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A Abebe* (anabebe@uncg.edu), **M Chhetri**, **L Sankar** and **R Shivaji**. *Existence and nonexistence of positive solutions to exterior domain superlinear semipositone system.*

In this article, under certain conditions on the parameter λ , we prove existence and nonexistence of positive solutions to superlinear semipositone eigenvalue problem of the form

$$\begin{aligned} -\Delta u(x) &= \lambda K_1(|x|)f(v(x)), & x \in \Omega \\ -\Delta v(x) &= \lambda K_2(|x|)g(u(x)), & x \in \Omega \\ u = v &= 0, & |x| = r_0 \\ u \rightarrow 0 \quad , \quad v \rightarrow 0, & & |x| \rightarrow \infty \end{aligned} \tag{1}$$

where $\lambda > 0$ is a parameter, $\Delta u := \operatorname{div}(\nabla u)$ is the Laplace operator and Ω is a \mathbb{R}^N minus the unit ball, $N \geq 2$. That is $\Omega = \{x \in \mathbb{R}^N \mid |x| > r_0, N > 2\}$. Suppose the nonlinearities $f : [0, \infty) \rightarrow \mathbb{R}$ and $g : [0, \infty) \rightarrow \mathbb{R}$ are C^1 and nondecreasing functions. (Received September 03, 2013)