NATALIA BRYKSINA, University of Manitoba, 240 Wallace Building, 125 Dysart Road, Winnipeg MB, R3T 2N2

On the number and stability of limit cycles in an SIR model with saturated incidence

We use the theory of Lyapunov coefficients to estimate the number, and characterize the stability, of limit cycles associated with an SIR model that employs saturated incidence function of the general form: $g(I) = kI^h/(1+\alpha I^h)$, where k, α and h are parameters. This study confirms that the model may have at most two limit cycles when $h = 2$. Furthermore, it is shown that for the case $h = 3$, the model may have a maximum of three limit cycles. The stability of these limit cycles is characterized based on the signs of the Lyapunov coefficients.