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Kazuo Yamazaki* (kyamazak@ur.rochester.edu), Hylan 1017, Department of Mathematics, University of Rochester, Rochester, NY 14627, and **Xueying Wang** (xueying.wsu@gmail.com), PO Box 643113, Department of Mathematics and Statistics, Washington State University, Pullman, WA 99164. *Global stability and uniform persistence of the reaction-convection-diffusion cholera epidemic model.*

This talk concerns the speaker's work, partially in collaboration with Prof. Xueying Wang of Washington State University.

We study the global stability issue of the reaction-convection-diffusion cholera epidemic PDE model and show that the basic reproduction number serves as a threshold parameter that predicts whether cholera will persist or become globally extinct. Specifically, when the basic reproduction number is beneath one, we show that the disease-free-equilibrium is globally attractive. On the other hand, when the basic reproduction number exceeds one, if the infectious hosts or the concentration of bacteria in the contaminated water are not initially identically zero, we prove the uniform persistence result and that there exists at least one positive steady state.

We also discuss work in progress and difficult remaining problems concerning Ebola virus disease model, Zika virus model, as well as extension to the case when the diffusivity coefficients among the susceptible, infected and recovered hosts are not all equal. (Received May 10, 2017)