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Core Measurement of Magnetic Fluctuation-Induced Particle Flux in the MST Reversed Field Pinch[1] W.X. DING, D.L. BROWER, University of California, Los Angeles, G. FIKSEL, D.J. DEN HARTOG, S.C. PRAGER, J.S. SARFF, University of Wisconsin, Madison, T. YATES, University of California, Los Angeles — The cross product of fluctuating parallel particle flux and radial magnetic field fluctuations, commonly referred to as radial particle transport driven by stochastic magnetic field, has been measured in the high-temperature core of Reversed Field Pinch plasmas by using a fast laser-based Faraday rotation and interferometer system. Measurements show that convective electron particle flux can account for the equilibrium density change during a sawtooth crash at the magnetic axis. In addition, the stochastic field driven ion and electron fluxes are nearly the same with their difference being $\sim$1%. A quasi-linear estimate of ion particle flux indicates that it scales as the ion sound speed and the square of radial magnetic field fluctuations.

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