

Neutral Collisional Sheath with Oblique Static Magnetic Field

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Several experimental and theoretical studies have focused on the space-charging phenomenon during the collisions. This study presents floating potential variation with neutral collisions in plasma. Collisions between neutral atoms and plasma particles in plasma are one of the important phenomena in studying space plasma. Collisional effects between neutrals and ions or between ions and electrons have long been studied, but they had not considered neutral collisions with ions and electrons simultaneously. Particle simulation method is adopted in this work to study the sheath formation in the ion neutral collisional plasma and the results are compared with those of the varying electron collision case. We investigate sheath properties according to varying ion-neutral collisional rate and weak uniform electron neutral collisional rate and vice versa. We also study plasma sheath properties with oblique static magnetic field and neutral collision effect.