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# Study of the features of angular stabilization of spacecraft with flexible structural elements with the use mobile control methods

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The development of space power engineering is one of the well-known lines in rocket and space science and innovative technologies which attracts the attention of many scientists and researchers. Engineering solutions in space-based solar power plant design and wireless space-to-Earth and satellite-to-satellite power transmission and power spacecraft control methods have been substantiated theoretically to sufficient depth. However, despite this, there is a need to improve methods for and approaches to the development of an optimal design methodology for power spacecraft. A way to improve existing approaches to the development of space-based solar power plants and power satellites may be the use of mobile control methods in the development of an attitude and orbit control system. Such methods allow one to reduce power consumption for control operations.

The goal of this paper is to study the features of mobile control and construct a methodology for the development of solar power satellites' attitude and orbit control system (AOCS) using mobile control algorithms. The paper considers the features of mobile control algorithm synthesis for the attitude control and stabilization of solar power spacecraft (solar power plants and power satellites). Power spacecraft control tasks are classified, and the expediency of using mobile control methods is justified. An analysis is made for the stability problem that arises in controlling power spacecraft with flexible elements. The paper presents methodological recommendations on determining the AOCS design parameters for space-based solar power plants and power spacecraft for wireless satellite-to-satellite power transmission. This methodology may be used in power satellite development.

***Keywords:*** *power spacecraft, attitude and orbit control system, mobile control algorithms, methodology, wireless power transmission.*

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