

## Laser beam power applications utilizing advanced lightweight energy sources

*A. Hertzberg*

(Aerospace and Energetics Research Program, University of Washington,  
Seattle, Washington 98195, USA)

Continuous high power lasers offer a number of attractive beam power applications in the space environment. These range from the beaming of power from a central power satellite to other satellites to the utilization of laser beam power for rocket propulsion and aircraft propulsion from spacebased power stations. These concepts have in the past been hampered by the lack of a suitable space-based continuous high power electrical energy source. However, the recent renewed interest in space-based nuclear power systems has led to the creation of new power concepts offering power modules with available electrical energy in excess of 10 MW which can be lifted and deployed in a single shuttle launch. These new concepts are based on the lightweight liquid droplet radiator for heat rejection and recent advances in space structures in combination with novel nuclear power sources. These new power sources will be discussed as well as their implications for laser beam power applications. In particular, the paper will review current research underway at the University of Washington in cooperation with other research groups on this significant new potential.

## 利用轻型先进能源的激光束功率的应用

*A. Hertzberg*

(华盛顿大学航天和力能学研究计划)

连续高功率激光器的光束功率提供了许多在空间环境下引人注目的应用,包括中心动力卫星对其它卫星的波束辐射形式的动力传输和激光束在火箭推进以及空基动力站航天器推进方面的应用。过去,这种设想由于缺少合适的空基连续高功率电能源而受到妨碍。但最近对空基核动力装置重新发生兴趣,并导致新动力概念的产生,也就是动力组件的可用电能超过10 MW,可由一架航天飞机运载与部署。这种新概念建立在轻型液滴热辐射器和最近空间结构与其新型核动力源进展的基础上。本文对这种新型动力源和它与激光束功率应用的关系进行了讨论,特别评述华盛顿大学和其他研究组合作,在这个重大的新型课题方面当前的研究情况。