Abstract Submitted
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**Measurement of turbulent electron temperature fluctuations on the ASDEX Upgrade tokamak using correlated Electron Cyclotron Emission**[1] S. FREETHY, G. D. CONWAY, Max-Plank-IPP, I. CLASSEN, FOM-DIFFER, A. J. CREELY, MIT, T. HAPPEL, Max-Plank-IPP, B. VANOVAC, FOM-DIFFER, A. E. WHITE, MIT, ASDEX UPGRADE TEAM[2] — First measurements of core (r/a ¡ 0.95) turbulent electron temperature fluctuations made on the ASDEX Upgrade (AUG) tokamak using a Correlation Electron Cyclotron Emission (CECE) technique are presented. Validation of gyro-kinetic models against measurements of the underlying turbulent micro-structure are essential for developing predictive capabilities for future devices. In tokamak plasmas, turbulent temperature fluctuations are sufficiently broadband (∼0.5MHz) and low-amplitude (∼1%) that conventional radiometer techniques are fundamentally unable to detect them and a correlation technique is required to further extract the signals. An application of the spectral decorrelation method had been designed and built for AUG. This CECE radiometer shares an optical path with a reflectometer and is sensitive to wavenumbers perpendicular to the magnetic field $k_\perp$ up to 0.76cm$^{-1}$ . An upgrade to the focusing mirror will increase this range to $k_\perp$ up to 1.4cm$^{-1}$. Measurements in Helium plasmas have been made at three radial locations simultaneously, providing a profile of the temperature fluctuation amplitude in the outer core of Electron Cyclotron Resonance Heated heated L-mode plasmas. New results and future plans will be presented.

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