1146-34-426 **Liancheng Wang*** (`lwang5@kennesaw.edu`), 850 Polytechnic Lane, D 215, #9085, MARIETTA, GA 30060, and **Xiaoqin Wu**. *Stability and Hopf Bifurcation Analysis for an SEIR Epidemic Model with Delay.*

In this paper, first a third degree transcendental polynomial is studied and the distribution of its zeros is established. Then the results are applied to study an SEIR model with a time delay. We show that, under some conditions, as the time delay increases, a stable endemic equilibrium will become unstable and periodic solution emerges by Hopf bifurcation. By finding the normal form of the system, the direction and the stability of the periodic solution are established. Numerical simulations are performed to demonstrate the theoretical results. (Received January 28, 2019)