

MULTIVARIATE MOMENT TYPE OPERATORS: APPROXIMATION PROPERTIES IN ORLICZ SPACES

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Abstract. In this paper modular convergence theorems in Orlicz spaces for multivariate extensions of the one-dimensional moment operator are given and the order of modular convergence in modular Lipschitz classes is studied.

Mathematics subject classification (2000): 41A35, 47G10, 46E30.

Key words and phrases: Orlicz spaces, weighted metric type kernels, moment operators, Korovkin theorem.

REFERENCES

- [1] F. ALTOMARE AND M. CAMPITI, *Korovkin-type approximation theory and its applications*, Walter de Gruyter, Berlin, New York, 1994.
- [2] F. BARBIERI, *Approssimazione mediante nuclei momento*, Atti Sem. Mat. Fis. Univ. Modena, **32**, (1983), 308–328.
- [3] C. BARDARO AND I. MANTELLINI, *Linear integral operators with homogeneous kernel: approximation properties in modular spaces. Applications to Mellin-type convolution operators and to some classes of fractional operators*, Applied Mathematics Reviews, vol I, World Scientific Publ., River Edge, NJ, Edited by G. Anastassiou, (2000), 45–67.
- [4] C. BARDARO AND I. MANTELLINI, *Korovkin theorem in modular spaces*, Comment. Math. Prace Mat., **47**(2), (2007), 239–253.
- [5] C. BARDARO AND I. MANTELLINI, *Korovkin theorem in multivariate modular function spaces*, to appear (2008).
- [6] C. BARDARO, J. MUSIELAK AND G. VINTI, *Nonlinear integral operators and applications*, De Gruyter Series in Nonlinear Analysis and Appl., Vol. 9, 2003.
- [7] C. BARDARO AND G. VINTI, *Modular convergence in generalized Orlicz spaces for moment type operators*, Appl. Anal., **32**, (1989), 265–276.
- [8] P. L. BUTZER AND R. J. NESSEL, *Fourier Analysis and Approximation I*, Academic Press, New York-London, 1971.
- [9] F. DEGANI CATTELANI, *Nuclei di tipo “distanza” che attutiscono i salti in una o piú variabili*, Atti Sem. Mat. Fis. Univ. Modena, **30**, (1981), 299–321.
- [10] R. A. DEVORE, *The approximation of continuous functions by positive linear operators*, Lecture notes in Math., **293**, Springer-Verlag, 1972.
- [11] C. FIOCCHI, *Two-dimensional moment kernels and convergence in area*, Atti Sem. Mat. Fis. Univ. Modena, **33**(2), (1986), 291–311.
- [12] C. FIOCCHI, *Variazione di ordine α e dimensione di Hausdorff degli insiemi di Cantor*, Atti Sem. Mat. Fis. Univ. Modena, **34**(2), (1991), 649–667.
- [13] P. P. KOROVKIN, *Linear operators and approximation theory*, Hindustan, Delhi, 1960.
- [14] I. MANTELLINI, *Generalized sampling operators in modular spaces*, Comment. Math., Prace Mat. **38**, (1998), 77–92.
- [15] J. MUSIELAK, *Orlicz Spaces and Modular Spaces*, Springer-Verlag, Lecture Notes in Math., **1034** (1983).
- [16] E. D. RAINVILLE, *Special Functions*, McMillan Co., New York, (1960).

- [17] C. VINTI, *Sull'approssimazione in perimetro e area*, Atti Sem. Mat. Fis. Univ. Modena, **13**, (1964), 187–197.
- [18] V. ZANELLI, *Funzioni momento convergenti dal basso in variazione di ordine non intero*, Atti Sem. Mat. Fis. Univ. Modena, **30**, (1981), 355–369.