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Author: Mr. Jia Li
Beihang University (BUAA), China, 15508668863@163.com

Mr. Meng Xu
Beihang University, China, hflzxmsw@163.com
Prof. Hai Huang
Beihang University, China, hhuang@buaa.edu.cn

A NEW CONTROL METHOD OF BATTERY CHARGING ON SATELLITE

Abstract

It's extremely important for satellite to maintain power supply subsystem in orbit. As the significant source of power supply subsystem, the battery of a satellite performs charge/ discharge cycles to keep energy balanced by storing/supplying power in orbit. The charging of the on-board battery needs to be carried out under a specific control mode. Commonly used methods are BCC (Battery Charge Controller) method, BCR (Battery Charge Regulator) method, and phase charging method, which combines BCC with BCR. These methods have their own advantages and disadvantages. In order to ensure fast charging speed and accurate, stable output voltage, specific control method need to be designed. Taking the common solar-powered satellite as an example, this paper adopts the optimal control strategy and proposes a new battery charging control method. Charging time and accuracy/stability of battery voltage, which are used to evaluate the control method in this paper, are considered to optimize the control method as well.