

THE THREE DIMENSIONAL SIMULATION OF COLLISIONAL INTERCHANGE INSTABILITY IN THE EQUATORIAL-LOW-LATITUDE IONOSPHERE

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In the work, we present a 3D simulation model of collisional interchange instability (CII) in the equatorial-low latitude ionosphere. The simulation code adopts electromagnetic framework solving hydro-magnetic equations. The governing equations are solved in magnetic dipole coordinate system. We discuss the following aspects in the work: (1) current distribution associated with plasma depletions or bubbles, (2) Mapping of bubble from equator to low-latitude, (3) Effects of pressure-gradient force on the evolution of bubble. Some of these aspects are discussed in the perspective of GPS observations over Brazil.

Plasma instability, GPS