



Seminário (Presencial/Online)

CIMA/DMAT/UÉ

Colégio Luís António Verney, Anfiteatro n.1

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A survey on Stability of Switched Systems with partial state reset

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Abstract

This talk is devoted to the study of stability of systems which are defined by a finite family of time invariant linear systems together with some switching laws. The switching laws determine how the invariant systems commute among themselves. We assume that for each commutation time instant the state trajectory may change discontinuously due to reset application. These systems are designed by reset switched systems. Two types of resets are considered - total and partial, depending if all state components or only part of them are available for reset. In this sense, we distinguish (total) reset switched systems and partial reset switched systems. We analyze the stability of reset switched systems, using Lyapunov theory, under two perspectives. Not only we determine some conditions according to which a reset switched system is stable, but also we identify some resets that, when applied, assure the stability of system. We conclude that, for total reset, it is always possible to choose adequately the resets in order to obtain stability. However, that is not always possible if partial reset is in question.

Keywords: Switched systems, stability, Lyapunov quadratic functions, partial state reset

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References

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