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Modifications to intermittent turbulent structures by sheared flow in LAPD GIOVANNI ROSSI, DAVID SCHAFFNER, TROY CARTER, DANNY GUICE, University of California: Los Angeles, ROGER BENGTSON, University of Texas at Austin — Turbulence in the edge of the Large Plasma Device is generally observed to be intermittent with the production of filamentary structures. Density-enhancement events (called "blobs") are localized to the region radially outside the edge of the cathode source while density-depletion events (called "holes") are localized to the region radially inward. A flow-shear layer is also observed to be localized to this same spatial region. Control over the edge flow and shear in LAPD is now possible using a biasable limiter. Edge intermittency is observed to be strongly affected by variations in the edge flow, with intermittency (as measured by skewness of the fluctuation amplitude PDF) increasing with edge flow (in either direction) and reaching a minimum when spontaneous edge flow is zeroed-out using biasing. This trend is counter to the observed changes in turbulent particle flux, which peaks at low flow/shear. Two-dimensional cross-conditional averaging confirms the blobs to be detached filamentary structures with a clear dipolar potential structure and a geometry also dependent on the magnitude of sheared flow. More detailed measurements are made to connect the occurrence of these blobs to observed flow-driven coherent modes and their contribution to radial particle flux.

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