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Waning immunity in a two-strain disease model

Motivated by the interactions between two strains of the virus causing Dengue Fever, we consider a model essentially taking the form of two mutually coupled SIRS models, with general density function for the duration of stay in each of the compartments, leading to a system of nonlinear functional-differential equations. We consider the stability of equilibria, detect Hopf bifurcations and investigate the influence of the distribution of the density function on these stability properties.