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Author: Mr. Meng Xu
Beihang University, China, hflzxmsw@163.com

Mr. Jia Li
Beihang University (BUAA), China, 15508668863@163.com
Prof. Hai Huang
Beihang University, China, hhuang@buaa.edu.cn

A NEW POWER SYSTEM FOR DEEP SPACE MISSION

Abstract

There are only several probes launched for deep space missions till now, such as Pioneer 10, Voyager 1 and Voyager 2 because of various factors. Shortage of power in the deep space is one of these restrictions that can't be ignore for deep space missions which are conducted so far from the sun that the solar energy is too negligible to be used for missions. We think it's a method to set many solar power stations that collect solar power and store it in their large capacity battery package unit on the edge of area where solar array of solar power stations can get power relatively efficiently from to transmit power wirelessly to satellites or probes nearby when they require. In this paper, we estimate the approximate boundary of this area and model the Jupiter atmosphere exploration mission as an example to prove that the power station and probe are all in power balance state during this mission. At the same time, we advance the new structure of electronic power subsystem(EPS) corresponding to the station-based power supply system and analyse this electric structure from all aspect such as electric balance, electric parameters, reliability and so on. In conclusion, our formulation is still vague but is proved to be feasible on deep space missions.