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Large Angle Transient Dynamics (Latdyn) User's Manual (Paperback)

By National Aeronautics and Space Adm Nasa

Independently Published, United States, 2018. Paperback. Condition: New. Language: English. Brand new Book. A computer code for modeling the large angle transient dynamics (LATDYN) of structures was developed to investigate techniques for analyzing flexible deformation and control/structure interaction problems associated with large angular motions of spacecraft. This type of analysis is beyond the routine capability of conventional analytical tools without simplifying assumptions. In some instances, the motion may be sufficiently slow and the spacecraft (or component) sufficiently rigid to simplify analyses of dynamics and controls by making pseudo-static and/or rigid body assumptions. The LATDYN introduces a new approach to the problem by combining finite element structural analysis, multi-body dynamics, and control system analysis in a single tool. It includes a type of finite element that can deform and rotate through large angles at the same time, and which can be connected to other finite elements either rigidly or through mechanical joints. The LATDYN also provides symbolic capabilities for modeling control systems which are interfaced directly with the finite element structural model. Thus, the nonlinear equations representing the structural model are integrated along with the equations representing sensors, processing, and controls as a coupled system. Abrahamson, A. Louis and Chang, Che-Wei...



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