

Particle motions in the planetary ionosphere with the effects of collisions and time-varying fields

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The motion of charged particles in the ionosphere of the earth and planets, such as Mars, Venus is regulated by the static magnetic and electric fields as well as the collision with the atmospheric neutral particles. In a real system, electrostatic and electromagnetic waves of large amplitudes can be existed. We investigated the influence of such waves on charged particles, and variations of the electric currents as well as the electrical conductivity with a test particle simulation. We assumed a single electrostatic wave propagating perpendicular to the static magnetic field to simplify our model.

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