Bahçeşehir University, Istanbul, Türkiye
Analysis & PDE Center, Ghent University, Ghent, Belgium
Institute Mathematics & Math. Modeling, Almaty, Kazakhstan

"Analysis and Applied Mathematics"

Weekly Online Seminar

Seminar leaders:
Prof. Allaberen Ashyralyev (BAU, Istanbul),
Prof. Michael Ruzhansky (UGent, Ghent),
Prof. Makhmud Sadybekov (IMMM, Almaty)

Date: **Tuesday, February 6, 2024**
Time: 12.00-13.00 (Istanbul) = 10.00-11.00 (Ghent) = 15.00-16.00 (Almaty)

Zoom link: https://us02web.zoom.us/j/6678270445?pwd=SFNmQUlvT0tRaH-lDaVYrN3l5bzJVQT09, **Conference ID:** 667 827 0445, **Access code:** 1

Speaker:

Prof. Dr. Mohammad Mursaleen
China Medical University, Taichung, Taiwan

Title: **On Some Applications of Measures of Noncompactness**

Abstract: In this talk, we discuss the classical measures of noncompactness and in particular Hausdorff measure of noncompactness. We discuss their applications in various problems of analysis such as differential equations, integral equations and characterization of compact matrix operators between sequence spaces. The most effective way in the characterization of compact operators between the Banach spaces is applying the Hausdorff measure of noncompactness. In this talk, we present some identities or estimates for the operator norms and the Hausdorff measures of noncompactness of certain operators given by infinite matrices that map an arbitrary BK-space into classicla sequence spaces. Many linear compact operators may be represented as matrix operators in sequence spaces or integral operators in function spaces [2]. Recently the measures of noncompactness are applied in solving infinite system of differential equations [5], [4] and integral equations in sequence spaces [1, 3].

References:

[1] R. Arab, M. Mursaleen and S.M.H. Rizvi, Positive solution of a quadratic integral equation using generalization of Darbo's fixed point theorem, *Numer. Funct. Anal. Optim.*, **40(10)** (2019), 1150–1168.

[2] J. Banas and M. Mursaleen, Sequence Spaces and Measures of Noncompactness with Applications to Differential and Integral Equations, Springer, 2014.

[3] B. Hazarika, R. Arab and M. Mursaleen, Applications of measure of noncompactness and operator type contraction for existence of solution of functional integral equations, *Complex Anal. Oper. Theory*, DOI: 10.1007/s11785-019-00933-y.

[4] M. Mursaleen, E. Porhadi and R. Saadati, Solvability of infinite systems of second-order differential equations with boundary conditions in ℓp, *Quaest. Math.*, DOI: 10.2989/16073606.2019.1617800.
[5] M. Mursaleen and S.M.H. Rizvi, Solvability of infinite system of second order differential equations in c0 and ℓ1 by Meir-Keeler condensing operator, *Proc. Amer. Math. Soc.*, **144(10)** (2016) 4279–4289.

Biography:

Mohammad Mursaleen obtained his Ph.D. in Mathematics from Aligarh Muslim University (India). He is former chair of Department of Mathematics at Aligarh Muslim University. He was a visiting professor at several universities in various countries including the USA (1992), Hungary (1993, 2017), Libya (1996–99), Turkey (2001, 2007, 2010, 2011, 2013(2), 2015, 2016, 2018), Thailand (2002, 2010), Serbia (2003), Switzerland (2007), Saudi Arabia (2004–2006, 2011,2012, 2015), UK (2009), Malaysia (2012, 2014, 2016, 2020), Albania (2013), Taiwan (2013), Kazakhstan (2014), Azerbaijan (2016), Iran (2017), Spain (2017), Brazil (2018). Furthermore, he participated as a speaker in 65 international scientific conferences. Prof. M. Mursaleen is a member of the editorial boards of 35 scientific journals. His list of publications contains 475 research papers in international journals. He is the author or co-author of 10 books. His work areas include Functional Analysis, Sequence Spaces, Summability Theory, Fuzzy Metric Spaces, Measures of Noncompactness, Fourier, Walsh-Fourier Series and Wavelets, Stability of Functional Equations, Fixed Point Theory and Approximation Theory. Prof. M. Mursaleen supervised 21 Ph.D. theses and 10 M.Sc. theses in Mathematics. He is currently a Visiting Professor at China Medical University (Taiwan).