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3D Global Fluid Simulations of Turbulence in LAPD[1] BARRETT ROGERS, Dartmouth, PAOLO RICCI, CRPP-EPFL, Lausanne, Switzerland, BO LI, Dartmouth — We present 3D global fluid simulations of the UCLA upgraded Large Plasma Device (LAPD). This device confines an 18-m-long, cylindrically symmetric plasma with a uniform magnetic field. The plasma in the simulations is generated by density and temperature sources inside the computational domain, and sheath boundary conditions are applied at the ends of the plasma column. In 3D simulations of the entire plasma, we observe strong, rotating intermittent density and temperature fluctuations driven by resistive driftwave turbulence with finite parallel wavenumbers. Analogous simulations carried out in the 2D limit (that is, assuming that the motions are purely interchange-like) display much weaker mode activity driven a Kelvin-Helmholtz instability. The properties and scaling of the turbulence and transport will be discussed.

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