عنوان مقاله:

Robust Attitude Control of Spacecraft Simulator with External Disturbances

محل انتشار:

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

The spacecraft simulator robust control through H∞-based linear matrix inequality (LMI) and robust adaptive method is implemented. The spacecraft attitude control subsystem simulator consists of a platform, an air-bearing and a set of four reaction wheels. This set up provides a free real-time threedegree of freedom rotation. Spacecraft simulators are applied in upgrading and checking the control algorithms performance in the real space conditions. The LMI controller is designed, through linearized model. The robust adaptive controller is designed based on nonlinear dynamics in order to overcome a broader range of model uncertainties. The stability of robust adaptive controller is analysed through Lyapunov theorem. Based on these two methods, a series of the laboratory and computer simulation are made. The tests' results indicate the accuracy and validity of these designed controllersin the experimental tests. It is observed that, these controllers match the computer simulation results. The spacecraft attitude is converged in a limited time. The laboratory test results indicate the controller ability in composed uncertainty conditions (existence of (disturbances, uncertainty and sensor noise

کلمات کلیدی:

Spacecraft Attitude Control Simulator,Linear Matrix Inequality,Robust Adaptive Controller,Hardware in the Loop,

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