1014-35-767 **Yuncheng You\*** (`you@math.usf.edu`), Prof. Yuncheng You, Department of Mathematics, University of South Florida, Tampa, FL 33620. *Multiple-Spike Ground State Solutions of the Activator-Inhibitor Equations.*

In many biological pattern formations and some biochemical reactions, an activator-inhibitor system of reaction-diffusion equations serves as a mathematical model. Here the Gierer-Meinhardt system is studied. This system features two largely differenr diffusion coefficients and the essentially nonlocal nonlinearity. By the Lyapunov-Schmidt method, the order estimate of the multiple spike numbers of the ground state solutions are made and the specific construction of these solutions is shown. (Received September 23, 2005)