

FRACTAL CALCULUS AND APPLICATIONS

Alireza Khalili Golmankhaneh¹,

¹*Department Of Physics, Urmia Branch, Islamic Azad University, Urmia, Iran*

MSC 2000: 26A33,28A80,28A25,37Fxx

Abstract

Fractals are the shape of many objects in the nature. Fractal geometry was studied by Benoit Mandelbrot. Fractals are often sets with fractional dimension. Mathematician and researchers have tried to establish analysis on fractals using measure theory but it is not algorithmic. Riemann method as algorithmic method has been generalized to define derivative and integral on fractal sets and curves. Recently, the researcher try to apply these equation in physics and engineering as a new mathematical models to have better approximation for the real problems.

Keywords:Fractal Calculus, Fractional Local Calculus, Fractional Dimension, Local Fractional Derivatives,

References

- [1] J. Kigami, Analysis on Fractals (Cambridge University Press, 2000)
- [2] A. Parvate, S. Satin, A. D. Gangal, Calculus on Fractal Curves in R^n , Fractals 19(1), (2011) 15-27.
- [3] Alireza K. Golmankhaneh, Ali K. Golmankhaneh, and D. Baleanu, About Maxwell's equations on fractal subsets of R^3 . Cent. Eur. J. of Phys. 11(6), (2013) 863-867.
- [4] A. K. Golmankhaneh, V. Fazlollahi, D. Baleanu, Newtonian mechanics on fractals subset of real-line. Rom. Rep. Phys., 65, (2013) 84-93.
- [5] Alireza K. Golmankhaneh, Ali K. Golmankhaneh, and D. Baleanu, Lagrangian and Hamiltonian mechanics on fractals subset of real-line. Int. J. Theo. Phys. 52(11), (2013) 4210-4217.
- [6] Alireza K. Golmankhaneh, Ali K. Golmankhaneh, and D. Baleanu, Schrodinger Equation on Fractals Curves Imbedding in R^3 , Int. J. Theo. Phys., 54 (4), (2015) 1275-1282

¹alirezakhalili2005@gmail.com