Contribution ID: **73** Type: **not specified**

Understanding the anisotropy of cosmic rays at TeV and PeV energies

Monday, 4 May 2015 16:15 (15 minutes)

The anisotropy in cosmic-ray arrival directions in the TeV-PeV energy range shows both large and small-scale structures. While the large-scale anisotropy may arise from diffusive propagation of cosmic rays, the origin of the small-scale structures remains unclear. We perform three-dimensional Monte-Carlo test-particle simulations, in which the particles propagate in both magnetostatic and electromagnetic turbulence derived from a three-dimensional isotropic power spectrum. However, in contrast to earlier studies, we do not use a backtracking method for the computation of the particle trajectories, and hence anisotropy must build up from a large-scale isotropic (or dipole) boundary condition. It has been recently argued that the turbulent magnetic field itself generates the small-scale structures of the anisotropy if a global cosmic-ray dipole moment is present. Our code is well suited to test that hypothesis.

Primary author: POHL, Martin (DESY)

Co-author: RETTIG, Robert (University Potsdam)

Presenter: POHL, Martin (DESY)

Session Classification: Cosmic Rays

Track Classification: Cosmic Rays (Theory / Experiment)