**A Microservice-Based Multi-Cluster Computation Platform for Space Mission Design**

*Y. Song1\*, X. Huang1, S. Yang1, L. Zhu1, Z. Yang**2, L. Deng2*

*1Software School, Beihang University, Beijing, China*

*\*Primary author contact details:* [*songyou@buaa.edu.cn*](mailto:songyou@buaa.edu.cn)

*2National Space Science Center, Chinese Academy of Sciences, Beijing, China*

1. **Introduction**

Large scale simulation is one of the dominant features in space mission design, which involves complex algorithms as well as calculation structures from a wide range of related research fields. In this work, we designed a high-performance integrated computation platform, which enables multiple client applications to invoke calculation formally and compactly in order to serve the space mission design. Based on the ideas of microservice and Logic-Interface orchestration method (LIOM), the proposed platform could integrate modules and/or algorithms from existing deployed clusters. Definition of calculation flow and dependency analysis method are used for performance optimization by achieving two-level parallel computing. In the production environment, the proposed computation platform has been applied in multiple space mission projects, such as Dark Matter Particle Explorer (DAMPE, also known as ‘Wukong’ in China), Quantum Teleportation Satellite (known as ‘Mozi’ in China) and Insight-HXMT (Hard X-ray Modulation Telescope)[1-4], which presents isolation between space mission design logic and various calculation implementations, featuring both efficiency and easy-to-use experience.

1. **References**

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