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Spectral characterization of Compact Toroidal Hybrid plasmas in preparation for Thomson scattering measurements[1] M.M. GOFORTH, S.D. LOCH, D.A. MAURER, A.J. PEARCE, P.J. TRAVERSO, Auburn University — A Thomson scattering system is in development for the Compact Toroidal Hybrid (CTH) experiment to provide localized, internal electron temperature and density measurements. Thomson scattering yields accurate information on the internal plasma electron pressure profile, which will aid in the equilibrium reconstruction of CTH plasmas using the V3FIT code [1]. The expected Thomson scattered signal is approximately 10^{15} times less than the incident laser light, and can be overwhelmed by stray laser light, background plasma emission, and intrinsic detector noise. Background plasma emission measurements in the visible spectral region near the planned laser wavelength of 532nm are underway using a Holospec f/1.8 spectrometer and an Andor iStar image intensified CCD camera to quantify line and continuum background levels. In addition, impurity line identification and plans for a separate line-of-sight averaged impurity temperature and density measurement capability employing the Thomson spectrometer are in progress.

[1] J.D. Hanson, et. al., Nuclear Fusion 49 (2009) 075031

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