

Abstract Submitted  
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**Electron Temperature Fluctuations in DIII-D SOL<sup>1</sup>** D.L. RUDAKOV, J.A. BOEDO, R.A. MOYER, UCSD, J.G. WATKINS, SNL — We present an overview of electron temperature  $T_e$  fluctuation properties in the scrape-off layer (SOL) of low (L) and high (H) confinement discharges, over L-H transitions, and during edge localized modes.  $T_e$  fluctuations play an important role in the tokamak SOL, being responsible for the “conductive” (due to correlated fluctuations of  $T_e$  and poloidal electric field  $E_\theta$ ) part of the cross-field turbulent transport. In DIII-D, SOL  $T_e$  fluctuations are measured using a harmonic technique deployed on the midplane reciprocating probe and having a bandwidth of up to 100 kHz. Relative  $T_e$  fluctuation levels range from 0.1-0.2 inside the last closed flux surface (LCFS) to 0.3-0.5 in the SOL.  $T_e$  fluctuations tend to be roughly in phase with the electron density  $n_e$  fluctuations. “Conductive” and “convective” (due to correlated  $n_e$  and  $E_\theta$  fluctuations) components of the cross-field turbulent heat fluxes are comparable near the LCFS, while in the far SOL the convective component tends to be larger. Most of the  $T_e$  fluctuation and heat flux spectral energy is below 50 kHz. Cross-field heat fluxes measured near the LCFS in L-mode are in reasonable agreement with the SOL power balance.

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