



An Elliptic System with logarithmic nonlinearity

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In this work we are interested to prove the existence of solution for the following singular system

$$\begin{cases} -\Delta_{p(x)}u = -\gamma \log v + \theta v^{\alpha(x)} & \text{in } \Omega, \\ -\Delta_{q(x)}v = -\gamma \log u + \theta u^{\beta(x)} & \text{in } \Omega, \\ u, v > 0 & \text{in } \Omega, \\ u = v = 0 & \text{on } \partial\Omega, \end{cases}$$

where $\Omega \subset \mathbb{R}^N (N \geq 2)$ is a bounded domain with smooth boundary, γ and θ are positive constants and $\alpha, \beta : \bar{\Omega} \rightarrow \mathbb{R}$ are positive exponents. Our study is based on bifurcation theory and a new result involving sub and super solutions.

Key words : *Bifurcation, $p(x)$ -Laplacian, Singular system, Sub-supersolution*

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