

## Stabilization Control of the Nonlinear AIDS Model Based on the Theory of Polynomial Fuzzy Control Systems

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**Abstract :** In this paper, we introduced AIDS disease at first, then proposed dynamic model illustrate its progress, after expression of a short history of nonlinear modeling by polynomial phasing systems, we considered the stability conditions of the systems, which contained a huge amount of researches in order to modeling and control of AIDS in dynamic nonlinear form, in this approach using a frame work of control any polynomial phasing modeling system which have been generalized by part of phasing model of T-S, in order to control the system in better way, the stability conditions were achieved based on polynomial functions, then we focused to design the appropriate controller, firstly we considered the equilibrium points of system and their conditions and in order to examine changes in the parameters, we presented polynomial phase model that was the generalized approach rather than previous Takagi Sugeno models, then with using case we evaluated the equations in both open loop and close loop and with helping the controlling feedback, the close loop equations of system were calculated, to simulate nonlinear model of AIDS disease, we used polynomial phasing controller output that was capable to make the parameters of a nonlinear system to follow a sustainable reference model properly.

**Keywords :** polynomial fuzzy, AIDS, nonlinear AIDS model, fuzzy control systems

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