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CONTENTS

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ON THE SOLVABILITY OF THE (SSIE) WITH AN OPERATOR $(c_0)_{B(r,s)-\lambda I} \subset \mathbf{s}_a + \mathbf{s}_x^{(c)}$ INVOLVING THE FINE SPECTRUM OF THE GENERALIZED DIFFERENCE OPERATOR $B(r,s)$ OVER c_0 1-22

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, E_z denotes the set of all sequences $y = (y_n)_{n\geq 1}$ such that $y/z = (y_n/z_n)_{n\geq 1} \in E$. The notations $\mathbf{s}_x = (\ell_\infty)_x$ and $\mathbf{s}_x^{(c)} = c_x$ are used for $x \in U^+$. In this paper, some results on the fine spectrum of the generalized difference operator $B(r,s)$ over c_0, (cf. [6]) have been used. Then, for given r, $s \neq 0$ and for every $\lambda \in \mathbb{C}$ the (SSIE) with an operator of the form $(c_0)_{B(r,s)-\lambda I} \subset \mathcal{E} + \mathbf{s}_x^{(c)}$, $F_{B(r,s)-\lambda I} \subset \mathcal{E} + \mathbf{s}_x$, where $F \in \{c_0, c, \ell_\infty\}$, and $(c_0)_{B(r,s)-\lambda I} \subset \mathcal{E} + \mathbf{s}_x^0$ are studied. In this way, the sets of all positive sequences $x = (x_n)_{n\geq 1}$ that satisfy each of these (SSIE) in each of the cases, (1) $\lambda = r$, (2) $\lambda \notin \sigma(B(r,s), c_0)$, (3) $\lambda \in \sigma_c(B(r,s), c_0)$ and (4) $\lambda \in \sigma_r(B(r,s), c_0) \setminus \{r\}$ are determined. Then, these results are applied to the solvability of the (SSIE) $(c_0)_{B(r,s)-\lambda I} \subset s_R + \mathbf{s}_x^{(c)}$ for all $\lambda \in \mathbb{C}$ and $R > 0$. Finally, each of the (SSIE) $(c_0)_{\Delta-\lambda I} \subset bv_p + \mathbf{s}_x^{(c)}$ and $(c_0)_{B(r,s)-\lambda I} \subset \chi_{R_b} + \mathbf{s}_x^{(c)}$ is studied, where $\chi = c_0$, c, or ℓ_∞ and R_b is the Rhaly matrix with $b \in U^+$. These results extend those stated in [25], [22].

Emine KOÇ SÖGÜTCÜ

SOME EQUATIONS ON IDEAL IN PRIME RINGS WITH HOMODERIVATIONS 23-41

Abstract: Let R be a prime ring with multiplicative center Z, I a nonzero ideal of R and h a homoderivation on R. This paper will prove that R is a commutative ring if any one of the following holds: i) $h(I) \subset Z$, ii) $[h(I), I] = (0)$, iii) $[h(I), I] \subset Z$, iv) $[h(I), h(I)] \subset Z$ and $h(Z) \neq (0)$ v) $[h(u), h(v)] = [u, v]$ for all $u, v \in I$, vi)$h(I) \circ I = (0)$, vii) $h(I) \circ I \subset Z$, viii) $h(I) \circ h(I) \subset Z$ and $h(Z) \neq (0)$.ix) $h(u) \circ h(v) = u \circ v$ for all $u, v \in I$ x)$h(u)h(v) = uv$, for all $u, v \in I$ xi)$h(u)h(v) = vu$, for all $u, v \in I$, xii) $h(I \circ I) = (0)$ xiii) $h(I \circ I) \subset Z$ and $h(Z) \neq (0)$, xiv) $h(u)h(v) = [u, v]$, for all $u, v \in I$, xv) $h(u)h(v) = u \circ v$, for all $u, v \in I$, xvi) $h([u, v]) = [h(u), v]$, for all $u, v \in I$, xvii) $h(u \circ v) = h(u) \circ v$, for all $u, v \in I$.

George A. Anastassiou

Q-DEFORMED AND λ-PARAMETRIZED A-GENERALIZED LOGISTIC FUNCTION BASED COMPLEX VALUED MULTIVARIATE TRIGONOMETRIC AND HYPERBOLIC NEURAL NETWORK APPROXIMATIONS 43-76

Abstract: Here we research the multivariate quantitative approximation of complex valued continuous functions on a box of $\mathbb{R}^N$, $N \in \mathbb{N}$, by the multivariate normalized type

neural network operators. We investigate also the case of approximation by iterated multilayer neural network operators. These approximations are achieved by establishing multidimensional Jackson type inequalities involving the multivariate moduli of continuity of the engaged function and its partial derivatives. Our multivariate operators are defined by using a multidimensional density function induced by a q-deformed and λ-parametrized A-generalized logistic function, which is a sigmoid function. The approximations are pointwise and uniform. The related feed-forward neural network are with one or multi hidden layers. The basis of our theory are the introduced multivariate Taylor formulae of trigonometric and hyperbolic type.

Yu-Xin Gu and Feng-Zhen Zhao

THE LOG-BALANCEDNESS OF SOME SEQUENCES INVOLVING CAUCHY NUMBERS 77-90

Abstract: FOR CAUCHY NUMBERS OF THE FIRST KIND a_n AND THE CAUCHY NUMBERS OF THE SECOND KIND b_n, WE PROVE THAT TWO SEQUENCES $\{\frac{|a_n|}{n!}\}_{n\geq 2}$ AND $\{\frac{b_n}{n!}\}_{n\geq 0}$ ARE LOG-BALANCED. IN ADDITION, WE DISCUSS THE LOG-BALANCEDNESS OF OTHER SEQUENCES INVOLVING a_n (b_n).

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