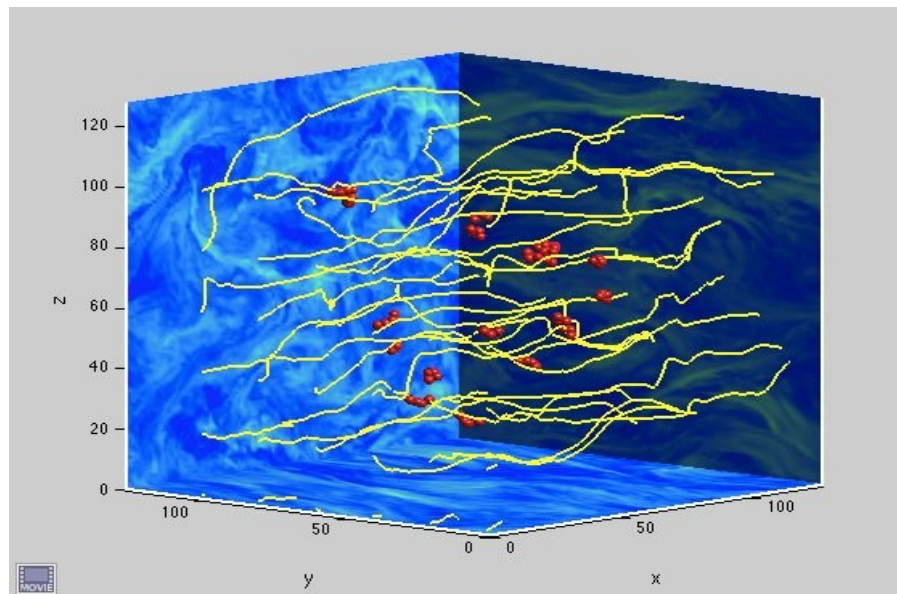




Cosmic ray transport and acceleration in MHD turbulence.

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Tuesday, 15 December 2015, 16:45 h, DESY Auditorium



Recent advances in MHD turbulence call for revisions in the paradigm of cosmic ray transport. I would like to clarify some outstanding issues related to particle transport in realistic turbulent astrophysical environments. We have carried out both analytical and numerical studies aiming at a theory-justified picture of the acceleration and transport processes based on the numerically confirmed modern theory of MHD turbulence. I shall address the issue of the transport of CRs, both parallel and perpendicular to the magnetic field and show that demonstrate that cosmic ray transport is medium dependent since compressible fast modes dominate the interactions. I shall also address the issue of perpendicular to the magnetic field and show that cosmic ray cross field transport is diffusive on large scales and superdiffusive on scales less than the injection scale of turbulence. Implications for Galactic cosmic ray propagation and shock acceleration will be presented. Last but not least, our model for GRBs based on turbulent reconnection (ICMART) shall be briefly discussed.

- **Coffee, tea and cookies will be served at 16:30h**
- **After the seminar there is a chance for private discussions with the speaker over wine and pretzels**

