IAF SPACE POWER SYMPOSIUM (C3)
Solar Power Satellite (1)

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MMR-SPS, AN UPDATED CONCEPT DESIGN ON MR-SPS

Abstract

As a major infrastructure for human to use space energy, Space Solar Power has attracted extensive international attention. The research in this field has been carried out more than 50 years. In recent years, the United States, Japan, South Korea, ESA and the United Kingdom have increased their research efforts and proposed some new concepts. China proposed the Multi-rotation Joints Solar Power satellite (MR-SPS) and OMEGA space solar power in 2014. Based on the MR-SPS concept proposed in 2014, this paper presents an updated Modular Multi-rotation Joints Solar Power satellite concept. The key is to simplify the difficulty of long-distance high-voltage power transmission technology. Based on the distributed solar cell sub-arrays and conductive rotary joints, the transmitting antenna array is carried out by modularization design and distributed layout. Each solar cell sub-array and microwave transmitting antenna array are combined to form an independent solar power generation and energy transmission module. The entire Solar Power satellite is the extension of many solar power generation and energy transmission modules. The design scheme also greatly simplifies the difficulty of on-orbit assembly.