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The global stability of an SIRS model with infection age

Infection age is an important factor affecting the transmission of infectious diseases. In this talk, we consider an SIRS model with infection age, which is described by a mixed system of ordinary differential equations and partial differential equations. The expression of the basic reproduction number R_0 is obtained. If $R_0 \leq 1$ then the model only has the disease-free equilibrium, while if $R_0 > 1$ then besides the disease-free equilibrium the model also has an endemic equilibrium. Moreover, if $R_0 < 1$ then the disease-free equilibrium is globally asymptotically stable otherwise it is unstable; if $R_0 > 1$ then the endemic equilibrium is globally asymptotically stable under additional conditions. The theoretical results are illustrated with numerical simulations. This is a joint work with J. Yang and F. Zhang.