

A Simple Linear Controller Design to Ensure Global Exponential Stability for a Class of Uncertain Fifth-Order Nonlinear Systems

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Abstract: *This paper intends to explore the controller design problem for a class of uncertain fifth-order nonlinear control systems. Combining the theory of differential and integral inequalities, a linear controller will be proposed to promote a class of nonlinear control systems with multiple uncertainties to achieve the goal of global exponential stability. In addition, the guaranteed exponential convergence rate of such uncertain nonlinear systems will also be precisely calculated. Finally, some numerical simulation results will also be presented to verify and illustrate the correctness of this main theorem and the design process of the controller*

Keywords: Nonlinear system, Global exponential stabilization, Uncertain systems, Linear control, Multiple uncertainties

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