

X Jaen Conference on Approximation
Úbeda, June 30th- July 05th, 2019

HARDY SPACES WITH VARIABLE EXPONENTS AND APPLICATIONS IN SUMMABILITY

FERENC WEISZ

Abstract

Let $p(\cdot) : \mathbb{R}^n \rightarrow (0, \infty)$ be a variable exponent function satisfying the globally log-Hölder condition. We introduce the variable Hardy spaces $H_{p(\cdot)}(\mathbb{R})$ and $H_{p(\cdot)}[0, 1)$ and give their atomic decompositions. It is proved that the maximal operator of the Fejér means of the Fourier transforms and Walsh-Fourier series is bounded on these spaces. This implies some norm and almost everywhere convergence results for the Fejér-means, amongst others the generalization of the well known Lebesgue's theorem.

Keywords: Variable Hardy spaces, variable Hardy-Lorentz spaces, atomic decomposition, Fourier transforms, Fejér-summability, Walsh-Fourier series.

AMS Classification: Primary 42B08, Secondary 42C10, 42A38, 42A24, 42B25.

Ferenc Weisz

Department of Numerical Analysis, Eötvös L. University

H-1117 Budapest, Pázmány P. sétány 1/C., Hungary

`weisz@inf.elte.hu`

This research was supported by the Hungarian National Research, Development and Innovation Office - NKFIH, K115804 and KH130426.