Abstract Submitted
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Flows, turbulence, and transport in the Large Plasma Device D.A. SCHAFFNER, T.A. CARTER, B. FRIEDMAN, P. POPOVICH — We report on measurements of spontaneous flows, turbulence, Reynold's stress and particle flux in the Large Plasma Device (LAPD) at UCLA. Measurements of perpendicular and parallel flow using a six-sided Mach probe reveal a shear-layer flow in the cathode edge region whose peak flow increases with magnetic field and broadly distributed far-edge perpendicular flows that scale inversely with magnetic field. The role of boundary effects and turbulent Reynolds stress in establishing the flow profile is investigated. Reynolds stress is measured with a seven tip vorticity probe; characteristics of the turbulence are measured using triple Langmuir probe. The connection among shear flow, turbulence and spatial correlation lengths is examined through cross-correlation techniques, which also serves to establish the relationship between these quantities and gradient driven instabilities such as drift-Alfven or Kelvin-Hemholtz. These results are especially useful for comparisons to ongoing fluid simulations using the BOUT and BOUT++ 3D Braginskii fluid codes.

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