

Abstract Submitted
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Similarity of Edge Turbulence in Various Magnetic Configurations of HSX WALTER GUTTENFELDER, DAVID ANDERSON, CARSTEN LECHTE, JOSEPH TALMADGE, HSX Plasma Laboratory, UW - Madison — Multi-pin Langmuir probes have been used to measure the edge and SOL characteristics of HSX plasmas in multiple locations and under various magnetic configurations. Auxiliary coils provide the flexibility to change the vacuum magnetic spectrum, well depth, rotational transform, and effective minor radius. The ion saturation current and floating potential probes measure broadband, large level fluctuations (10 – 40%) in the edge and SOL. Poloidal wavenumbers, measured via two displaced probes, are in the range of $0.5 - 1.5 \text{ cm}^{-1}$, with $\rho_s k_\theta = 0.1 - 0.2$. From the estimated density gradient scale lengths in the edge ($L_n = 2 - 5 \text{ cm}$), these fluctuation levels are consistent with mixing length type arguments ($n'/n \sim 1/k_\theta L_n$). The phase velocities of the fluctuations follow the $E \times B$ velocities inferred from floating potential profiles. The measured turbulent features are similar for the quasi-symmetric and non-symmetric configurations. This work is supported by DOE grant number DE-FG02-93ER54222.

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