

Abstract Submitted
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Particle diffusion in strong field-guided magnetohydrodynamic turbulence¹ YUE-KIN TSANG, University of Exeter, JOANNE MASON COLLABORATION — We consider three-dimensional incompressible magnetohydrodynamic turbulence in the presence of a strong mean background magnetic field. We examine the Lagrangian statistics and characterize the transport properties of the system by numerically tracking a large number of passive massless particles. Previous studies demonstrated that in two dimensions, the presence of a weak background guiding field can suppress turbulent transport in the field-perpendicular direction. The situation in three dimensions is less clear. Here, we measure the single-particle diffusion along different directions with respect to the background magnetic field. By varying the background field strength, we quantify the effect of such guiding field on turbulent diffusion and interpret the results in terms of the Lagrangian velocity function.

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