

Optimal Control Applied to Immuno-epidemiological Models

An immuno-epidemiological model is formulated and analyzed to show that we have a well-posed model comprising a “within-host” system of ordinary differential equations (ODEs) with a “between-host” system of partial differential equations and ODEs. Stability results for the model are investigated. Using a representation from the method of characteristics and a fixed point argument, we prove the existence and uniqueness of a solution to our system. An optimal control problem for the immuno-epidemiological model is considered. This work is in collaboration with Suzanne Lenhart, Maia Martcheva and Souvik Bhattacharya.