Abstract Submitted
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Transverse component of Xe^+ ions velocity in the crossed field discharge of a Hall Effect Thruster[1] GUILLAUME BOURGEOIS, STEPHANE MAZOUFFRE, ICARE, CNRS, Orléans, France, NADER SADEGHI, LSP, Univ. & CNRS Grenoble, France — Electric propulsion is a well-established technology for satellite orbit correction and interplanetary exploration missions. A Hall Effect Thruster, used e.g. on the SMART-1 probe for a Moon mission, is a low pressure xenon dc discharge in crossed electric and magnetic fields. The anode is located at the back of an annular ceramic chamber while the cathode is placed outside. The radial magnetic field is maximum at the chamber exit, where it confines the electrons. Thrust is produced by the acceleration along the channel axis of Xe^+ ions formed inside the channel. The aim of this work was to measure by the Doppler-shifted LIF technique [1] the azimuthal ion velocity that originates in the Lorentz force. Surprisingly, the measured velocity amplitude reaches several times the calculated one ($\sim$ 100 m/s). Besides, its direction does not always depend on the B field polarity. Velocity properties can be explained accounting for the drift of ions toward the external cathode.

[1] D. Gawron *et al*, PSST **17** (2008), 025001

[1]Works are performed in the frame of GdR 3161.

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