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Gampola Waduge Nalin Fonseka* (fonsekan@carolinau.edu), 1825 Sherwood St, Apt C, Greensboro, NC 27403, and **Ananta Acharya** and **Ratnasingham Shivaji**. *Analysis of reaction-diffusion systems where a parameter influences both the reaction terms as well as the boundary.*

We study positive solutions to steady state reaction diffusion models of the form:

$$\begin{cases} -\Delta u = \lambda f(v); & \Omega \\ -\Delta v = \lambda g(u); & \Omega \\ \frac{\partial u}{\partial \eta} + \sqrt{\lambda} u = 0; & \partial\Omega \\ \frac{\partial v}{\partial \eta} + \sqrt{\lambda} v = 0; & \partial\Omega \end{cases}$$

where $\lambda > 0$ is a positive parameter, Ω is a bounded domain in \mathbb{R}^N ; $N > 1$ with smooth boundary $\partial\Omega$ or $\Omega = (0, 1)$, $\frac{\partial z}{\partial \eta}$ is the outward normal derivative of z . We assume that f and g are continuous increasing functions such that $f(0) = 0 = g(0)$ and $\lim_{s \rightarrow \infty} \frac{f(Mg(s))}{s} = 0$ for all $M > 0$. (Received August 22, 2020)