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*Global Hopf, Bi-stability, and Period doubling bifurcation in a delayed West Nile virus model.*

West Nile virus is a typical infectious disease which can cause illness in humans or animals. Vectors like mosquitoes play a critical role in the transmission and spread of the diseases. We formulate a delay differential equation model for the transmission of West Nile virus between mosquitoes and avian hosts, which incorporates maturation delay for mosquitoes. The system comprises five delayed equations. Analytical analysis shows that only vectors can force the system to oscillate under the impact of delay while the species interaction has no such impact. Our studies indicate the existence of Global Hopf bifurcation, period doubling bifurcation, and fold bifurcation of periodic solutions as well as the existence of Bi-stability in the form of a boundary period solution and a positive periodic solution. This is a collaborated work with Prof. Chunhua Shan and Prof. Huaiping Zhu. (Received January 29, 2019)