Approximation Theory and Special Functions
ATSF 2026 Conference - 9th Series
September 2-5, 2026, Ankara - Türkiye

Some Stability Results on Sequences

Angshuman R. Goswami

University of Pannonia, Department of Mathematics, Veszprém, Hungary
e-mail: goswami.angshuman.robin@mik.uni-pannon.hu

Abstract

The primary objective of this talk is to introduce stability results for several well-known sequence classes that can be represented via discrete functional equations or inequalities. We will focus on four fundamental types of sequences: monotone, convex, subadditive, and periodic. Special attention will be given to convex sequences, including their characterizations and applications. We will also explore the deep connection between Fekete's Lemma and Hille's Theorem, illustrating how these classical results are interrelated. Furthermore, we propose a Hermite-Hadamard-type inequality in the discrete setting, along with a corresponding sandwich-type result. Finally, we will present decomposition and equivalence theorems for approximately monotone and approximately periodic sequences, offering insight into their structure and behavior.

Keywords: Sequence decomposition, Fekete's Lemma, Ulam-type stability results.

References:

[1] A. R. Goswami, Revisiting Fekete's lemma, subadditive and periodic sequences. Results Math. 80 (2025), no. 5, Paper No. 131, 18 pp.

[2] A. R. Goswami, Decomposition of approximately monotone and convex sequences. Publ. Math. Debrecen 107 (2025), no. 3-4, 373–395.

[3] A. R. Goswami, On approximately convex and affine sequences. Period. Math. Hungar. 91 (2025), no. 2, 604–612.

[4] A. R. Goswami and I. Szalkai, Convex sequence and convex polygon. Ann. Math. Sil. (2025), Online First.

[5] A. R. Goswami, On characterizations of convex and approximately subadditive sequences. Filomat 39 (2025), no. 27, 9363–9370.