

论文

具有时滞的生态流行病模型的稳定性和Hopf分支

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摘要:

该文考虑一类食饵染病的时滞捕食被捕食模型. 作者分析了系统的非负不变性, 边界平衡点的性质和全局稳定性. 证明了当时滞 $\tau=\tau_1-1+\tau_2-2$ 适当小时, 正平衡点是局部渐近稳定的, 随着时滞的增加, 正平衡点由稳定变为不稳定, 系统在正平衡点附近发生Hopf分支.

关键词: 捕食模型 全局稳定性; Hopf分支.

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Stability and Hopf Bifurcation of an Eco epidemiological Model with Delays

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Abstract:

A system of retarded functional differential equations is proposed as a predator-prey model with disease in the prey. The invariance of non negativity, nature of boundary equilibria and global stability are analyzed. The authors show that positive equilibrium is locally asymptotically stable when time delays  $\tau=\tau_1-1+\tau_2-2$  is suitable small, while a loss of stability by a Hopf bifurcation can occur as the delays increase.

Keywords: Predator-prey model Global stability; Hopf bifurcation.

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