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Junping Shi*, Department of Mathematics, College of William and Mary, Jones Hall 122,
Williamsburg, VA 23187. *Bifurcation and asymptotic behavior in classical predator-prey systems.*

Predator-prey system with Holling type II functional response is considered. In the first part, we show that the limit cycle for the ODE dynamics possesses a structure of relaxation oscillator. In the second part, we show that multiple steady state and periodic solution bifurcations occur for the diffusive predator-prey system. In particular, we show the existence of spatially non-constant periodic solutions. This is a report of joint work with S.B. Hsu of National Tsing-Hua University, and F.Q. Yi, J.J. Wei of Harbin Institute of Technology. (Received January 28, 2008)