

Control Theory for HIV Dynamics: Sliding Mode Control in Antiviral Drug Therapy

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We study the dynamics of human immunodeficiency virus (HIV) infection under HIV antiviral drug therapy. In sense of control theory, the drug efficiency is treated as an controller. In this paper, we reduce the nonlinear terms and reconstruct problem as mathematical model in control system. The sliding mode control (SMC) is applied to control contact rate between CD4+ T lymphocyte (CD4+ T-cell) and HIV. A switching controller is investigated to establish asymptotically stability of the sliding surface as desired. Finally we illustrate simulation results of CD4+ T-cells, infected T-cells, Viral load and control action.

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