

Abstract Submitted
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Positive to negative sheath transition at the metallic anode of a Hall thruster EDUARDO AHEDO, DIEGO ESCOBAR, Universidad Politécnica de Madrid — Both the anode sheath and the near-anode quasineutral regions are considered. The near anode region is studied with a simplified set of fluid equations that retain the central elements of the problem under consideration. A generalized singular / sonic condition is found in the quasineutral edge in terms of the particle fluxes of the two species. As the relative flux ratio is modified, the resulting near-singular electric field changes sign, indicating the transition to a different type of sheath. Maxwellian-type distribution functions are taken to solve the sheath. The parameters of these distributions are determined by forcing continuity of the species densities, particles fluxes and energy fluxes at the two sides of the sheath edge. This kinetic/fluid formulation provides well-matched solutions in practically the whole range of fluxes ratio.

Eduardo Ahedo
Universidad Politécnica de Madrid

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