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Minimax Theory and its Applications 04 (2019) 021–032

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A Multiplicity Result for a Non-Autonomous Sublinear Elliptic Problem Involving Nonlinearities Indefinite in Sign

Let Ω be a bounded smooth domain in \mathbb{R}^N , let $\alpha, \beta: \Omega \rightarrow \mathbb{R}$ be two measurable functions, and let $s \in]1, 2[$ and $r \in]1, s[$. We deal with the following non autonomous elliptic problem

$$\begin{cases} -\Delta u = \alpha(x)u^{s-1} - \mu\beta(x)u^{r-1}, & \text{in } \Omega \\ u \geq 0, & \text{in } \Omega \\ u|_{\partial\Omega} = 0 \end{cases}$$

where $\mu \in \mathbb{R}$ is a parameter. We establish, via minimax methods, a multiplicity result under suitable summability conditions on the weight functions α, β .

Keywords: Sublinear elliptic problem, weight function, nonnegative solution, positive solution, minimax method, mountain pass, multiplicity.

MSC: 35J20, 35J25.