Numerical simulation of particle dynamics in the electron current layer in collisionless magnetic island

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Abstract: Particle dynamics in the electron current layer in collisionless magnetic island is investigated by using a standard numerical method for solving the differential equations. The electron motion and velocity distribution functions are studied by tracking particle trajectories. Different kinds of orbits such as figure-eight-shaped regular orbits, noncrossing regular orbits and noncrossing Speiser orbits are studied respectively.

【**Key Words**】 magnetic island; numerical calculation; particle simulation