

Detection of Chaos in General Parametric Model of Infectious Disease

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Abstract : Mathematical epidemiological models for the spread of disease through a population are used to predict the prevalence of a disease or to study the impacts of treatment or prevention measures. Initial conditions for these models are measured from statistical data collected from a population since these initial conditions can never be exact, the presence of chaos in mathematical models has serious implications for the accuracy of the models as well as how epidemiologists interpret their findings. This paper confirms the chaotic behavior of a model for dengue fever and SI by investigating sensitive dependence, bifurcation, and 0-1 test under a variety of initial conditions.

Keywords : epidemiological models, SEIR disease model, bifurcation, chaotic behavior, 0-1 test

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