

About modified fractional operators: theory and applications



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Abstract

Fractional calculus is an important field of mathematics having fundamental applications in many branches of science and engineering.

In my talk I will present the modification of Mittag-Leffler kernel and some of its real world applications.

Short CV:

Dumitru Baleanu is a Professor at the Institute of Space Sciences, Magurele-Bucharest, Romania and a visiting staff member at the Department of Mathematics, Cankaya University, Ankara, Turkey.

Dumitru Baleanu got his PhD from the Institute of Atomic Physics in 1996. His fields of interest include the fractional dynamics and its applications, fractional differential equations and their applications, discrete mathematics, image processing, bio-informatics, mathematical biology, mathematical physics, soliton theory, Lie symmetry, dynamic systems on time scales, computational complexity, the wavelet method and its applications, quantization of systems with constraints, the Hamilton-Jacobi formalism, geometries admitting generic and non-generic symmetries.

Dumitru Baleanu is one of the pioneers of the fractional variational principles and their applications in control theory. He is one of the co-authors of the seminal paper entitled “Anomalous diffusion expressed through fractional order differential operators in the Bloch-Torrey equation”, published in Journal of Magnetic Resonance (2008), which now plays a fundamental role within diffusion weighted MRI.

Besides, together with G.C. Wu, L.G. Zeng ,X.C. Shi and F. Wu, Dumitru Baleanu is the coauthor of a Chinese Patent No : ZL 2014 1 0033835.7 regarding the chaotic maps and its important role in the information encryption.

Dumitru Baleanu is co-author of 18 books published by Springer, Elsevier and World Scientific. His H index is 85 and he is highly cited researchers in Mathematics. Dumitru Baleanu won several awards:

- 2020-Best Research Award, given by the ITS Foundation Award 2020 (organized by Institute of Technical and Scientific Research, India) and presented online on September 13th, 2020.

- 2020- Distinguished Researcher Award, Given by the Jaipur Mathematical Society and presented during the 3rd International Conference on Mathematical Modelling, Applied Analysis and Computation (ICMMAAC-20),7-9 August 2020 at JECRC University,Jaipur, India

- 2019-Award for 20 years of successful scientific activity in the field of fractional calculus and its applications by Istanbul Gelisim University, Turkey

- 2019- Obada Prize. The Obada-Prize recognizes and encourages innovative and interdisciplinary research that cuts across traditional boundaries and paradigms. It aims to foster universal values of excellence, creativity, justice, democracy, and progress and to promote the scientific, technological and humanistic achievements that advance and improve our world.

- 2018- Award of Merit given by the Embassy of Romania to the Republic of Turkey for the contribution to the development of the Romanian-Turkish relationship in the field of Education

- 2018- ICFDA2018 Award:Innovation in Fractional Calculus. This award is granted to inventors of new patents which address major problems and have a great perspective by use of fractional calculus in real world applications.

Dumitru Baleanu is the Editor in Chief of Progress in Fractional Differentiation and Applications and a Co-editor in Chief of Discontinuity, Nonlinearity and Complexity. Dumitru Baleanu is a member of several editorial boards of journals indexed in SCI.