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RESEARCHES INTO THE MECHANICAL CHARACTERISTICS AND OPTIMIZATION OF THE LINKAGE OF A STRAP-ON LAUNCHER

Abstract

In order to increase the launching capability, the strap-on launch vehicle is widely adopted. In this type of vehicle, the structural design of the linkages is one of the most key techniques. Based on the typical structure, the mechanical characteristics are researched in this paper firstly, and the different axial stiffness in tension and compression property is revealed. Based on the research of the typical property, an analytical schematic model is established and verified, then every design parameter that affects structure's stiffness is researched. With this model, NSGA-II is used to optimize the structure, which could effectively improve the mechanical property. This method will provide a reference and a basis for the linkage's structure design.