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Conceptual Paper

Approximation Results by Certain Genuine Operators of Integral Type

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Abstract

Approximation processes arise in a very natural way in many problems dealing with the constructive approximation of functions as well as solutions to (partial) differential equations and integral equations. The study of such subject falls into an intensive research area, developing in different directions by many mathematicians. Several investigations have been devoted to the approximation properties of new sequences of operators, which might generalize or modify well-known ones, in order to get better results. Issues related to these studies are, for instance, shape preserving properties of the approximating operators, estimates of the rate of convergence, asymptotic formulae, saturation problems, approximation of semigroups of operators, asymptotic behavior, direct, and converse results. Several approximation processes have been successfully applied for example in Computer Aided Geometric Design, in the theory of artificial neural networks, and in evolution problems arising in population genetics, financial mathematics, and other fields.

Keywords: Genuine Operators; Integral Type; Approximation Processes

The goal of this talk is to attract researchers as well as scientists who are working in the recent advances in operator methods in approximation theory and related applications.

Potential topics of this talk include but are not limited to the following:

- Approximation by positive operators
- Approximation by linear/nonlinear operators
- Approximation by integral operators
- Rate of convergence and moduli of smoothness
- Simultaneous approximation
- Approximation problems for semigroups of operators and evolution equations
- Multidimensional problems
- Abstract approximation theory
- Quantum Calculus in Approximation Theory.

The theory of summability arises from the process of summation of series and the significance of the concept of summability has been strikingly demonstrated in various contexts e.g. in Analytic Continuation, Quantum Mechanics, Probability Theory, Fourier Analysis, Approximation Theory and Fixed Point Theory. The methods of almost summability and statistical summability have become an active area of research in recent years. This short monograph is the first one to deal exclusively with the study of some summability methods and their interesting applications. We consider here some special regular matrix methods as well as non-matrix methods of summability. Broadly speaking, signals are treated as functions of one variable and images are represented by functions of two variables. Positive approximation processes play an important role in Approximation Theory and appear in a very natural way dealing with approximation of continuous functions, especially one, which requires further qualitative properties such as monotonicity, convexity and shape preservation and so on. Analysis of signals or time functions is of great importance, because it conveys information or

attributes of some phenomenon. The engineers and scientists use properties of Fourier approximation for designing digital filters. In this talk, we discuss the basic tools of approximation theory and determine the error (degree) in approximation of a signal (function) by different types of positive linear operators in various Function spaces like as in Lp-spaces. During this talk, few applications of approximations of signals will also be highlighted. Approximation processes arise in a very natural way in many problems dealing with the constructive approximation of functions as well as solutions to (partial) differential equations and integral equations. The study of such subject falls into an intensive research area, developing in different directions by many mathematicians. Several investigations have been devoted to the approximation properties of new sequences of operators, which might generalize or modify well-known ones, in order to get better results. Issues related to these studies are, for instance, shape preserving properties of the approximating operators, estimates of the rate of convergence, asymptotic formulae, saturation problems, approximation of semigroups of operators, asymptotic behavior, direct, and converse results. Several approximation processes have been successfully applied for example in Computer Aided Geometric Design, in the theory of artificial neural networks, and in evolution problems arising in population genetics, financial mathematics, and other fields. The goal of this talk is to attract researchers, engineers as well as scientists who are working in the recent advances in operator methods in approximation theory and related applications [1-13].

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