

MULTIPLE SOLUTIONS FOR NONLINEAR ELLIPTIC EQUATIONS WITH FAST INCREASING WEIGHT AND CRITICAL GROWTH

MARCELO F. FURTADO *

We are concerned with the existence of rapidly decaying solutions for the equation

$$-\operatorname{div}(K(x)\nabla u) = f(x, u), \quad x \in \mathbb{R}^N,$$

where $N \geq 2$, $K(x) := \exp(|x|^2/4)$ and f has critical growth. In the case $N \geq 3$ the obtained solutions are in some sense related to self-similar solutions of a critical heat equation. In the case $N = 2$ the function f is not homogeneous and its behavior at infinity is related to (a properly version of) the Trudinger-Moser inequality. In all the proofs we apply variational methods. The results presented are obtained in some jointly works with J.P.P. Silva & M.S. Xavier and E.S.Medeiros & U.B. Severo.

*Universidade de Brasília - Departamento de Matemática - Brasília-DF - Brazil, email: mfurtado@unb.br