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Editorial

Advanced Theoretical and Applied Studies of Fractional Differential Equations 2013

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The fractional calculus (derivatives and integrals of arbitrary order) has developed into an effective modeling methodology for a variety of real-world problems. Based on the wide applications in engineering and sciences such as physics, mechanics, chemistry, and biology, research on fractional ordinary and partial differential equations and other related topics is active and extensive around the world. In the past few years, the increase in the popularity of the subject can be witnessed by hundreds of research papers published in prestigious journals, several monographs, and international conferences and workshops.

The special issue, focused on the importance of fractional operators and their applications, received 65 papers. Only 33 highest quality papers were accepted for publication after the peer review process.

The research papers in this special issue cover various topics like numerical methods for fractional partial differential equations, practical sketching rules for fractional order systems, nonlocal boundary value problems of fractional q-difference equations, fractional steepest descent approach for modeling texture imaging, fractional order chaotic systems, fractional order circuits, approximate controllability of Sobolev type nonlocal fractional stochastic dynamic systems, fractional abstract Cauchy problems, positive solutions for a new coupled system of multiterm singular fractional integrodifferential equations, and asymptotic behavior of solutions to abstract stochastic fractional partial integrodifferential equations.

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