

The Voronovskaja theorem for some Stancu-type operators

OVIDIU T. POP AND DAN BĂRBOSU

ABSTRACT.

One obtains the Voronovskaja theorem for the Kantorovich-Stancu, Stancu-Kantorovich and Durrmeyer-Stancu operators, the convergence and the evaluation for the rate of convergence in terms of the first order modulus of smoothness for these operators.

REFERENCES

- [1] Agratini, O., *Aproximare prin operatori liniari*, Presa Univ. Clujeană, Cluj-Napoca, 2000 (Romanian)
- [2] Altomare, F. and Campiti, M., *Korovkin-type Approximation Theory and its Applications*, de Gruyter, Series Studies in Mathematics, **17**, Walter de Gruyter&Co, Berlin, New York, 2000
- [3] Durrmeyer, J. L., *Une formule d'inversion de transformée de Laplace: Application à la theorie des moments*, Thèse de 3e cycle, Faculté de Sciences de l'Université de Paris, 1967
- [4] Kantorovich, L. V., *Sur certain développements suivant les polynômes de la forme de S. Bernstein*, **I, II**, C. R. Acad. URSS (1930), 563 - 568, 595-600
- [5] Pop, O. T., *Voronovskaja type theorems. Applications to the uniform approximation of functions with linear and positive operators*, PhD Thesis, Babeş-Bolyai University of Cluj-Napoca, Faculty of Mathematics and Computer Science, Cluj-Napoca, 2006
- [6] Pop, O. T., *The generalization of Voronovskaja's theorem for a class of linear and positive operators*, Rev. Anal. Numér. Théor. Approx., **34** (2005), No. 1, 79-91
- [7] Pop, O. T., *The Kantorovich form of Stancu operators*, Miskolc Math. Notes, **7** (2006), No. 2, 161-168
- [8] Pop, O. T. and Bărbosu, D., *Stancu-Kantorovich type operators*, Southeast Asian Bull. of Math. **33** (2009), 41-47
- [9] Pop, O. T. and Bărbosu, D., *Durrmeyer-Stancu type operators* (to appear)
- [10] Stancu, D. D., *Asupra unei generalizări a polinoamelor lui Bernstein*, Studia Univ. Babeş-Bolyai, Ser. Math.-Phys., **14** (1969), 31-45 (Romanian)
- [11] Stancu, D. D., Coman, Gh., Agratini, O. and Trîmbiţaş, R., *Analiză numerică şi teoria aproximării*, **I**, Presa Univ. Clujeană, Cluj-Napoca, 2001 (Romanian)
- [12] Voronovskaja, E., *Détermination de la forme asymptotique d'approximation des fonctions par des polynômes de M. Bernstein*, C. R. Acad. Sci. URSS (1932), 79-85

NATIONAL COLLEGE "MIHAI EMINESCU"
5 MIHAI EMINESCU STREET
440014 SATU MARE, ROMANIA
E-mail address: ovidiutiberiu@yahoo.com

NORTH UNIVERSITY OF BAIA MARE
DEPARTMENT OF MATHEMATICS AND
COMPUTER SCIENCE
VICTORIEI 76
430122 BAIA MARE, ROMANIA
E-mail address: barbosudan@yahoo.com

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