عنوان مقاله:

Dynamic Stability of Step Beam Carrying Concentrated Masses under Follower Force

محل انتشار:

مجله علوم و مهندسی هوافضا, دوره 4, شماره 4 (سال: 1386)

تعداد صفحات اصل مقاله: 6

نویسنده:
M. Sohrabian

خلاصه مقاله:

This paper investigates the dynamical behavior of an assembled beam like structure with tip masses modeling a two stage space rocket structure. The beam like structure is composed of two beams connected together carrying two masses at the free ends to model the payload, and the stabilizing fins mass properties. The effect of non-homogeneity of the structure due to different cross section properties at each stages of the rocket and the tip masses, heavily affects the dynamical behavior and stability regions of the structure if excited using a follower force. The rocket thrust is considered in this study as follower force as in flexible space structures the thrust direction is affected by the lateral vibrations of the structure. As demonstrated in this study the primarily mode of instability in such a structure, i.e. divergence or flutter, depends on the stiffness and mass distributions of the structure. This would enable the designer to alter the mode of instability by modifying these distributions. In inspecting the instability regions of the structure under follower force, and establishing an analytical solution, the Galerkin method is employed and the stability regions of the structure are determined.

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/1792546