

论文

两类带有确定潜伏期的SEIS传染病模型的分析

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摘要 通过研究两类带有确定潜伏期的SEIS传染病模型, 发现对种群的

常数输入和指数输入会使疾病的传播过程

产生本质的差异. 对于带有常数输入的情形,

找到了地方病平衡点存在及局部渐近稳定的阈值, 证明了地方病平衡点存在时

一定局部渐近稳定, 并且疾病一致持续存在. 对于带有指数输入的情形,

发现地方病平衡点当潜伏期充分小时是

局部渐近稳定的, 当潜伏期充分大时是不稳定的.

关键词 [流行病模型](#) [平衡点](#) [稳定性](#) [潜伏期](#)

分类号

Analysis Of Two Seis Epidemic Models With Fixed Period Of Latency

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Abstract By analyzing two SEIS epidemic models with fixed period of latency, one of which is with constant input, another of which is with exponent input, the essential difference between their dynamic behaviors is found. For the model with constant input, the threshold is given. When the threshold is not greater than one, the disease-free equilibrium is globally asymptotically stable. When the threshold is greater than one, the disease-free equilibrium is unstable, the endemic equilibrium is locally asymptotically stable, and the disease is uniformly persistent in the population. For the model with exponent input, the endemic equilibrium is locally asymptotically stable when the period of latency is small enough; the endemic equilibrium is unstable when the period of latency is large enough.

Key words [Epidemic model](#) [equilibrium](#) [stability](#) [latency period](#)

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