YEDİTEPE UNIVERSITY

MATHEMATICS DEPARTMENT SEMINARS

Stochastic Analysis For Singular Integral Operators and Fractional Derivatives

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Abstract: On the cross-section of Probability Theory and Analysis, singular integral operators and related boundedness problems of Analysis are studied by means of stochastic processes. One of the main problems is to determine a general class of multipliers and so the bounded operators on function spaces. In this talk, we use a discontinuous process, namely a symmetric stable process, to show boundedness results of extended versions of classical singular integral operators which arises from classical multipliers. In the first part of our talk, we will discuss how one can build the connection between integral operators in Classical Analysis and Stochastic Analysis. We will introduce versions of intermediate operators appearing in the Littlewood-Paley Theory and show recent boundedness results. The second part of our talk will present the relation between these new operators and fractional derivative in its integral form and we discuss multipliers defined in terms of fractional derivatives. We show an extended class of multipliers obtained through a new version of Mikhlin Multiplier Theorem and explain why classical multipliers form a sublass of this new extended class of multipliers.

Date: 18 December 2024, Wednesday

Time: 13:30

Place: Seminar Room