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Meyer-König and Zeller operators and some of their modifications

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Abstract

This is an extensive survey on the Meyer-König and Zeller operators. It includes most of the modifications they have undergone through the years, in particular the well-known Cheney and Sharma operators and their own modifications. The organization of the exposition refers to papers whose goals are connected with the study under consideration in each section rather than their chronological appearance. The results obtained by the different authors have been commented.

Keywords: Meyer-König and Zeller operators, moments, eigenfunctions, direct and converse results, Besov and Orlicz spaces, Bernstein type inequalities, Voronovskaya results, saturation, shape preserving properties.

MSC: Primary 41-02; Secondary 41A30, 41A35.

§1. Introduction

Certain operators may be related to distributions of Probability Theory and summation methods. For instance, it is known that Bernstein operators are connected with the Bernoulli distribution and the Euler-Knopp matrix of summability theory (see [106]). On the other hand, in 1950, Szász constructed an approximation process by means of the Poisson distribution [148]. In 1960, Meyer-König and Zeller introduced a variation of the Bernstein polynomials. To this aim, the main idea was to consider the Pascal distribution

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