Finite-time Stability and Control
of Linear DAEs with Delays

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Abstract: In this paper, some basic results from the area of finite-time stability and control are extended to linear differential-algebraic equations (DAEs) with time delay. The time delay is a continuous function belonging to a given interval and not required to be differentiable. Based on Lyapunov-Krasovskii function method combined with new linear matrix inequality (LMI) technique, novel delay-dependent criteria for robust stability and stabilization of linear DAEs with time-varying delays are established in terms of LMIs. Numerical examples are given to illustrate the effectiveness of the obtained results.

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