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Yue Sui and Junchao Wei

SOME STUDIES ON GENERALIZED INVERSES OF MATRICES

105-120

Abstract: This paper mainly introduces some properties of several generalized inverses of matrices, especially some equivalent characteristics of generalized inverses of matrices, specifically by constructing some specific matrix equations and discussing whether these matrix equations have solutions in a given set to determine whether a group invertible matrix is some generalized inverse.

Bruno de Malafosse

NEW RESULTS ON THE EQUATION $(E_a)_\Delta + F_x = F_b$ WHERE E AND F
ARE ANY OF THE SETS c_0 , c , OR ℓ_∞

121-141

Abstract: Let U^+ be the set of all positive sequences. Then, given any sequence $z = (z_n)_{n \geq 1} \in U^+$ and any set E of complex sequences, we write E_z for the set of all sequences $y = (y_n)_{n \geq 1}$ such that $y/z = (y_n/z_n)_{n \geq 1} \in E$. In particular, $c_z = s_z^{(c)}$, $(\ell_\infty)_z = s_z$ and $(c_0)_z = s_z^0$ denote the sets of all sequences y such that y/z converges, is bounded and converges to zero, respectively. Until now, there is no solvability of the (SSE) of the form $(E_a)_\Delta + F_x = F_b$, where Δ is the operator of the first difference, for all positive sequences a and b and $E, F \in \{c_0, c, \ell_\infty\}$, except in cases (i) $E = c_0$, $F = c$, and (ii) $E \in \{c, \ell_\infty\}$ and $F = c_0$, (cf. [15]). In this paper, we extend these results solving the (SSE) $(s_a)_\Delta + s_x^{(c)} = s_b^{(c)}$ and studying each of the (SSE) $(s_a^0)_\Delta + s_x = s_b$ and $(s_a^{(c)})_\Delta + s_x = s_b$ in the general case when $a, b \in U^+$. Then, for any given $a, b \in U^+$ and $u, R > 0$ we obtain a resolution of the next special (SSE) $(s_a^0)_\Delta + s_x = s_u$, $(s_a)_\Delta + s_x^{(c)} = s_u^{(c)}$ and $(s_R)_\Delta + s_x^{(c)} = s_b^{(c)}$. These results also extend those stated in [16], [14].

Hasret Yazarli and Damla Yilmaz

A NOTE ON DERIVATIONS OF EQ-ALGEBRAS

143-160

Abstract: In this paper, we define the notion of generalized derivations on EQ-algebras and investigate its properties. Also, we characterize f -derivations and prove their special cases.

George A. Anastassiou

HIGH ORDER APPROXIMATION BY MULTIVARIATE GENERALIZED PICARD
SINGULAR INTEGRALS

161-200

Abstract: This research and survey article deals exclusively with the study of the approximation of generalized multivariate Picard singular integrals to the identity-unit operator. Here we study quantitatively most of their approximation properties. These operators are not in general positive linear operators. In particular we study the rate of convergence of these operators to the unit operator, as well as the related simultaneous approximation. These are given via Jackson type inequalities and by the use of multivariate high order modulus of smoothness of the high order partial derivatives of the involved function. Also we study the global smoothness preservation properties of these operators. These multivariate inequalities are nearly sharp and in one case the inequality is attained, that is sharp. Furthermore we give asymptotic expansions of Voronovskaya type for the error of approximation. The above properties are studied with respect to L_p norm, $1 \leq p \leq \infty$.
