Eur. Phys. J. D 64, 369–373 (2011)
DOI: 10.1140/epjd/e2011-10534-5

THE EUROPEAN PHYSICAL JOURNAL D

Regular Article

The effects of ion-neutral collision frequency on the plasma sheath dynamics for oblique entrance of ions into the sheath

S.F. Masoudi[a]

Department of physics, K. N. Toosi University of Technology, P.O. Box 15875-4416, Tehran, Iran

Received 20 September 2010 / Received in final form 10 March 2011
Published online 17 August 2011 –

Abstract. Recently it has been shown that the magnetic field has significant effects on the characteristics of ions which enter the collisionless plasma sheath with an oblique incidence angle. Here, we have investigated these effects in collisional plasma sheath. Considering the ion-neutral collision, the basic equations of fluid model in a plasma sheath have been numerically solved in the presence of an external magnetic field where the ion collision frequency has a power law dependency to the ion flow velocity. The results show that the effects of magnetic field on the plasma sheath dynamics strongly depend on the ion-neutral collision frequency and its dependency to ion flow velocity.