

Abstract Submitted
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Thomson scattering diagnostic on the Compact Toroidal Hybrid Experiment¹ P.J. TRAVERSO, D.A. ENNIS, G.J. HARTWELL, J.D. KRING, D.A. MAURER, Auburn Univ — A Thomson scattering system is being commissioned for the non-axisymmetric plasmas of the Compact Toroidal Hybrid (CTH), a five-field period current-carrying torsatron. The system takes a single point measurement at the magnetic axis to both calibrate the two-color soft x-ray T_e system and serve as an additional diagnostic for the V3FIT 3D equilibrium reconstruction code. A single point measurement will reduce the uncertainty in the reconstructed peak pressure by an order of magnitude for both current-carrying plasmas and future gyrotron-heated stellarator plasmas. The beam, generated by a frequency doubled Continuum 2 J, Nd:YAG laser, is passed vertically through an entrance Brewster window and a two-aperture optical baffle system to minimize stray light. Thomson scattered light is collected by two adjacent f/2 plano-convex condenser lenses and routed via a fiber bundle through a Holospec f/1.8 spectrograph. The red-shifted scattered light from 533-563 nm will be collected by an array of Hamamatsu H11706-40 PMTs. The system has been designed to measure plasmas with core T_e of 100 to 200 eV and densities of 5×10^{18} to $5 \times 10^{19} m^{-3}$. Stray light and calibration data for a single wavelength channel will be presented.

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