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Xiulan Lai and **Xingfu Zou*** (xzou@uwo.ca), Department of Applied Mathematics, University of Western Ontario, London, Ontario Nx5 0K1, Canada. *Modeling the repulsion effect on superinfecting virions by infected cells.*

In this talk, we present some results on modeling the repulsion effect of superinfecting virion by infected cells. The mathematical model is described by a system of reaction diffusion equation, in which the diffusion of virus depends not only on its concentration gradient but also on the concentration of infected cells. The basic reproduction number, linear stability of steady states, spreading speed, and existence of traveling wave solutions for the model are discussed. It is shown that viruses spread more rapidly with the repulsion effect of infected cells on superinfecting virions, than with random diffusion only. For our model, the spreading speed of free virus is not consistent with the minimal traveling wave speed. With our general model, numerical computations of the spreading speed shows that the repulsion of superinfecting virion promotes the spread of virus, which confirms, not only qualitatively but also quantitatively, the experimental result of Doceul et al. (Science, 2010) (Received February 03, 2017)