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Transport of Charged Particles in Laser-Driven Magnetized Turbulence[1] P. TZEFERACOS, U. Chicago, L. CHEN, A. BOTT, A. RIGBY, A. BELL, U. Oxford, R. BINGHAM, RAL, C. GRAZIANI, ANL, J. KATZ, LLE, U. Rochester, M. KOENIG, LULI, CNRS CEA, C. LI, R. PETRASSO, MIT, H.-S. PARK, J. S. ROSS, LLNL, D. RYU, UNIST, T. WHITE, U. Nevada-Reno, B. REVILLE, Queens U. Belfast, J. MATTHEWS, J. MEINECKE, F. MINIATI, U. Oxford, E. ZWEIBEL, U. Wisconsin-Madison, S. SARKAR, A. SCHEKOCHIHIN, U. Oxford, D. FROULA, LLE, U. Rochester, D. LAMB, U. Chicago, G. GREGORI, U. Oxford, TDYNO COLLABORATION — The interaction of charged particles and turbulent magnetic fields is key to understanding how cosmic rays traverse space. In this poster we report on numerical simulations and laser-driven experiments at the Omega Laser Facility at the Laboratory for Laser Energetics that measure the propagation of energetic particles through random magnetic fields in a turbulent plasma. We characterize their angular diffusion and recover their mean free path and associated diffusion coefficient. These experiments constitute the first laboratory probe of particle diffusion through magnetized turbulence in the absence of mean background fields and validate theoretical tools that are widely used in propagation studies of high-energy cosmic rays through the intergalactic medium.

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