

Abstract Submitted  
for the GEC08 Meeting of  
The American Physical Society

**Ion-ion plasmas by electron magnetic filtering: 2D fluid simulation and applications to space propulsion** ALBERT MEIGE, LPTP, Ecole Polytechnique, GERJAN HAGELAAR, Laplace, Universite Paul Sabatier, PASCAL CHABERT, LPTP, Ecole Polytechnique — A two-dimensional magnetized plasma fluid simulation is developed to investigate the electron magnetic filtering in an electronegative plasma. The model uses the first three moments of the Boltzmann equation, namely the continuity equation, the conservation of momentum and an energy equation for the electrons. An oxygen plasma in a grounded cylinder is simulated. The magnetic field is uniform and parallel to the system revolution axis. When the magnetic field strength is sufficient, electrons are confined in the center of the discharge, resulting in an ion-ion plasma (electron-free plasma) at the periphery of the discharge. Applications to space propulsion are presented.

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Date submitted: 13 Jun 2008

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