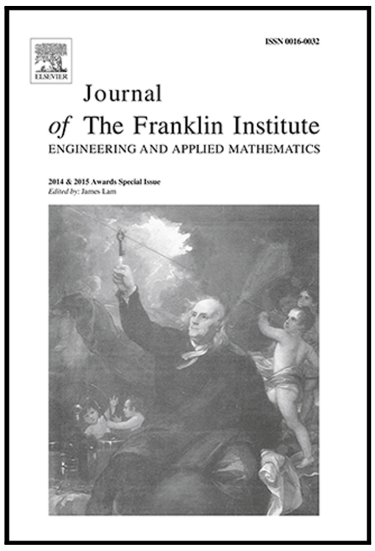

Global Finite Time Stabilization of Pure-feedback Systems with Input Dead Zone Nonlinearity

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Highlights

- A systematic procedure is developed for solving the problem of global finite time stabilization of pure-feedback systems with dead-zone input;
- A novel system transformation technique is introduced to circumvent the difficulties arising from nonaffine properties. The finite-time stabilizer is constructed based on the strengthened finite-time Lyapunov stability theorem and the obtained results can accelerate convergence speed and decrease settling time explicitly;
- As further extensions, the development of finite-time stabilizer for uncertain pure-feedback systems and the derivation of finite-time tracking controller are also presented.
- An application example for finite-time tracking control of the longitudinal motion dynamics of a missile is provided to illustrate the effectiveness of the proposed approach.