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Investigation of a Low-Frequency Rotating Spoke in Hall Thrusters[1] CHARLES L. ELLISON, YEVGENY RAITSES, NATHANIEL FISCH, Princeton Plasma Physics Laboratory — In recent studies [1], we identified the presence of an E×B rotating spoke in the cylindrical Hall thruster operating with a cusp-shaped magnetic field. The characteristics of the rotating spoke resemble previous observations for conventional Hall thrusters of the annular geometry with predominantly radial magnetic field [2, 3]. It was suggested that the spoke is responsible for the enhancement of the electron current across the magnetic field. In this work, we use a high speed camera, electrostatic probes and segmented electrodes to measure the fraction of the cross-field current traversing the spoke towards the anode.

[1] J. Parker, et al., *Appl. Phys. Lett* (Submitted 2010)
[2] G. S. Janes and R. S. Lowder, *Phys. Fluids* (1966)
[3] A. I. Morozov, et al., *Sov. Phys. Tech. Phys.* (1972)

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