

Abstract Submitted
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Scaling Laws of Lissajous Helicon Plasma Accelerator toward Electric Propulsion in Space¹ IKKOU FUNAKI, T. MATSUOKA, JAXA/ISAS Japan, T. NAKAMURA, K. YOKOI, H. NISHIDA, TUAT Japan, K.P. SHAMRAI, Institute for Nuclear Research, Ukraine, T. TANIKAWA, Tokai U. Japan, T. HADA, S. SHINOHARA, Kyushu U. Japan — Scaling law of Lissajous Helicon Plasma Accelerator(LHPA) is derived and tested via PIC simulations with code VORPAL. In the LHPA, rotating transverse electric field in external longitudinal uniform magnetic field drives azimuthal current via ExB drift then thrust is produced due to Lorentz force. An 1D analytical model is developed which includes field penetration and ExB current estimation based on trajectory analysis. Scaling law of thrust as a function of parameters of RF drive frequency, applied RF voltage, plasma density, size of the thruster will be shown.

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