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Huiqiang Jiang* (hqjiang@math.umn.edu), School of Mathematics, UMN, 127 Vincent Hall, 206 Church St S.E., Minneapolis, MN 55455, and **Wei-Ming Ni**. *Existence of nontrivial patterns to a reaction diffusion system.*

We consider the stationary Gierer-Meinhardt system

$$\begin{cases} d_1 \Delta u - u + \frac{u^p}{v^q} + \sigma = 0 & \text{in } \Omega, \\ d_2 \Delta v - v + \frac{u^r}{v^s} = 0 & \text{in } \Omega, \\ \frac{\partial u}{\partial \nu} = \frac{\partial v}{\partial \nu} = 0 & \text{on } \partial\Omega \end{cases}$$

where Δ is the Laplace operator, Ω is a bounded smooth domain in \mathbb{R}^n , $n \geq 1$ and ν is the unit outer normal to $\partial\Omega$. Under suitable conditions on the exponents p, q, r and s , we show the existence of nontrivial solutions using topological degree theory, for both $\sigma > 0$ and $\sigma = 0$ cases. (Received August 31, 2006)