

ON THE RATE OF CONVERGENCE FOR CERTAIN SUMMATION-INTEGRATION TYPE OPERATORS

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Abstract. In the present paper, we study the certain summation integral type operators which includes the well known Baskakov-Durrmeyer and Szasz-Durrmeyer operators as special cases. We obtain the rate of convergence for functions of bounded variation, for these generalized sequences of linear positive operators together with the exact bounds for Baskakov basis functions and Szasz basis functions.

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REFERENCES

- [1] G. BASTIEN, M. ROGALSKI, *Convexite, complete monotonie et inegalites sur les fonctions zeta et Gamma, sur les fonctions des operateurs de Baskakov et sur des fonctions arithmetiques*, Canadian J. Math., **54**, (5) (2002), 916–944.
- [2] M. M. DERRIENNIC, *Sur l'approximation de fonctions integrable sur $[0,1]$ par des polynomes de Bernstein modifies*, J. Approx. Theory, **31**, (1981), 325–343.
- [3] J. L. DURRMEYER, *Une formule d'inversion de la transformee de Laplace: Application a la Theorie des Moments*, These de 3e Cycle, Faculte des Sciences de l' Universite de Paris 1967.
- [4] S. GUO, *On the rate of convergence of Durrmeyer operator for function of bounded variation*, J. Approx. Theory, **51**, (1987), 183–192.
- [5] V. GUPTA, *A note on modified Baskakov type operators*, Approx. Theory and its Appl., **10**, (3) (1994), 74–78.
- [6] V. GUPTA, P. GUPTA, *Rate of convergence for the Baskakov-Durrmeyer type operators*, Ganita, **52**, (1) (2001), 69–77.
- [7] V. GUPTA, R. P. PANT, *Rate of convergence for the modified Szasz-Mirakyan operators on functions of bounded variation*, J. Math. Anal. Appl., **233**, (1999), 476–483.
- [8] V. GUPTA, G. S. SRIVASTAVA, *Approximation by Durrmeyer type operators*, Ann. Polonici Math., **LXIV**, (2) (1996), 153–159.
- [9] S. M. MAZHAR, V. TOTIK, *Approximation by modified Szasz operators*, Acta Sci. Math. (Szeged), **49**, (1985), 257–269.
- [10] SAHAI, G. PRASAD, *On simultaneous approximation by modified Lupas operators*, J. Approx. Theory, **45**, (1985), 122–128.
- [11] Y. WANG, S. GUO, *Rate of approximation of functions of bounded variation by modified Lupas operators*, Bull. Austral. Math. Soc., **44**, (1991), 177–188.
- [12] X. M. ZENG, *Bounds for Bernstein basis functions and Meyer Konig Zeller basis functions*, J. Math. Anal. Appl., **219**, (1998), 364–376.
- [13] X. M. ZENG, J. N. ZHAO, *Exact bounds for some basis functions of approximation operators*, J. Inequal. Appl., **6**, (2001), 563–575.