

Abstract Submitted
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Spatiotemporal Evolution of the Probability Distribution Function of Density Fluctuations near the L-H Transition on DIII-D¹ LOUKAS CARAYANNOPOULOS, Massachusetts Institute of Technology, ZHENG YAN, GEORGE MCKEE, University of Wisconsin-Madison — The Probability Distribution Function (PDF) of long-wavelength density fluctuations changes markedly in space and in time approaching the L-H mode confinement bifurcation. The dynamics of turbulence and flows approaching the L-H transition has been well documented, but requires complex and time-consuming diagnosis and analysis. Initial analysis of the PDF of these fluctuations demonstrates that it skews negatively and positively a couple centimeters inside and outside the separatrix, respectively, while approaching the L-H transition. This suggests a change in the near edge turbulence dynamics and transport properties approaching the transition. Studying the parametric dependencies of various statistical properties (e.g. skewness and kurtosis) of edge fluctuations could lead to new connections between theoretical and experimental descriptions of the L-H transition. Additionally, this analysis may provide a relatively straightforward method to determine if the L-mode edge turbulence dynamics are conducive to an L-H transition, or are far from such a transition, which may be of critical importance to anticipating and achieving H-mode in burning plasmas.

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