

1. D. Kuwahara et al., Tokyo Univ. of Agri. Tech., Improvement of Thrust Characteristics of Helicon Plasma Thruster using Local Fueling Method.
2. T. Furukawa et al., Tokyo Univ. of Agri. Tech., Plasma Acceleration by Rotating Magnetic Field acceleration Method using Helicon Source.
3. S. Nishimura et al., Tokyo Univ. of Agri. Tech., Electrodeless Plasma Acceleration Using $m = 0$ Coil. (in this presentation)
4. T. Yamase et al., Tokyo Univ. of Agri. Tech., High Frequency, Low Pressure, Plasma Generation using Extremely Small Diameter Tube.

Abstract Submitted
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Electrodeless Plasma Acceleration Using $m = 0$ Coil SHUICHI NISHIMURA, DAISUKE ARAI, TAKUYA YAMAGUCHI, DAISUKE KUWAHARA, SHUNJIRO SHINOHARA, Tokyo Univ. of Agri. Tech. — We have been investigating electrodeless plasma acceleration method by the Lorentz force, using $m = 0$ coil (m is an azimuthal mode number) without electrode erosion condition, which leads to a deep space exploration in future [1,2]. The Lorentz force of j -theta * B_r is composed of two factors; the $m = 0$ coil can generate the azimuthal current j -theta by supplying an AC current (over 100 A) and the externally magnet make the static radial magnetic field B_r in divergent field configuration. In the past $m = 0$ coil experiment using the SHD [3], we have found increases of ion velocity and electron density by a factor of 2.5 and 3, respectively. In this research, detailed measurement have been done as to ion velocity, electric density and the azimuthal current to clarify the effect of $m = 0$ coil method on plasma acceleration. [1] S. Shinohara *et al.*, IEEE Trans. Plasma Sci. **42** (2014) 1245. [2] T. Ishii *et al.*, JPS Conf. Proc. **1** (2014) 015047. [3] D. Kuwahara *et al.*, Rev. Sci. Instrum. **84** (2013) 103502.

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