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Statistical analysis of edge turbulence and blob structures simulated in the full-f gyrokinetic code XGC1[1] RANDY CHURCHILL, CS CHANG, SEUNG-HOE KU, ROBERT HAGER, Princeton Plasma Phys Lab — Turbulence in the edge (pedestal + SOL) is difficult to probe both experimentally and computationally, yet it may play a large role in the feasibility of a tokamak fusion reactor. XGC1 is a full-f gyrokinetic code aimed at including all of the important physics necessary to faithfully simulate transport in the edge region. Here we present statistical analyses of turbulent fluctuations of XGC1 outputs, including density, potential, and temperature. The skewness and kurtosis are investigated as indicators of the underlying distribution, and are shown to follow closely the skewness/kurtosis relation for gamma distributions. Spatial cross-correlation and cross-phase analysis will be presented to identify poloidal wavenumber regions of strongest particle and energy transport, helping to identify dominant turbulence modes in the pedestal and SOL. These comparisons will be made using both flux-surface averaged (important for total transport) and low-field side localized data (what experiments usually measure). Distributions of size and speed of edge turbulent eddies and blobs, and the connected physics associated with their radial transport will be explored.

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