

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Origin of electrons entering the channel of a Closed Electron Drift Thruster (CEDT) ANDRÉ BOUCHOULE, TITAINA GIBERT, Orléans University, GREMI LABORATORY TEAM — CEDT's involve a magnetized DC discharge between an external hollow cathode and an anode located at the bottom of an annular ceramic channel. An efficient ionization is achieved in the magnetized channel plasma. The outflow of Xe ions and the inflow of primary electrons are the contributions to the thruster's discharge current at channel exit. The electrons entering the channel are generally assumed to be a fraction of those delivered by the hollow cathode hole. This straightforward assumption induced various attempts to describe electron transport from cathode hole to channel entrance. A different representation of the electron flow entering the channel is suggested in this contribution, the primary electron entering the channel being delivered by the thruster's plume. This result, derived from pulsed cathode polarization experiments, explains observations of the CEDT's insensitivity to the cathode location. These polarization experiments and the physical interpretation of experimental data will be presented in the ICRP extended abstract.

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Date submitted: 10 Jun 2010

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