

# The Influence of Neutral Collision Effect on the Magnetic Presheath Structure

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Abstract: In this study the space-charging phenomenon with neutral collisions and magnetic field is investigated using particle simulations. We present the variations of floating potential and presheath potential structure according to the ion-neutral collisions and the magnetic field strengths in the plasma. The effects of both magnetic field and collision on presheath have been investigated by many previous studies. However, models that simultaneously address collisional and magnetic field effects on presheath are not completely understood. Moreover, presheath structure including electron neutral collision frequency has not been considered. In this study we have investigated the variations of presheath properties according to the ratio of ion-neutral collision frequency to ion gyro-frequency. Especially, we include electron-neutral collision and present the effect of the electron-neutral collision on the presheath structure. We assume that electron-neutral collision frequencies are about 10 times of ion neutral collision frequencies.