

عنوان مقاله:

Design and simulation Sandwich Composite Fairing Shells Using FEM Analyzing

محل انتشار:

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خلاصه مقاله:

In order to investigate and improve the destructive effects of maneuvers that the flying body has during a flight in space, it is necessary to know the forces acting on the flying body. In this paper, an analysis of the composite sandwich structure of a launch vehicle fairing is considered. This study explores carbon-fiber-reinforced skins with different cores used to deploy satellites and can be used as a space habitat. In order to calculate the effective forces on sandwich skins, finite element method (FEM) was used to determine three-dimensional stress and strain. Three types of structural models with honeycomb and solid core under dynamic loads were compared and evaluated. Models were compared in three category of stress distribution, strain and weight. The honeycomb core pattern helps reduce the structure's weight up to half of the structure compared to a solid core. The effect of mesh size sensitivity applied on simulations. The results showed that the amount of stress and strain were the same in all models and only differed in dispersion. However, the composite sandwich structure with aluminum core showed more strength against the applied forces.

کلمات کلیدی:

Honeycomb sandwich structures, Fairing, Satellite, Aerodynamic flight load, FEM Mesh Sensitivity

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