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

Some Applications of Power Series Statistical Convergence

Şeyma Çelik[(1)] and Dilek Söylemez[(2)]

[(1)] *Selcuk University, Department of Mathematics, Konya, Türkiye*
e-mail: seymacelik216@gmail.com

[(2)] *Selcuk University, Department of Mathematics, Konya, Türkiye*
e-mail: dsozden@gmail.com

Abstract

This study investigates the approximation properties of modified Baskakov operators via power series statistical convergence. By analyzing these operators within weighted function spaces, we explore their convergence characteristics on unbounded intervals and establish quantitative estimates for the rate of convergence using the weighted modulus of continuity. Our findings highlight the effectiveness of power series statistical methods in extending the applicability of linear positive operators. The theoretical results are supported by illustrative examples and graphical illustrations to demonstrate the efficiency of the operators.

Keywords: Power series statistical convergence, weighted Korovkin-type theorem, rate of convergence.

References:

[1] O. Agratini, Linear operators that preserve some test functions. Int. J. Math. Math. Sci. 2006, Art. ID 94136, 11 pp.

[2] Ö. G. Atlıhan, T. Yurdakadim, and E. Taş, A new approach to the approximation by positive linear operators in weighted spaces. Ukrainian Math. J. 74 (2023), no. 11, 1649–1657.

[3] V. A. Baskakov, An example of a sequence of linear positive operators in the space of continuous functions. Doklady Akademii Nauk SSSR 113 (1957), 249–25.

[4] N. İspir, On modified Baskakov operators on weighted spaces. Turkish J. Math. 25 (2001), no. 3, 355–365.

[5] L. Rempulska and K. Tomczak, Approximation by certain linear operators preserving x^2. Turkish J. Math. 33 (2009), no. 3, 273–281.

[6] M. Ünver and C. Orhan, Statistical convergence with respect to power series methods and applications to approximation theory. Numer. Funct. Anal. Optim. 40 (2019), no. 5, 535–547.