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Design Analysis of Tilting System for Spacecraft Transportation

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Abstract : Satellite transportation is inevitable step during the course of integration testing and launch. Large satellites are transported in horizontal mode due to constraints on commercially available cargo bay dimensions & on road obstacles. To facilitate transportation of bigger size spacecraft in horizontal mode a tilting system is released. This tilting system consists of tilt table, columns, hinge pin, angular contact bearings, slewing bearing and linear actuators. The tilting system is very compact and easy to use however it is also serves the purpose of a fixture so it is of immense interest to know the stress and fundamental frequency of the system in transportation configuration. This paper discusses design aspects and finite element analysis of tilting system-cum-fixture using Hypermesh/Nastran.

Keywords : tilt table, column, slewing bearing, stress, modal analysis
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