

1093-35-153

Maya Chhetri* (maya@uncg.edu), Department of Mathematics and Statistics, UNC Greensboro, Greensboro, NC 27410, and **Petr Girg**. *Existence of positive solutions for a class of superlinear semipositone systems.*

We consider an elliptic system of the form

$$\begin{aligned} -\Delta u &= \lambda f(x, v) & \text{in } \Omega, \\ -\Delta v &= \lambda g(x, u) & \text{in } \Omega, \\ u &= 0 = v & \text{on } \partial\Omega, \end{aligned}$$

where $\lambda > 0$ is a parameter and Ω is a bounded domain in R^N with $C^{2,\alpha}$ boundary $\partial\Omega$. Here the nonlinearities $f, g : \Omega \times [0, \infty) \rightarrow R$ are Carathéodory functions that are superlinear at infinity and satisfy $f(x, 0) < 0$ and $g(x, 0) < 0$ almost everywhere in Ω . We prove that the system has a positive strong solution for λ small by using degree theory combined with re-scaling argument and a uniform L^∞ apriori bound of positive strong solutions to some Lane-Emden type of systems. (Received August 11, 2013)