

INTERNATIONAL BIWEEKLY ONLINE SEMINAR ON ANALYSIS, DIFFERENTIAL EQUATIONS AND MATHEMATICAL PHYSICS

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

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27 October 2022, 6 pm (UTC+3)

Extended Fractional Hypergeometric Function and Applications

Praveen Agarwal, Anand International College of Engineering, India

goyal.praveen2011@gmail.com

Hypergeometric functions (Beta and Gamma functions) are a very important family member of the special functions and they play a vital role in the whole theory of special functions. Hypergeometric functions together with their extension have many applications in research fields such as engineering, chemical, statistics, fractional calculus, and physical problems. In this talk, we have focused on the extended Euler's beta function, which is developed by using the 2-parameter Mittag-Leffler function as the kernel. We discuss various basic properties and formulas of the extended Euler's beta function such as integral representations, transformation formulas, and summation formulas. We also introduce the logarithmic convexity and some important inequalities for this extended Euler's beta function. Then by using this extended Euler's beta function as a kernel, we have generalized hypergeometric functions and study various properties of these extended hypergeometric functions. From the application point of view, we have also derived some relations between this extended Euler's beta function and extended fractional derivative operators such as Caputo fractional derivative operator and Riemann-Liouville fractional operators.

Keywords: Beta function, Gamma function, fractional calculus

*Seminar website: <https://msrn.sfedu.ru/sl>. The seminar uses Microsoft Teams online platform. Please send questions to ademp.seminar@gmail.com (Tatiana Andreeva, scientific secretary).

The seminar is organized by the coordinators Alexey Karapetyants and Vladislav Kravchenko within the activities of the Regional Mathematical Center of the Southern Federal University in collaboration with Institute of Mathematics, Mechanics and Computer Sciences of the Southern Federal University and the OTHA research group in Operator Theory and Harmonic Analysis.

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