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Brief paper

# Controller design for Markov jumping systems subject to actuator saturation $\hat{a}^{\sim} \dagger$

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## Abstract

In this paper, the stochastic stabilization problem for a class of Markov jumping linear systems (MJLS) subject to actuator saturation is considered. The concept of *domain of attraction in mean square sense* is used to analyze the closed-loop stability. When the jumping mode is available, a mode-dependent state feedback controller is developed. Otherwise, we give a less conservative approach to design the mode-independent state feedback controller. Both design procedures can be converted into a set of linear matrix inequalities (LMIs). Finally, a numerical example is provided to show the effectiveness of the techniques.



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## Keywords

Markov jumping linear systems; Constrained inputs; Domain of attraction in mean square sense; Linear matrix inequality (LMI)

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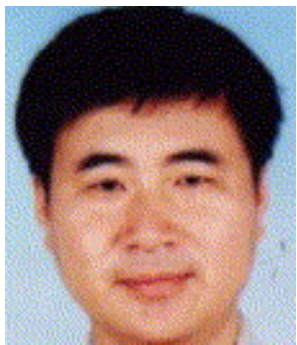




**El-Kebir Boukas** was born in Morocco. He received the engineer degree in electrical engineering in 1979 from Ecole Mohammadia d'Ingenieurs, Rabat, Morocco, and the M. Sc. A and Ph. D. degrees in Electrical engineering both from Ecole Polytechnique de Montreal, Canada respectively at 1984 and 1987.

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His research interest include stochastic control, robust control, optimal control, modeling and control of flexible manufacturing systems, mechatronics. He is the author of three books in control and more than 25 invited chapters in edited books. He is the author of more than 200 technical publications most of them are in control theory and manufacturing systems.



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