Lyapunov stability analysis of Caputo fractional-order nonlinear systems

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Abstract

This paper deals with the stability analysis of the fractional nonlinear systems. It treats the asymptotic stability of the fractional nonlinear systems with Hurwitz state matrix, using the Lyapunov direct method. We give algebraic conditions under which the fractional nonlinear systems are asymptotical stable. Two numerical examples are provided to illustrate the proposed theoretical results.

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