

[2009-0580] A Robust Adaptive Dynamic Surface Control for Nonlinear Systems with Hysteresis Input

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摘要

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[2009-0580] A Robust Adaptive Dynamic Surface Control for Nonlinear Systems with Hysteresis Input

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Abstract

In this paper, a robust adaptive dynamic surface control for a class of uncertain perturbed strict-feedback nonlinear systems preceded by unknown backlash-like hysteresis is proposed. The main advantages of our scheme are that it can eliminate the explosion of complexity problem when the hysteresis is fused with backstepping design and by introducing an initializing technique, the \mathcal{L}_{∞} performance of system tracking error can be guaranteed.

It is proved that the new scheme can guarantee semiglobal stability of the closed-loop system and make the convergence of the tracking error into an arbitrarily small residual set. Simulation results are presented to demonstrate the efficiency of the proposed scheme.

Key words

[Dynamic Surface Control](#) [Backlash-like Hysteresis](#) [Adaptive Control](#) [Backstepping](#)

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