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Ellina Grigorieva* (egrigorieva@twu.edu), PO BOX 425262, Denton, TX 76204, and **Evgenii Khailov** and **Andrei Korobeinikov**. *Optimal control of HIV treatment*.

We consider a 3 -dimensional nonlinear control model describing possible effect of medication intake (bounded control parameter) on HIV infected patients and his (her) possible recovery. The ODE model describes the dynamics of a viral infection with lytic and nonlytic immune response and has the following phase variables: populations of infected and uninfected cells, and population of immune response cells. The optimal control problem of minimizing the infected cells is stated and solved. Optimal trajectories of the system are obtained analytically under condition of the absence of own immune system. Numerical simulation demonstrate behavior of the model under different system's parameters. (Received September 19, 2011)