

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**Optimization of the Performance of Cylindrical Hall Thrusters**

ARTEM SMIRNOV, YEVGENY RAITSES, NATHANIEL J. FISCH, Princeton Plasma Physics Laboratory — Cylindrical Hall thrusters have lower surface-to-volume ratio than conventional (annular) design Hall thrusters and, thus, seem to be more promising for scaling down.<sup>1,2</sup> We present the results of the performance study of the cylindrical Hall thrusters with channel outer diameters of 2.6 cm and 3 cm. The effect of the magnetic field distribution and segmented electrodes on the thruster discharge characteristics and efficiency is investigated. The experimental results demonstrate a substantial flexibility in the thruster magnetic field configuration, which is a key tool in achieving the high-efficiency operation. The electron confinement and ion acceleration can be optimized over a family of realizable magnetic field distributions.

<sup>1</sup>Y. Raitses and N.J. Fisch, *Phys. Plasmas* **8**, 2579 (2001).

<sup>2</sup>Artem Smirnov, invited talk, this conference.

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Date submitted: 21 Jul 2006

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