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RESEARCH ON APPLICATION OF EXTRA-HIGH POWER ELECTRIC THRUSTER TOWARDS
SPACE SOLAR POWER STATION

Abstract

The Space Solar Power Station (SSPS) is a very challenging concept of renewable energy system. It provides a strategic choice for solving the energy and climate change problems currently faced by human beings, and thus has been widely concerned and supported by all space powers in the world. As a grand space system, the on-orbit construction of SSPS will involve key technologies such as extra-large structure deployment and control technology, high-efficiency solar energy collection and conversion technology, super-high power transmission and management technology, microwave wireless power transmission technology, on-orbit assembly and maintenance, high-efficiency energy conversion material and devices, etc.. According to the proposed overall scheme of MW-level Modular Hierarchical Control Space Solar Power Station (MHC-DSPS) by China, this paper analyzed its construction and control strategy based on space super-large system lightweight and flexible design ideas, and discussed the application requirements of extra-high power electric thruster in SSPS. Finally, based on the characteristics of extra-high power system construction of SSPS, an application scheme of space extra-high power electric thruster supplied by hybrid bus direct drive was proposed.