JIANHONG WU, York University

Global dynamics of the Nicholson's blowflies equation revisited: onset and termination of nonlinear oscillations

We revisit the Nicholson's blowflies model with natural death rate incorporated into the delay feedback. We consider the delay as a bifurcation parameter and examine the onset and termination of Hopf bifurcations of periodic solutions from a positive equilibrium. We show that the model has only a finite number of Hopf bifurcation values and we describe how branches of Hope bifurcations are paired so the existence of periodic solutions with specific oscillation frequencies occurs only in bounded delay intervals. The bifurcation analysis and the Matlab package DDE-BIFTOOL developed by Engelborghs et al guide some numerical simulations to identify ranges of parameters for coexisting multiple attractive periodic solutions. This is a joint work with Hongying Shu and Lin Wang.