Analysis Seminar

Approximation Theory through Korovkin's eye: Applications of Multivariate Orthogonal Polynomials and Quantum Calculus

By

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Abstract: Approximation Theory can be considered as an application (or a sister branch) of Functional Analysis. The origin of the subject was found by an interesting question: Can we approximate a complex look alike function with a simpler one? The question was first addressed (with some restrictions!) by the renowned mathematician Weierstrass in 1885, and he proved: Any continuous function with a compact support (you see the restrictions?) can be approximated by a polynomial of some suitable degree. With this beautiful result, a very new branch opened up in mathematics what we today known as Approximation Theory.

This talk aims to discuss the recent developments on the approximation of functions in Banach spaces through the positive linear operators

(PLOs) based on multivariate orthogonal polynomials and the elements of quantum calculus. We shall first revisit the standard Korovkin Theorem on the convergence of PLOs with some early contributions in the direction of approximation. Next, we will see the construction of PLOs by means of the multivariate q-Lagrange polynomials and few interesting inequalities for the moments and the central moments. Furthermore, a power series summability-based analogue of the Korovkin theorem shall also be discussed.

Date: Thursday, March 31, 2022
Time: 18:00-19:00, GMT+3
Place: ZOOM

To request the event link, please send a message to goncha@fen.bilkent.edu.tr