

**Abstract Submitted for the Forty-Eighth Annual Meeting
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Category Number and Subject: 5.6.2. DIII-D Tokamak

Theory Experiment

Electron Temperature Fluctuations in DIII-D Using the New UCLA Correlation ECE Diagnostic,* A.E. White, *ORISE*, L. Schmitz, T.A. Carter, W.A. Peebles, T.L. Rhodes, *UCLA*, M.E. Austin, *U. Texas-Austin* – The new UCLA correlation ECE diagnostic recently installed on DIII-D allows for the study of broadband electron temperature fluctuations as well as coherent modes. Measurements of broadband electron temperature fluctuations are essential for understanding anomalous electron heat transport in advanced tokamak plasmas. The UCLA correlation ECE diagnostic has sub-centimeter radial resolution and the use of Gaussian optics results in a poloidal spot size ($2 w_0 \sim 3.5$ cm) that is comparable to anticipated turbulent correlation lengths. Remotely tunable 100 MHz wide YIG filters are utilized to select adjacent frequency bands from overlapping plasma volumes. Using established cross-correlation techniques, the amplitude and spectrum of temperature fluctuations can be extracted. The system design and data analysis will be discussed and initial measurements of broadband electron temperature fluctuations in DIII-D will be presented.

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