عنوان مقاله:

Dynamic Modeling of a Satellite Equipped with Variable Speed Control Moment Gyros

محل انتشار:

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خلاصه مقاله:

In this paper, the equations of motion of a satellite equipped with N single gimbal Variable Speed Control Moment Gyros (VSCMG), are derived by the use of Kane's method. The numbers of VSCMGs, as well as their positions and the direction of gimbal axes have been chosen arbitrary. Compared to other researches, no assumptions have been made of ignoring mass and inertia of the gimbals to increase the precision of the satellite dynamic simulation. The resultant equations are compared to the results obtained from other methods. Analytical equations are solved in MATLAB for a pyramid configuration of VSCMGs and compared to the results obtained from ADAMS model for verification. The simulation results show good compatibility between analytical methods and the results of multi-body dynamics analysis in ADAMS.

کلمات کلیدی:

Satellite; Dynamic Modeling; Kane's method; Control Moment Gyros