APPROXIMATION OF FUNCTIONS
OF WEIGHTED LEBESGUE AND SMIRNOV SPACES

RAMAZAN AKGUN

Abstract. In this work we investigate the inverse approximation problems in the Lebesgue and Smirnov spaces with weights satisfying the so-called Muckenhoupt's A_p condition in terms of the α-th mean modulus of smoothness, $\alpha > 0$. We obtain a converse theorem of trigonometric approximation in the weighted Lebesgue spaces and obtain some converse theorems of algebraic polynomial approximation in the weighted Smirnov spaces.

MSC 2010. Primary 30E10, 46E30; Secondary 41A10, 41A25, 41A27, 42A10.

Key words. Weighted Smirnov spaces, Dini-smooth curve, inverse theorems, fractional modulus of smoothness.

REFERENCES

[1] HACIYEVA, E.A., *Investigations of the properties of functions with quasimonotone Fourier coefficients in generalized Nikolskii-Besov spaces*, Author's summary of Dissertation, Tbilisi, 1986 (in Russian).

[2] ISRAFILOV, D.M. and AKGÜN, R., *Approximation in weighted Smirnov-Orlicz classes*, J. Math. Kyoto Univ., **46** (4) (2006), 755-770.

[3] ISRAFILOV, D.M. and GUVEN, A., *Approximation in weighted Smirnov classes*, East J. Approx., **11** (1) (2005), 91-102.

[4] KY, N.X., *Moduli of mean smoothness and approximation with A_p-weights*, Ann. Univ. Sci. Budapest. Sect. Math., **40** (1997), 37-48.

[5] KY, N.X., *An Alexits's lemma and its applications in approximation theory*, Functions, Series, Operators (L. Leindler, F. Schipp, J. Szabados, eds.), Budapest (2002), 287-296.

[6] TABERSKI, R., *Two indirect approximation theorems*, Demonstratio Math., **9** (2) (1976), 243-255.

[7] TABERSKI, R., *Approximation of functions possessing derivatives of positive orders*, Ann. Polon. Math., **34** (1977), 13-23.

[8] TABERSKI, R., *Differences, moduli and derivatives of fractional orders*, Comment. Math., **19** (1977), 389-400.

[9] ZYGMUND, A., *Trigonometric series*, I and II, Cambridge University Press, 1959.

Balikesir University
Faculty of Art and Science
Department of Mathematics
10145, Balikesir, Turkey
E-mail: `rakgun@balikesir.edu.tr`