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Modifying turbulence by driving interchange flows in a dipole-confined plasma[1] M.W. WORSTELL, M.E. MAUEL, T.M. ROBERTS, A.M. SENTER, Columbia University — The Collisionless Terella Experiment (CTX) is a mechanically supported dipole magnet that studies interchange turbulence. Previous study[2] revealed dynamics consistent with two dimensional turbulence. A hallmark of which is the presence of an inverse energy cascade from small to larger spatial scales. We report the results of application of electrostatic bias to experimentally alter the fluctuation spectrum via the inverse energy cascade. The bias is applied with a twelve point equatorial biasing array that can be configured to drive static and rotating interchange flow with azimuthal modes from $m = 0$ to 3. We find that application of $m = 3$ interchange drive causes a significant amplification of $m = 1$ perturbations and an apparent reduction in turbulent dynamics. Feedback phase-controlled and constant frequency open-loop perturbations will be discussed as well.

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[2]B.A. Grierson, M.W. Worstell, M.E. Mauel, *Phys. Plasmas* **16** 055902 (2009)

Matthew Worstell
Columbia University

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