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Jude Dzevela Kong* (jk1567@dimacs.rutgers.edu), 96 Frelinghuysen Road, Piscataway, NJ 08854, and **William Davis** and **Hao Wang**. *Indirect Transmitted Infectious Diseases: from Microscopic to Macroscopic Cycles*.

Many infectious diseases that spread indirectly via reservoir such as cholera remain endemic and epidemic in the world, causing thousands of deaths annually in locations that lack adequate sanitation and water infrastructures. In this talk, I will present an infectious disease transmission model that includes the dynamics of bacteriophage and bacteria, and contains an indirect infection term which accounts for the minimum infectious dose of the bacteria. Using this model, I determine what drives cyclical outbreaks of infectious diseases in endemic regions and suggest ways by which such outbreaks can be prevented. In addition, I will present a region in the parameter space of our model that leads to chaotic behaviour. This could be used to explain the irregularity in the seasonal patterns of outbreaks amongst different countries, especially if the positive relationship between bacterial proliferation and temperature is considered. (Received September 25, 2018)