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Guangyu Zhao* (gzz0021@auburn.edu), Department of Mathematics and Statistics, Auburn University, Auburn, AL 36849, and **Shigui Ruan**. *Spatial and Temporal Dynamics of a Nonlocal Viral Infection Model*.

Recent studies suggest that spatial heterogeneity plays an important role in the within-host infection of viruses such as HBV, HCV, and HIV. This presentation will discuss a spatial model of viral dynamics on a bounded domain in which virus movement is described by a nonlocal (convolution) diffusion operator. The model is a spatial generalization of a basic ODE viral infection model that has been extensively studied in the literature. We investigate the principal eigenvalue of a perturbation of the nonlocal diffusion operator and show that the principal eigenvalue plays a key role similar to that of the basic reproduction number when it comes to determining the infection dynamics. Through analyzing the spectra of two matrix operators, it is shown that the model exhibits threshold dynamics. More precisely, if the principal eigenvalue is less than or equal to zero, then the infection-free steady state is asymptotically stable, while there is an infection steady state which is stable provided that the principal eigenvalue is greater than zero. (Received January 26, 2019)