

**WEIGHTED MODULAR AND NORM INEQUALITIES FOR THE
HARDY OPERATOR IN VARIABLE L^p SPACES OF MONOTONE
FUNCTIONS**

SANTIAGO BOZA
UNIVERSITAT POLITÈCNICA DE CATALUNYA

Abstract. We study weak and strong type modular inequalities on weighted $L^{p(\cdot)}$ spaces with a variable exponent $p(\cdot)$ for the Hardy operator restricted to non-increasing functions. We show that the exponents $p(\cdot)$ for which these modular inequalities hold must have a constant oscillation at zero, which implies that these exponents are either constant or extremely oscillating near the origin. For this purpose, and similarly to the constant case, we introduced the class of weights $B_{p(\cdot)}$. We also deal with the problem of the boundedness in norm in the same context. The talk is part of a joint work with Javier Soria.

E-mail address: boza@ma4.upc.edu