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Stability of Hybrid Systems

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Abstract : This paper is concerned with exponential stability of switched linear systems with interval time-varying delays. The time delay is any continuous function belonging to a given interval, in which the lower bound of delay is not restricted to zero. By constructing a suitable augmented Lyapunov-Krasovskii functional combined with Leibniz-Newton's formula, a switching rule for the exponential stability of switched linear systems with interval time-varying delays and new delay-dependent sufficient conditions for the exponential stability of the systems are first established in terms of LMIs. Finally, some examples are exploited to illustrate the effectiveness of the proposed schemes.

Keywords : exponential stability, hybrid systems, timevarying delays, Lyapunov-Krasovskii functional, Leibniz-Newton's formula
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