



Scattering of Equatorial Electrons in the Current Sheet

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We investigate the charged particle scattering in the magnetic field configuration with stretched magnetic field lines. This magnetic field configuration models the current sheet in the near Earth's magnetosphere. Scattering results from the violation of the adiabatic invariant (magnetic moment) when particles cross the region with a large curvature of magnetic field lines. We consider an intermediate regime of charged particle dynamics, when the violation of the adiabaticity is significant enough, but the particle motion is not chaotic. We found a range of parameters characterizing the magnetic field configuration, in which there is a substantial scattering of particles with a large adiabatic invariant (magnetic moment). The approximation of the value of jump of the adiabatic invariant has allowed us to derive the expression for the diffusion coefficient for the magnetic moment. We also demonstrate numerical results of evolution of the particle distribution function for different magnetic field gradients.