**Eo-017** Room: C510 Time: June 6 14:45-15:00

# Cross Field Transport of Cosmic Rays : Percolation statistics

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We study cross-field transport of charged particles in a two dimensional space by performing test particle simulations. The time stationary, power-law magnetic field turbulence is given perpendicular to the simulation plane. We have so far performed some ten simulation runs using different sets of random numbers for phases of the field turbulence Fourier modes.

As a result, the diffusion processes were found to be classified into two types depending on the ratio of particle Larmor radius to the field fluctuation correlation length. We compare the numerically calculated diffusion coefficients to that obtained by the quasi-linear theory, and further relate statistics of the field turbulence to that of the particle transport, making use of the percolation theory.

Diffusive Fermi acceleration is important in efficient acceleration of

cosmic rays. For quasi-perpendicular geometry, in order that the process operates, it is essential that the cosmic ray particles can traverse magnetic field lines perpendicularly so that they can travel back and forth between upstream and downstream of the shock. Here we study cross-field transport of charged particles in a two dimensional space by performing test particle simulations. The time stationary, power-law magnetic field turbulence is given perpendicular to the simulation plane.

We have so far performed some ten simulation runs using different sets of random numbers for phases of the field turbulence Fourier modes.

As a result, the diffusion processes were found to be classified into two types depending on the ratio of particle Larmor radius to the field fluctuation correlation length. Both were found to be different from classical diffusion process. We compare the numerically calculated diffusion coefficients to that obtained by the quasi-linear theory, and further relate statistics of the field turbulence to that of the particle transport, making use of the percolation theory.