

On nonautonomous H^∞ control problem: linear and nonlinear cases.*

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Abstract

Using methods of the theory of nonautonomous linear differential systems we study nonautonomous H^∞ control problems with infinite horizon. We pass from a Riccati equation to a linear nonautonomous Hamiltonian system. Using the concepts and properties of exponential dichotomy and rotation number we define a minimal attenuation value and prove stability when the disturbance is zero. Then we consider a nonlinear nonautonomous H^∞ control problem formulated as a perturbation of a linear one. Using the concept of exponential dichotomy we obtain stabilization and attenuation results.

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