Applied Dynamical Systems Seminar

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A Time-Delayed Epidemic Model for Ebola Disease Transmission

Abstract:

We propose a time-delayed model for the transmission of Ebola in humans. We consider the transmission of infection between the living humans and from infectious corpses to the living individuals in which the latent period of Ebola is incorporated. We identify the basic reproduction number R0 for the model, prove that the disease-free equilibrium is always globally asymptotically stable when R0<1, the disease is persistent and a unique endemic equilibrium exists when R0>1. We show that the endemic steady state is locally asymptotically stable under certain condition and globally asymptotically stable in a special case of the model. Numerical simulations are provided to demonstrate and complement the theoretical results. This talk is based on a joint work with Dr. Yuan Yuan.