R007-13
Zoom meeting D ：11/3 AM1 (9:00-10:30)
10:00〜10:15

On stochastic models for the pitch angle scattering of charged particles in the solar wind

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The Fokker-Planck (FP) equations have widely been used to describe scattering of charged particles in space plasma. Although the quasi-linear theories (QLTs) give the diffusion coefficients through systematic coarse-graining of micro processes, the assumptions in QLTs are usually too strict for the solar wind plasma/solar energetic particles. In this talk, from the point of view of the stochastic processes, we discuss the generalization of diffusion models for the pitch angle scattering and parallel diffusion of charged particles. For instance, the FP model with the isotropic pitch angle diffusion coefficient (e.g., Shalchi, 2009; Yoon et al, 2009) corresponds to a Wright-Fisher model (e.g., Dangerfield et al, 2012). We will also discuss the relationship between the stochastic models and FP models of the cosmic ray transport with the adiabatic focusing (e.g., Litvinenko et al, 2013).