Dear respected editor and reviewers,

It is our pleasure to submit the manuscript “***Maximum Allowable Current Determination of RBS By Using a Directed Graph Model and Greedy Algorithm***” to special issue **Novel Space Power System Design, Integration and Control Technologies** of **Space: Science & Technology**.

Reconfigurable Battery Systems (RBS) address the limitations of traditional battery systems, enhancing energy storage efficiency and reliability. Unlike traditional power systems, which connect batteries through fixed circuits and are constrained by the weakest battery, RBS uses additional switches to change battery series-parallel modes and isolate unhealthy batteries, ensuring higher reliability and longevity. As such, RBS is a promising solution for achieving high reliability, long lifespan, and fine-grained control, particularly in spacecraft applications.

Due to the flexibility of RBS, the system output can be dynamically adjusted. One indicator for RBS output capability is the Maximum Allowable Current (MAC), defined as the maximum output current that does not exceed the rated state of any battery in the RBS. To facilitate accelerated RBS design and fine-grained control of RBS operation, **we present a universal and automated greedy algorithm for determining the MAC of arbitrary RBS**. This algorithm guides the RBS to parallel as many batteries as possible. Its effectiveness has been verified on two existing RBS structures and a new RBS structure that we propose. The algorithm has also shown its applicability in scenarios involving battery isolation.

We believe that our proposed greedy algorithm has significant potential to advance the design and application of RBS in complex scenarios, such as the intricate working conditions of spacecraft and battery isolation. Therefore, we consider our work suitable for publication in **Space: Science & Technology**.

We hereby certify that this manuscript consists of original, unpublished work which is not under consideration for publication elsewhere. All authors have approved the manuscript and agree with its submission to your journal.

Thank you very much for your attention and consideration. We look forward to hearing from you soon.

Best regards,

Dr. Cheng Qian, on behalf of all authors

Beihang University

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