



Nonlinear Elliptic Equations with Some Measure Data in Musielak-Orlicz Spaces

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Abstract: Our aim in this paper is to establish an existence result in the framework of Musielak-Orlicz spaces for the following nonlinear Dirichlet problem

$$A(u) + K(x, u, \nabla u) = \mu, \quad (1)$$

where $A(u) = -\operatorname{div}(a(x, u, \nabla u))$ is a Leray-Lions type operator defined on $D(A) \subset W_0^1 L_\varphi(\Omega)$ into its dual and the function K is a lower order term which satisfy some growth condition, and does not satisfy the sign condition. The source data μ is a bounded nonnegative Radon measure on Ω .

Keywords: *Musielak-Orlicz spaces; nonlinear elliptic problems; measure data; weak solution.*

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1 Introduction

Classical Sobolev spaces do not allow one to solve all problems of the EDP, hence the need to find other spaces, larger and suitable for the recent problems such as the spaces $L^{p(x)}(\Omega)$ or, more generally, the Musielak spaces. These spaces are not always reflexive and separable, adding further difficulties for studying the existence of solutions. Thus all our work will be in these spaces. We consider the following nonlinear Dirichlet problem:

$$A(u) + K(x, u, \nabla u) = f \quad (2)$$

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