

Uluğ Çapar

A Guide to Generalized Functions

Linear, Nonlinear, Random, and Infinite Dimensional Distributions

The aim of the present work is to give a unifying treatment of the four faces of the theory of generalized functions – linear, nonlinear, random and infinite dimensional distributions. The book deals with all of these categories in a comparative and interconnected way, giving a broad overview without getting lost in too many details.

This original presentation touches upon a number of mathematical areas, such as functional analysis, theory of functions, measure theory, operator theory, differentiable manifolds, probability theory, stochastic processes and stochastic analysis. For example, in one of the chapters it builds a bridge from Gaussian measures on Hilbert spaces, Malliavin calculus, Wiener chaos, Meyer-Watanabe distributions, Hida distributions and White Noise Analysis up to Kondratiev spaces, ending with Colombeau versions.

Any researcher who is looking for an overview on the state-of-the art, or to specialize in the theory of distributions, will find this book a useful resource.

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