approaches and new derivatives are introduced to study new properties of fuzzy differential equations. In this talk, we will discuss some new results in the areas of fuzzy differential equations and fuzzy difference equations.

Key Words: Fuzzy arithmetic, Hukuhara derivative, generalized derivative, fuzzy valued functions, fuzzy difference equations, fuzzy difference equations.

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