Mathematical Analysis of the Global Dynamics Model for HIV Infection of $CD4^+$ T Cells with Treatment using Adomian Decomposition Approach

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Abstract: A compartmental epidemic model introduced by Liancheng and Micheal [1], was examined. The model incorporated a nonlinear incidence rate and treatment. A bifurcation analysis was performed by applying the bifurcation method introduced in [2], which is based on the use of the center manifold theory. Forward bifurcation, was derived. Adomian Decomposition Method (ADM) was also employed to compute an approximation to the solution of the non-linear system of differential equations governing the problem. Maple is used to carry out the computations and graphical results were presented.

Keywords and phrases: HIV infection, Basic reproduction number, forward bifurcation. Adomian decomposition method