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Stable Eigenmodes and Energy Dynamics in a Model of LAPD Turbulence BRETT FRIEDMAN, T.A. CARTER, UCLA, M.V. UMANSKY, LLNL — A three field Braginskii fluid model that semi-quantitatively predicts turbulent statistics in the Large Plasma Device (LAPD) at UCLA is analyzed. A 3D simulation of turbulence in LAPD using the BOUT++ fluid code is shown to reproduce experimental turbulent properties such as the frequency spectrum and correlation length with semi-qualitative and semi-quantitative accuracy. In an attempt to explain turbulent saturation in the simulation, equations for the energy dynamics are derived and applied to the results. The degree to which stable linear drift wave eigenmodes draw energy from the system and the affect that zonal flows have on transferring energy to stable eigenmode branches is explored. It is also shown that zonal flows drive Kelvin-Helmholtz flute modes, which come to dominate the energy dynamics in the quasi steady state regime.

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