

## Numerical simulation of satellite potential control using charged particle beam emission

HOSHI, Kento<sup>1\*</sup>; MURANAKA, Takanobu<sup>2</sup>; KOJIMA, Hirotsugu<sup>3</sup>; USUI, Hideyuki<sup>4</sup>; SHINOHARA, Iku<sup>5</sup>; YAMAKAWA, Hiroshi<sup>3</sup>

<sup>1</sup>Graduate School of Engineering Kyoto University, <sup>2</sup>School of Engineering Chukyo University, <sup>3</sup>Research Institute for Sustainable Humanosphere, Kyoto University, <sup>4</sup>Graduate school of system informatics Kobe University, <sup>5</sup>Japan Aerospace Exploration Agency/Institute of Space and Astronautical Science

It is known that a satellite is charged by plasma in space.

Satellite charging on surface is a cause of discharge and malfunction electric equipment, and affect plasma diagnostics by the satellite potential accelerate ambient plasma, therefore a satellite is designed to mitigate surface charging. However, a perfect mitigation of satellite charging is difficult.

Thereby, a charging mitigation technique using electron emitter and ion emitter is often adopted. Satellite charging will be caused due to collisions with charged particles in plasma. In general, surface potential is determined by the balance of inflow current and outflow current. It becomes a positive value in the sunshine, and a negative value in the shade. The potential balance point can be controlled using charged particle beam emission.

We investigate a feasibility of satellite potential control under various environments using numerical simulation.

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