

1014-60-566

Rachel Kuske, Luis F. Gordillo and Priscilla E. Greenwood* (pgreenw@math.asu.edu),
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Oscillations via Coherence Resonance in SIR.*

Sustained nearly regular oscillations in prevalence of infectious diseases such as measles, chickenpox, and flu in large populations have been a subject of puzzlement for many years. Also curious is that stochastic simulations of an SIR (susceptible-infectious-removed) model may show sustained oscillations, whereas the oscillations of the corresponding deterministic model are damped. In this talk we use a multiscale argument to show that the stochastic SIR path, in some parameter range, is close in law to a randomly modulated periodic function whose frequency is determined by the dynamics of the corresponding deterministic SIR. (Received September 20, 2005)