



## HOPF BIFURCATION AND STABILITY ANALYSIS OF A TIME-DELAY VECTOR-BORNE DISEASE MODEL

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**Abstract.** The study of mathematical models with time delays is of paramount importance for the effective control of disease. For this reason, this study analyses the stability and Hopf bifurcation of the nonlinear model of an epidemic disease caused by the Zika virus with latent periods. Subsequently, the stability of the disease-free and endemic equilibrium points when the latent period is zero is studied, and the existence of a Hopf bifurcation is investigated. Finally, numerical examples of the stability of the system for different values of the latent period depending on the basic reproduction number are provided, which support the theoretical results.

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