1044-35-197   **Maya Chhetri*** (`maya@uncg.edu`), Department of Mathematics and Statistics, 125 Petty Science Bldg, UNC Greensboro, Greensboro, NC 27402, and **Petr Girg**. *Existence and Nonexistence of Positive Solutions For a Class of Superlinear Semipositone Systems.*

We consider an elliptic system of the form

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

where $\lambda > 0$ is a parameter, Ω is a bounded domain in R^N with smooth boundary $\partial\Omega$. The nonlinearities $f, g : [0, \infty) \to R$ are C^1 functions that are superlinear at infinity and satisfy $f(0) < 0$ and $g(0) < 0$. We prove that the system has a positive solution for λ small when Ω is convex with C^3 boundary and no positive solution for λ large when Ω is a general bounded domain with $C^{2,\beta}$ boundary.

We use fixed point index combined with re-scaling argument to prove the existence result while positive solutions are analyzed in a sub-domain near the boundary to prove the nonexistence result. (Received September 01, 2008)