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SIMULATION CALCULATION METHOD AND TEST VERIFICATION OF THE AXIAL
CONNECTION STIFFNESS OF THE CLAMP BAND DEVICE

Abstract

The clamp band device(CBD) is used to connected satellite and launch vehicle. The axial connection stiffness of the CBD is an important factor affecting the vibration response of the satellite. Nonlinear contact characteristics between the CBD, the satellite and the launch vehicle can not be considered in the analytical calculation of axial connection stiffness. In order to solve this problem, a simulation calculation method for the axial connection stiffness of the CBD is proposed in this paper. Not only the nonlinear contact characteristics due to different material contacts, but also the nonlinear contact characteristics due to the axial load are all considered in this method. In order to verify the correctness of the method, the axial connection stiffness test of the CBD is carried out. The test results show that the maximum deviation of the simulation calculation result is less than 5% from the experimental result. This method can be used as a method for calculating the axial connection stiffness of the CBD.