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A Reaction-Diffusion Lyme Disease Model with Seasonality

In this talk, I will report our recent research on a reaction-diffusion Lyme disease model with seasonality. In the case of a bounded habitat, we obtain a threshold result on the global stability of either disease-free or endemic periodic solution. In the case of an unbounded habitat, we establish the existence of the disease spreading speed and its coincidence with the minimal wave speed for time-periodic traveling wave solutions. We also estimate parameter values via some published data, and use them to study the Lyme disease transmission in Port Dove, Ontario. Our numerical simulations are well consistent with the obtained analytic results. This talk is based on my joint work with Yuxiang Zhang.