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LOCAL AND GLOBAL STABILITY OF A TIME DELAY SIRS EPIDEMIC MODEL WITH VARYING IMMUNITY PERIOD

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Abstract

This paper addresses a time delayed SIRS epidemic model with varying Immunity period and generalized it to describe the dynamics of infectious diseases with varying immunity. This shows that solutions are always positive and the model has atmost two steady states : disease free and endemic. In this paper about stability (both local and global) for the system of differential equation for the generalized model has been studied and found that when an endemic equilibrium exists, it is possible to analytically prove its local and global stability using Lyapunov functional.

Key Words : *Time delay model, Epidemic, SIRS, Immunity, Local and global stability, Lyapunov functional.*

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