

Cross Field Diffusion of Cosmic Rays: Levy statistics

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We have discussed cross field diffusion of energetic particles performing two dimensional test particle simulation studies, especially paying attention to the relate statistics of the field turbulence to that of the particle transport. Qualitatively distinct diffusion processes were observed depending on the ratio of Larmor radius to the field fluctuation correlation length. The diffusion was found to be composed of several different regimes with distinct statistical properties, which was characterized by Levy statistics. We calculate the probability distribution function (PDF) of particle motion for each regime. And then, we compare it with solution of the generalized diffusion equation, which represents time evolution of ensemble of particles with Levy type trajectories.