

MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Space Structures I - Development and Verification (Space Vehicles and Components) (1)

Author: Mr. Liming Fan
School of Astronautics, Beihang University, Beijing 100191, PR China, China

OPTIMIZATION FOR STRUCTURE SYSTEM OF MICRO-SATELLITE

Abstract

Structural optimization is divided into size optimization, shape optimization and topology optimization. In general, the results of topology optimization can not be applied to engineering practice, but can be used to reveal the optimal transmission path of the carrier. In this paper, the topological optimization technique is used to optimize the structure of a micro-satellite system, and the position of the satellite components is adjusted according to the optimization results. Thus the configuration and force path of the satellite are determined. On this basis, the size optimization technique is used to optimize the finite element model of the satellite, and the design of the satellite structure system satisfying the constraint condition is obtained. Compared with the original design, the optimized satellite structure quality is reduced by 31%, and the weight loss target is achieved.