

Abstract Submitted
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Electron Temperature Measurements Using Soft X-Ray Emission on the Compact Toroidal Hybrid¹ J.L. HERFINDAL, G.J. HARTWELL, S.F. KNOWLTON, D.A. MAURER, Auburn University — Electron temperature measurements are important in characterizing the equilibrium of fusion plasmas as well as an aid in the understanding of MHD stability. Soft X-ray (SXR) diagnostics used to measure the electron temperature have been installed on the Compact Toroidal Hybrid (CTH) torsatron ($R_0 = 0.75\text{ m}$, $a_p \sim 0.2\text{ m}$, $B \leq 0.7\text{ T}$, $n_e \leq 5 \times 10^{19}\text{ m}^{-3}$, $I_p \leq 75\text{ kA}$, $T_e \leq 300\text{ eV}$). Two Amptek SXR spectrometers independently determine the electron temperature by measurement of a ratio of counts in specific energy channels and from fitting the spectral intensity. A new two color SXR camera has been designed, built, and installed on CTH. This camera consists of two AXUV20ELG diode arrays viewing the same poloidal cross-section of the plasma through Be filters of different thicknesses and different cutoff energies. Electron temperatures are calculated by taking the ratio of the SXR intensities measured by the two detectors. An overview of the design and preliminary data will be presented.

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