

Abstract Submitted
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Electron Temperature and Density Profiles in the New High-Performance Regime of C-2W Plasmas KAN ZHAI, ELI PARKE, JAMES SWEENEY, MICHAEL BEALL, JOHN KINLEY, MANJIT KAUR, AND THE TAE TEAM, TAE Technologies, Inc. — In TAE Technologies' current experimental device, C-2W (also called “Norman”) [1], record breaking, advanced beam-driven field reversed configuration (FRC) plasmas are produced and sustained in steady state utilizing variable energy neutral beams, advanced divertors, end bias electrodes, and an active plasma control system. Study of the electron temperature and density profiles under various experimental settings is critical for understanding the physics of the high-performance operating regime and for planning of future experimental campaigns. The C-2W Thomson scattering system [2] was designed to provide full spatial and temporal coverage of the plasma size and lifespan. In this poster, we will present the results of the Thomson scattering measurements in C-2W, including the electron temperature and density profiles and their temporal evolution under different experimental configurations. In addition, we will present the recent improvement of the calibration procedure of the C-2W Thomson scattering system using the Raman scattering method to avoid the stray light issue inherent with calibration using Rayleigh scattering. [1] H. Gota et al., Nucl. Fusion 59, 112009 (2019). [2] K. Zhai et al., Rev. Sci. Instrum. 89, 10C118 (2018).

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