## Accepted Manuscript

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 PII:
 S0022-247X(17)31015-6

 DOI:
 https://doi.org/10.1016/j.jmaa.2017.11.014

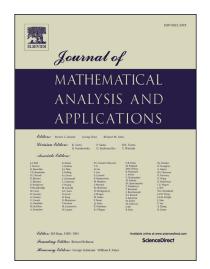
 Reference:
 YJMAA 21813

To appear in: Journal of Mathematical Analysis and Applications

Received date: 15 May 2017

Please cite this article in press as: G.M. Figueiredo, M.T.O. Pimenta, Existence of bounded variation solutions for a 1-Laplacian problem with vanishing potentials, *J. Math. Anal. Appl.* (2018), https://doi.org/10.1016/j.jmaa.2017.11.014

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## Existence of bounded variation solutions for a 1-Laplacian problem with vanishing potentials

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#### Abstract

In this work it is studied a quasilinear elliptic problem in the whole space  $\mathbb{R}^N$ involving the 1-Laplacian operator, with potentials which can vanish at infinity. The Euler-Lagrange functional is defined in a space whose definition resembles  $BV(\mathbb{R}^N)$ . It is proved the existence of a nonnegative nontrivial bounded variation solution and the proof relies on a version of the Mountain Pass Theorem without the Palais-Smale condition to Lipschitz continuous functionals.

Key Words. 1-Laplacian, mountain pass theorem, bounded variation functions. AMS Classification. 35J62, 35J20.

### 1 Introduction and some abstract results

In general, whenever dealing with semilinear or quasilinear elliptic problems in  $\mathbb{R}^N$ , it is explored the reflexivity of the Sobolev spaces  $W^{m,p}(\mathbb{R}^N)$ , for 1 . In fact,the weak limits of sequences, which can be minimizing, Palais-Smale, and so on, are thecandidates to be weak solutions of the problems. Download English Version:

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