F^{α}- Calculus and its Application

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Abstract

In this paper, we review F^{α}-Calculus and recent application in the statistical mechanics. We discuss on the local and non-local derivatives on fractal sets. The anomalous diffusion on fractal sets and curves are modeled by F^{α}-Calculus. Fractional Brownian motion is characterized to model different random walks on fractal sets. Fractal Hurst exponent is defined and related to standard Hurst exponent.

Recent Publications

1. A. Parvate, A. D. Gangal, Calculus on fractal subsets of real-line I: Formulation, Fractals 17(01), (2009) 53-148.
2. A. Parvate, A. D. Gangal, Calculus on fractal subsets of real line II: Conjugacy with ordinary calculus, Fractals , 19(03) (2011) 271-290.
3. A.K. Golmankhaneh, D. Baleanu, Non-local Integrals and Derivatives on Fractal Sets with Applications, Open Phys., 14(1), (2016) 542–548.
4. A.K Golmankhaneh, A.S. Balankin, Sub-and super-diffusion on Cantor sets: Beyond the paradox, Phys. Lett. A, 382(14) 2018; 960-967.
5. A.S. Balankin, A.K. Golmankhaneh, Julian Patino-Ortiz, Miguel Patino-Ortiza, Noteworthy fractal features and transport properties of Cantor tartans, Phys. Lett. A, 382(23), 2018, 1534-1539



Biography

Professor Dr. Alireza Khalili Golmankhaneh was born in Urmia City-West Azerbaijan, Iran. He has finished his high school in the mathematical physics. He was top student during his education in the period of B.Sc. and M.Sc. He has finished my Ph.D. in theoretical physics from Pune University, India. Recently, He had sabbatical in ESIME-Zacatenco, Instituto Politécnico Nacional, México D.F. 07738, México. He has published one book and one chapter book more than 46 papers. He has attended more than 10 international conferences. He is membership of American Physical Society and European Mathematical Society. He is interested for working on the mathematical physics with focus on fractal calculus.

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Notes/Comments: