| Prof. Dr. Abdon Atangana  
University of Free State, South Africa |
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| **Title:** Fractional calculus with power law kernel a cradle of our ancestors  
**Abstract:** Fractional differential and integral operators have been claimed to come from the Cauchy formula. In this talk we discuss some mistakes of the past and we present some improvement in the fields. |

| Prof. Dr. Dumitru Baleanu  
Cankaya University, Ankara, Turkey |
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| **Title:** New Versus Old In Fractional Calculus And Its Applications  
**Abstract.** The fractional calculus deals with the study of so-called fractional order integral and derivative operators over real or complex domains and their applications. In this lecture I will review the new trends within this interesting field. The importance of the new fractional operators with non-singular kernels will be discussed. Some real world applications of fractional operators in Physics, Economy and Biology will be presented. |
Prof Dr. Hasan Bulut  
(Firat University)  
Title: New Facts for Power Methods to the Nonlinear Partial Differential Models with High Nonlinearity  
Abstract: The understanding and prediction of real physical properties of nonlinear problems in real world scenario can be extracted via mathematical formula commonly called partial and ordinary differential equations. The prediction and the comparison of mathematical equation with experimental data can only be achieved after these models have been solved. For simple models, analytical methods can be used to derive the exact solutions. For more complex cases, powerful analytical methods and numerical methods are applied.

Prof. Dr. Fahd Jarad  
(Cankaya University, Turkey)  
Title: On some generalizations of the classical fractional operators  
Abstract: There are variety of modifications and generalizations of the classical fractional operators. Some of these operators are known and used in theory and application. An example of such modifications is Erdelyi-Kober fractional operators. In this talk, we will talk about generalizations of the Reimann-Liouville fractional derivatives and integrals. They are called the weighted fractional integral (or derivative) of a function with respect to another function.

Prof. Dr. Thabet Abdeljawad  
Title: Discrete fractional operators with three parameter generalized discrete Mittag-Leffler kernels and their continuous counterpart  
Abstract: In this article we define the discrete fractional operators of Riemann type (ABR) and Caputo type (ABC) with kernels of discrete Mittag-Leffler in three parameters $(E_{\alpha,\mu}^{q}(\lambda, t - \rho(s)))$ we derive the corresponding fractional sums, study their semi-group properties, and their action on the ABC type fractional differences to prove existence and uniqueness theorem for the ABC fractional difference initial value problems. In fact, as advantages to the obtained extension, we find that for $\mu \neq 1$ we obtain a nontrivial solution for the linear ABC type initial value problem with constant coefficient and prove a certain semi group property in the parameters $\mu$ and $\gamma$ simultaneously. Examples of non-constant functions whose ABR and ABC differences are zero are constructed and the relation between the ABC and ABR fractional differences are formulated by using the discrete Laplace transform. Iterated type fractional sum-differences are constructed, by iterating fractional sums of order $-(\alpha, \mu, 1)$, to add a fourth parameter and a semi group property is derived under the existence of the fourth parameter. The nabla discrete transforms for the AB fractional sums and the AB iterated fractional sum-differences are calculated. Several examples and remarks are given to illustrate part of the proven results and some of their particular cases. The obtained results generalized and improved some recent results. The continuous counter part of the results is discussed as well.
Prof. Dr. Qasem Al-Mdallal
Title: An overview on new locked-on vortex shedding modes of a circular cylinder subject to a circular motion
Abstract: This paper presents a computational study of the two dimensional flow of a viscous incompressible fluid past a circular cylinder subject to a circular motion. The motion is governed by the two-dimensional unsteady Navier-Stokes equations in non-primitive variables. The method of solution is based on Fourier spectral analysis with finite difference approximations. This study strongly proves that it is possible to attain locked-on or quasi-locked-on vortex shedding modes due to a uniform flow past a circular cylinder subject to a circular motion. The occurrence of multiple lock-in regions is demonstrated. Comparisons with previous numerical and experimental results verify the accuracy and validity of the present work.

Prof. Dr. Zakia Hommouch
Title: Spatiotemporal patterns in fractional-order reaction systems with nonsingular kernel derivatives
Abstract: In this work, robust numerical simulation techniques based on the fractional Adams-Bashforth and the Fourier spectral methods are formulated to explore some spatiotemporal patterns in a range of Belousov-Zhabotinskii reaction systems. The standard integer-order time-derivative is replaced with the Atangana-Baleanu fractional order derivative in the sense of Caputo. Details of existence and stability of positive solution are given. Numerical experiments are carried out at some instances of fractional power to demonstrate the suitability of the methods, and to explore the dynamic richness in some chemical species when modelled with non-integer-order derivatives.

Dr. Liliana Guran
Title: Some fixed point theorems for generalized contractions on b-metric spaces
Abstract:
In this paper, we present some fixed point theorems for generalized Hardy-Rogers and Ćirić type contractions in complete b-metric space endowed with a partial order relation. Then we obtain some applications to coupled fixed point theory concerning the generalized contraction condition. Moreover, using the notion of f-closed set we give a Ran-Reurins type general fixed point result.
National Invited Speakers

1. Dr. Nadeem Shoukat (PIEAS)
2. Dr. Bilal Riaz (UMT)
3. Dr. Muhammad Riaz (PU)
4. Dr. Muhammad Ashraf Awan (UoS)
5. Dr. Sarfraz Ahmed (Head Mathematics Department, COMSATS Lahore)
6. Prof. Dr. Faqir M Bhatti (Chairperson, Mathematics Department, Riphah International University)
7. Dr. Ayesha Sohail (COMSATS Lahore)
8. Dr. Absar ul Haq
9. Dr. Abdul Rauf Nizami
10. Dr. Zohaib Zahid (UMT)

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