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Turbulence and transport in mirror geometries in the LAPD[1]
PHIL TRAVIS, University of California, Los Angeles, TROY CARTER, tcarter@physics.ucla.edu — Measurements of turbulence and transport in varying magnetic mirror ratios, including multi-celled configurations, have been performed using the flexible magnetic geometry of the Large Plasma Device (LAPD). Fluctuations in density (ion saturation current), floating potential, and magnetic field were recorded, with amplitudes peaking, as expected, on the edge pressure gradient. Planar correlation functions of single-celled mirror cases were also recorded. In a single-celled mirror, density and magnetic field fluctuation amplitudes decreased with increasing mirror ratio, while potential fluctuation amplitudes remained similar. The cross-phase between potential and density fluctuations varies with increasing mirror ratio, suggesting a shift in the underlying linear instability as the mirror ratio is increased and magnetic curvature is introduced. Differences in the spectra and cross-phases of floating potential and ion saturation current were also observed with increased cell count. Swept Langmuir probe measurements, analyzed using neural-network-based machine learning techniques, will also be presented.

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