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A COMPARATIVE STUDY OF DIFFERENT OPTIMAL CONTROL STRATEGIES OF MEDICINE ADMINISTRATION FOR HIV VIRUS TREATMENT

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Considering a model that describes the spread of HIV in human body, this work proposes different strategies to minimize the side effects of medication by introducing control variables that represent the evolution of the medication levels with time. Each strategy corresponds to the definition of a prescribed performance function to be optimized. For a given performance function, an optimal medication strategy is obtained by means of Pontryagin's maximum principle. To solve the set of nonlinear ordinary differential equations that describe the dynamics of susceptible, infected, active and HIV cells, we will make use of grid refinement strategies to optimize the total computation time.