

Abstract Submitted
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Characterization of the plasma jet from a cylindrical Hall thruster¹ WILLIAM WILLCOCKSON, University of Colorado, YEVGENY RAITSES, ARTEM SMIRNOV, NAT FISCH, Princeton Plasma Physics Laboratory — The principle of operation of the cylindrical Hall thruster is in many ways similar to that of a conventional coaxial Hall thruster, i.e., it is based on a closed ExB electron drift in a quasineutral plasma with magnetized electrons. The cylindrical configuration offers a novel approach for scaling Hall thrusters to low power regimes, desirable for future microsatellite applications. Owing to the complex magnetic configuration of the cylindrical thruster with a strong axial component of the magnetic field, one might expect a large beam divergence and high energy ions escaping the thruster at large angles with respect to the thruster axis. In this study we use a two grid retarding potential analyzer to measure the angular ion energy distribution of the plasma plume for a miniaturized cylindrical Hall thruster. Preliminary results indicate the presence of a large population of energetic ions at large angles. It is also shown that the fraction of these ions can be substantially reduced for an optimized thruster configuration [A. Smirnov, invited speaker at this conference].

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