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Particle and Momentum Transport in a Stochastic Magnetic Field W.X. DING, D.L. BROWER, W.F. BERGERSON, L. LIN, University of California, Los Angeles, A. ALMAGRI, G. FIKSEL, D.J. DEN HARTOG, J.A. REUSCH, J.S. SARFF, University of Wisconsin, Madison — 3-D Resonant Magnetic Perturbations (RMP) have been successfully utilized to suppress or mitigate ELMS in tokamak plasmas. However, the mechanism for particle transport (density pumpout) and flow change in a stochastic magnetic field remains unclear. In the MST reversed field pinch (RFP), where a stochastic magnetic field is produced by multiple overlapping tearing modes, we observe a strong particle pump-out and parallel flow change similar to RMP experiments. Detailed measurements in the interior of the high-temperature RFP indicate that density fluctuations in a stochastic magnetic field play an important role both in particle and momentum transport. The particle flux primarily results from strong nonlinear mode coupling. A common physics basis for fluctuation-induced transport in the tokamak and RFP toroidal magnetic confinement configurations is explored. Work is supported by US DOE and NSF.

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