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# An approximation algorithm for the solution Of the Fuzzy Fractional Differential Equations

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## Abstract

The meshless algorithm is a numerical method which can become adjusted to solve the Fuzzy Fractional Differential equations (FFDE). The method is based on radial basis functions. This paper will define the principle of meshless method and discuss its advantages as well as some necessary concepts of the fuzzy fractional equations. Numerical example is included to demonstrate the efficiency of this method.

**Key words:** Fuzzy Fractional differential equations, Fuzzy number, Radial Basis Functions, Fuzzy set, r_level set.

## 1. Introduction

### 1-1- Fuzzy Fractional Differential

The importance in the study of differential equations of fractional order lies in the fact that fractional derivatives provide an vast information about modeling in different fields, such as electrolyte polarization [1], control[2], signal processing [3], viscoelastic [4] and etc. Several methods were presented. It can be claimed that the analyze solution of FFDE is hard for the ambiguous features in this study. Therefore the numerical method is useful. Solving fuzzy fractional differential equations by using fuzzy Laplace transforms in the sense of the Riemann-Liouville H-derivative by [5]. Authors of [6] have presented a method based on tau method with Jacobi. Recently Mazandarani , Vahidian and Khodadadi and Çelik have used in order the modified fractional Euler method and iteration method to solve fuzzy fractional initial value problems in [7,8]. In this study. The formation of the paper is prepared as follows. In section 2, some useful definitions are in fuzzy differential