Statistical approximation properties of Kantorovich type q-MKZ operators

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ABSTRACT.

In this study we have introduced the Kantorovich type generalization of Meyer-König and Zeller operators based on q-integers. With the help of some recent studies on q-calculus, we have obtained the statistical Korovkin type approximation properties of the operator. We have also examined the order of statistical approximation by means of modulus of continuity.

REFERENCES

[1] Agratini, O. , *Korovkin type error estimates for Meyer-König and Zeller operators*, Math. Ineq. Appl. **4** (2001), No.1, 119-126

[2] Andrews, G. E., Askey, R. and Roy, R., *Special Functions*, Cambridge University Press, 1999

[3] Cheney, E. W. and Sharma, A., *Bernstein power series*, Can. J. Math. **16** (1964), 241-253

[4] Dalmanoğlu, Ö., *Approximation by Kantorovich type q-Bernstein operators*, Proc. of the 12th WSEAS Inter. Conf. on App. Math., Cairo, Egypt (2007), 113-117

[5] Dalmanoğlu, Ö. and Doğru, O., *On Statistical Approximation properties of Kantorovich type q-Bernstein operators* (submitted for publication)

[6] Doğru, O., *Approximation order and asymptotic approximation for Generalized Meyer-König and Zeller operators*, Math. Balkanica **12** (1998), No. 3-4, 359-368

[7] Doğru, O. and Özalp, N., *Approximation by Kantorovich Type Generalization of Meyer-König and Zeller Operators*, Glasnik Mat. **36** (2001), 311-318

[8] Doğru O., Duman, O. and Orhan, C., *Statistical Approximation by Generalized Meyer-König and Zeller type operators*, Stud. Sci. Math. Hun. **40** (2003), 359-371

[9] Doğru, O. and Duman O., *Statistical Approximation of Meyer-König and Zeller operators based on q-integers*, Math. Debrecen **68** (2006), No. 1-2, 199-214

[10] Fast, H., *Sur la convergence statistique*, Colloq. Math. Studia Mathematica **2** (1951), 241-244

[11] Gadjiev, A. D. and Orhan, C., *Some approximation properties via statistical convergence*, Rocky Mountain J. of Math. **32** (2002), 129-138

[12] Kac, V. and Cheung, P., *Quantum Calculus*, Springer–Verlag, Newyork–Berlin–Heidelberg, 1953

[13] Lorentz, G. G., *Bernstein Polynomials*, Univ. of Toronto Press, Toronto, 1953

[14] Marinković, S., Rajković, P. and Stanković, M., *The inequalities for some types of q-integrals*, Comp. and Math. with Applications **56** (2008), 2490-2498

[15] Meyer-König, W. and Zeller, K., *Bernsteinsche potenzreihen*, Studia Math. **19** (1960), 89-94

[16] Niven, I., Zuckerman, H. S. and Montgomery, H., An Introduction to the Theory of Numbers, 5th edition, Wiley, New York, 1991

[17] Radu, C., *Statistical Approximation properties of Kantorovich operators based on q-integers*, Creative Math. and Inf. **17** (2008), No. 2, 75-84

[18] Trif, T., *Meyer-König and Zeller operators based on the q-integers*, Rev. Anal. Numer. Theor. Approx. **29** (2000), No. 2, 221-229

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