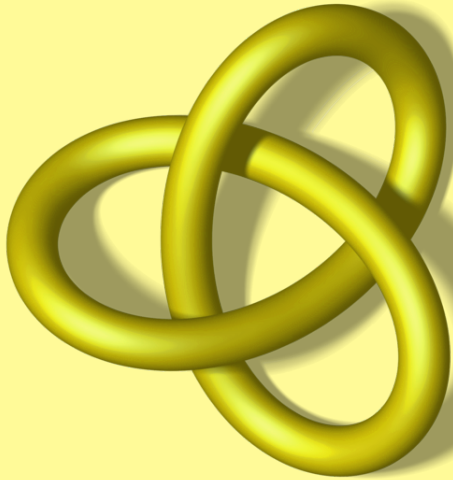


Lectures on Applied Mathematics



Announcing

A Seminar Presentation

on Friday

February 24, 2017

at 2:00 pm in

North Hall 102

at The University of New Haven

Vector-host epidemic model with direct transmission in random environment

— Dr. Dawit Denu

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Abstract: Vector-borne diseases, among all infectious diseases of humans have constituted a major cause of human mortality. Mathematical models can project how infectious diseases progress to show the likely outcome of an epidemic. In this talk, we shall discuss the dynamics of a vector-host SIS epidemic model and the associated nonlinear system of differential equation. We will show that the global and local dynamics is completely determined by the basic reproduction number R_0 .

We also consider a stochastic vector-host epidemic model with direct transmission under regime-switching. First we examine the existence of a unique positive global solution. Then we study some stability conditions, such as almost sure exponential stability, p th moment exponential stability and stochastic asymptotic stability. These stabilities will help us to determine when the infection will die out. Additionally, we provide conditions for the existence and uniqueness of a stationary distribution. To illustrate some of the theoretical results we present numerical simulations.

Finally, I will present some of the projects that my undergraduate students are currently working on.

Further Information

For further information, please contact Angie Domschine at the Department of Mathematics and Physics, Office: Maxcy 204, 203-932-7250, ADomschine@newhaven.edu.