SPACE SYSTEMS SYMPOSIUM (D1)
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MODELING OF A PERIPHERAL POINTING ARCHITECTURE FOR THE SPACE TESTBED

Abstract

Next generation segmented space telescopes such as the James Webb Space Telescope (JWST) require highly accurate figure maintenance and pointing control to have clear images from space. In the NASA sponsored Structures, Propulsion, and Control Engineering (SPACE) Center, a Peripheral Pointing Architecture (PPA) is designed and modeled; it must maintain a pointing accuracy of 2 arc seconds. A finite element model of the PPA is developed using Finite Element Modeling and Post processing (FEMAP). Modal analysis is performed on the finite element model, and it finds the mode shapes, eigenvalues, natural frequency, and degrees of freedom. The mass matrix, M, and stiffness matrix, K, are extracted using DMAP (Direct Matrix Abstraction Program) which is the secondary development language of NX Nastran.