

Abstract Submitted
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Helicon Plasma Thruster Employing Rotating Magnetic Field Plasma Acceleration Method¹ TAKERU FURUKAWA, SHUNJIRO SHINOHARA, Tokyo University of Agriculture and Technology, DAISUKE KUWAHARA, Chubu University — Helicon Plasma Thruster (HPT) can be a next generation electric thruster since high-dense plasma can be generated with various operational parameters, and wear of plasma generation/acceleration grids (electrodes), which is typically seen in conventional electric thrusters, does not occur. We are conducting proposed, additional electrodeless plasma acceleration methods [1] to enhance the HPT performance e.g., Rotating Magnetic Field (RMF) plasma acceleration method [1,2]. Here, an azimuthal current can be driven in a plasma by the RMF application, and the plasma can be accelerated by an axial Lorentz force in the presence of a divergent magnetic field. The azimuthal current drive was demonstrated by the spatiotemporal measurements of the RMF. The acceleration effect becomes better by increasing an amplitude of ac current applied to the RMF antennas, leading to higher total thrust value. In this conference, current experimental results will be reported including above topics. [1] S. Shinohara *et al.*, *IEEE Trans. on Plasma Sci.* **42** (2014) 1245. [2] T. Furukawa, *et al.*, *Phys. Plasmas* **24** (2017) 043505, **26** (2019) 033505, *AIP Adv.* **7** (2017) 115204, and *Rev. Sci. Instrum.* **89** (2018) 043505.

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