Robust exponential stabilisation of a class of nonlinear systems using a novel technique of higher order sliding mode control

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Abstract: In this work, we propose a novel technique of higher order sliding mode control in order to solve the problem of chattering phenomenon which appears, generally, with standard sliding mode controller. The proposed approach provides an exponential stability on the sliding surface and guarantees the robustness of the closed loop system against uncertainties and external matched disturbances. The resulting controller has been applied to control an induction motor. Numerical simulations are developed to show the effectiveness of the proposed approach.

Keywords: nonlinear systems; higher order; sliding mode control; SMC; induction motor.


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