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PEM026-P11

Room:Convention Hall

Time:May 25 10:30-13:00

Experimental Study of Plasma Acceleration Using Rotating Electric Field for Electrodeless Plasma Thruster

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Electric propulsion system has a large specific impulse and is suitable for a long term space mission such as a space exploration. Some space missions using electric propulsions have been successfully conducted. However, in conventional electric propulsion systems, the discharge and acceleration electrodes are exposed to the plasma and the electrode deterioration restricts the life time of electric propulsion systems. To overcome this difficulty, we have been studying a electrodeless electric propulsion system using the helicon plasma source. In this study, the electromagnetic plasma acceleration concept called Lissajous acceleration is focused. In this acceleration concept, the plasma is accelerated by the Lorentz force generated by an applied rotating electric field and applied magnetic field. Plasma acceleration experiments have been conducted for validating the acceleration concept, and the experimental results will be presented.

Keywords: helicon plasma, electrodeless electric propulsion, rotating electric field