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Global dynamics of a nonlocal periodic reaction-diffusion model of Chikungunya disease

In this talk, we propose a nonlocal reaction-diffusion model of Chikungunya disease with seasonality (temperature and rainfall), spatial heterogeneous structure, periodic maturation delay, and periodic extrinsic incubation period. We introduce the basic reproduction number R_m for the vector and the basic reproduction ratio R_0 for the disease to describe the global dynamics of the model system. We further conduct a case study for the Chikungunya transmission in Ceará, Brazil. Our numerical simulations are well consistent with the analytic results. The effects of spatial heterogeneity and some control strategies will be also discussed. This talk is based on a joint work with Dr. Xiao-Qiang Zhao.