# Saturated Switching Systems [

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Engineering   Chemical engineering   Systems theory   Astronautics

Machinery   Engineering   Control   Systems Theory, Control   Industrial

Chemistry/Chemical Engineering   Automotive Engineering   Manufacturing,

Machines, Tools   Aeronáutica

Monografía

Saturated Switching Systems treats the problem of actuator saturation, inherent in all dynamical systems by using two approaches: positive invariance in which the controller is designed to work within a region of non-saturating linear behaviour; and saturation technique which allows saturation but guarantees asymptotic stability.The results obtained are extended from the linear systems in which they were first developed to switching systems with uncertainties, 2D switching systems, switching systems with Markovian jumping and switching systems of the Takagi-Sugeno type.The text represents a thoroughly referenced distillation of results obtained in this field during the last decade. The selected tool for analysis and design of stabilizing controllers is based on multiple Lyapunov functions and linear matrix inequalities. All the results are illustrated with numerical examples and figures many of them being modelled using MATLAB.Saturated Switching Systems will be of interest to academic researchers in control systems and to professionals working in any of the many fields where systems are affected by saturation including: chemical and pharmaceutical batch processing, manufacturing (for example in steel rolling), air-traffic control, and the automotive and aerospace industries

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**Contenido:** The Regulator Problem for Linear Systems with Constrained Control -- Introduction to Switched Systems -- Constrained Control of Switching Systems: A Positive Invariance Approach -- Stabilization of Saturated Switching Systems -- Stabilization of Saturated Switching Systems with Uncertainties -- Stabilization of Uncertain State Constrained Discrete-time Switched Systems -- Stability Analysis of Positive Switching Linear Discrete-time Systems -- Srabilization of Discrete 2-d Switching Systems by State Feedback Control -- Stabilization of 2-d Switching Systems by Output Feedback Control -- Stabilization of Switching Takagi(QA(B(3C(BSugeno Systems -- Stability of Discrete-time Linear Systems with Markovian Jumping Parameters and Constrained Control

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