

Abstract Submitted
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Soft X-Ray Tomography and Temperature Measurements on the Compact Toroidal Hybrid (CTH) Experiment¹ G. HARTWELL, S. KNOWLTON, J. PETERSON, B.A. STEVENSON, J. HANSON, Auburn University — Soft X-Rays (SXR) arrays are used on the CTH experiment ($R = 0.75$ m, $a \sim 0.2$ m, $B \leq 0.7$ T, $n_e \leq 10^{19}$ m⁻³, $T_e(\text{est}) \sim 300$ eV) for tomographic reconstruction of the emissivity profile and for electron temperature measurement. The SXR tomography is done using a 60 chord system viewing the poloidal cross-section with 3 cameras each consisting of a 20-channel AXUV-20EL photo-diode array filtered with 500nm Al foil. A description of the SXR tomography cameras, the tomographic reconstruction technique and results will be given. The SXR electron temperature measurement diagnostic is a 20 chord system viewing a single toroidal cross-section. Each chord is viewed simultaneously in 2 energy bands with 2 photo-diodes. The energy bands are discriminated using filters with different thicknesses. The ratio of the 2 photo-diode signals can be used to infer the maximum electron temperature along that chord. A description of the dual-energy camera will be given as well as calculations that leading to the choice of filter material and thickness. Calibration methods will be discussed and results will be given.

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