

Abstract Submitted
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UF-CHERS Measurements of Ion Temperature and Toroidal Rotation Fluctuations Associated with the Edge Harmonic Oscillation in Quiescent H-mode Plasmas¹ D.D. TRUONG, R.J. FONCK, G.R. MCKEE, Z. YAN, U. Wisconsin-Madison, B.A. GRIERSON, PPPL — The UF-CHERS (Ultra Fast CHarge Exchange Recombination Spectroscopy) diagnostic at DIII-D measures local, long-wavelength ion temperature and toroidal velocity fluctuations at turbulence-relevant spatiotemporal scales from emission of the CVI $n=8 \rightarrow 7$ transition. During Quiescent H-mode (QH-mode) plasmas, which offer ELM-free improved confinement, UF-CHERS measurements observed coherent, low frequency ($f_o \sim 10$ kHz) pedestal oscillations in T_i and v_{tor} at the Edge Harmonic Oscillation (EHO) frequency while several modes between 35-75 kHz are suppressed when the EHO appears. Although broadband ion temperature and density fluctuations were reduced by the EHO, the toroidal rotation showed increased fluctuation amplitude. Investigating ion temperature and toroidal fluctuations associated with the EHO may provide insights into the saturated instability driving the EHO.

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