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**Asymmetric diffusion in turbulent magnetized plasmas with a mean field gradient**[1] M.V. MEDVEDEV, U.Kansas — We analyze particle transport in plasmas with turbulent magnetic fields in the presence of a gradient of the mean magnetic field and weak pitch-angle diffusion. We demonstrate that such transport is described by asymmetric diffusion: the generalization of the conventional diffusion process to the case of random walk with unequal probabilities. Using a Markov chain analysis of a toy 1D model, we demonstrate that the particle density distribution becomes exponential in distance, instead of linear as is the case for the standard diffusion process. Implications of our results for the transport of Cosmic Rays in the Galaxy are discussed.

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