Detection of interplanetary magnetic field through comet polarization

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Charged Particle's Transport in Goldreich & Sridhar type Turbulences by Test Particle Simulations

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Turbulence with irregular magnetic field is common in astrophysical environment. Charged particles would drift and diffuse in inhomogeneous magnetic fields. The diffusive transport could be both parallel and perpendicular to mean magnetic fields. It is believed that characteristics of the turbulent magnetic field would affect the transportation of the particles. However, different magnetic turbulence models have been proposed for this study. Isotropic and special anisotropic (with a 2D plus slab mode structure) magnetic turbulence modes and the influence to the transportation of energetic particles are simulated and compared in Giacalone & Jokipii 1999. Goldreich & Sridhar 1995 proposed another magnetic turbulence model similar to Kolmogorov's for incompressible magnetohydrodynamic turbulence. Our goal is to study the transportation characteristics of particles in this type of magnetic turbulence.