عنوان مقاله:

Immersion and Invariance Based Fault Tolerant Adaptive Spacecraft Attitude Control

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خلاصه مقاله:

In this paper, an immersion and invariance (I&I) adaptive fault tolerant satellite attitude tracking control scheme is proposed. The proposed controller is capable of track the desired trajectory inthe presence of unknown actuator multiplicative faults and unknown inertial matrix. Also based on Lyapunov direct method, all closedloop signals are proven to be globally asymptotically stable. The main advantage of this controller is improving closed loopperformance while maintaining stability in the presence of unknown actuator faults. This method does not rely on certainty equivalenceprinciple so it can be used to control the transient response of overall closed loop system by means of controlling the parameter estimationbehavior which is not possible in traditional adaptive control. Numerical simulations are performed to demonstrate the effectiveness of proposed control scheme.

کلمات کلیدی:

Fault tolerant control, spacecraft attitude control, actuator fault, Immersion and invariance

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/208776