Dynamics of epidemic models with stochastic perturbations

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Mathematical models are widely used to describe and control the dissemination of diseases in the population. Stochasticity is introduced to bring new insight into the modelling of population dynamics of diseases. Many systems in nature divulge stochasticity and are subject to stochastic perturbations. In this talk, we present differential equations with stochastic perturbations. We present briefly the existence and uniqueness of the global positive solution to the stochastic system. We present the stability conditions and illustrate the simulation results for the proposed model. The model parameters are estimated using the updated data estimation method, and the proposed model is validated. Finally, we present a computational experiment and validate the model by performing statistical analysis for the actual data for some diseases like COVID-19 and acute respiratory diseases.