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# Phenomenology of CR transport in the Galaxy

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## Abstract

After briefly reviewing the canonical, linear paradigm for cosmic ray transport in external turbulence, I will confront the standard predictions with recent data from direct and indirect cosmic ray observations. To explain local measurements, spectral breaks seem to be required both in the source spectra and in the diffusion coefficient. I will explain how turbulence generated by the cosmic rays nearby the sources and in the Galaxy at large can produce such features and could potentially ameliorate tension with the nuclear data. Next, I will focus on the leptonic component and explain the difficulties in reaching a consistent explanation of high-energy electron and positron fluxes. Finally, I will consider the small-scale anisotropies at TeV-PeV energies, argue that they are due to the correlated motion of pairs of cosmic ray particles and describe a first-principles approach of understanding and predicting them.

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