عنوان مقاله:

Fractional sliding mode control design for robust synchronization and anti-synchronization of fractional order nonlinear chaotic systems in finite time

محل انتشار:

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خلاصه مقاله:

This paper deals with the problem of synchronization (anti-synchronization) of fractional nonlinear systems. Here, due to the advantages of fractional calculus and sliding mode control, we provide a new fractional order sliding mode control for synchronization (anti-synchronization) problems. So, in this paper a novel sliding surface is introduced and with and without the existence of uncertainties and external disturbances, finite-time synchronization is achieved by designing a new fractional sliding mode control. This method applied to the class of fractional order nonlinear systems and sufficient conditions for achieving synchronization/anti-synchronization are derived by the use of fractional Lyapunov theory. The method is perform on different fractional order nonlinear chaotic system which confirm the applicability of the method. Here, we bring two of them for confirmation. That is to say, to show the effectiveness and robustness of the proposal, we applied our method on two identical fractional order permanent magnet synchronous .machine to verify the efficacy

کلمات کلیدی:

fractional-order nonlinear system, chaos synchronization, anti-synchronization, Lyapunov Stability, uncertainty and disturbance