Abstract Submitted
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Improvement of the fluid electron description in a hybrid model of a Hall effect thruster by means of the ion velocity profile measurements[1] LAURENT GARRIGUES, LAPLACE (Laboratoire, PLAsma et Conversion d'Energie), CNRS and Universite de Toulouse, STÉPHANE MAZOUFFRE, GUILLAUME BOURGEOIS, ICARE (Institut de Combustion Aérothermique Réactivité et Environnement), CNRS — Hall effect thrusters are now used on board geostationary satellites. A xenon flow is released at the inlet of a cylindrical channel through the anode plane. A radial magnetic field is generated at the end of the channel to impede the axial electron current arising from an external cathode. A discharge voltage is applied between the electrodes. Such a ExB configuration leads to a high ionization of the neutral propellant flow and a the classical theory to describe the electron transport across the magnetic field barrier falls down. A two-dimensional model of the thruster has been developed, where a kinetic description is used for the ions and the electrons are treated as a fluid. The goal of this work is to show that measurements of the axial ion velocity profile leads to a better description of the electron transport diffusion coefficient used in the fluid approach.

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