



CENTRO DE INVESTIGACIÓN Y DE ESTUDIOS AVANZADOS DEL IPN

El Departamento de Control Automático

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Seminario Departamental

Nonlinear Feedback Design for Fixed-Time Stabilization of Linear Control Systems

Dr. Andrey Polyakov

Institute of Control Sciences,
Russian Academy of Sciences, Moscow

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Planta Baja del Depto. de Control Automático, CINVESTAV-IPN, Unidad Zacatenco, D.F.

Abstract : Nonlinear control algorithms of two types are presented for uncertain linear plants. Controllers of the first type are stabilizing polynomial feedbacks that allow to adjust a guaranteed convergence time of system trajectories into selected neighborhood of the origin independently on initial conditions. The control design procedure uses block control principles and finite-time attractivity properties of polynomial feedbacks. Controllers of the second type are modifications of the second order sliding mode control algorithms. They provide global finite-time stability of the closed-loop system and allow to adjust a guaranteed settling time independently on initial conditions. Control algorithms are presented for both single-input and multi-input systems. Theoretical results are supported by numerical simulations.