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6.29 Thomson scattering systems on C-2W field-reversed configuration plasma experiment

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TAE Technologies' newly constructed C-2W experiment aims to improve the ion and electron temperature (Te) in a sustained field-reversed-configuration (FRC) plasma. A suite of Thomson scattering systems has been designed and constructed for electron temperature and density (ne) profile measurement. The systems are designed for electron density and temperature ranges of 1×10(12) cm(-3) to 2×10(14) cm(-3) and 10eV to 2keV. The central system will provide profile measurement of Te/ne at 16 radial locations from r = -9cm to r = 64cm with a temporal resolution of 20kHz/4 pulses or 1kHz/30 pulses. The jet system will provide profile measurement of Te/ne at 5 radial locations in the open field region from r = -5cm to r = 15cm with a temporal resolution of 100Hz. The systems and their components have been characterized and calibrated [1,2]. A maximum-likelihood algorithm has been applied for data processing and analysis. [1] T. Schindler Calibrations of Thomson Scattering Diagnostic on C-2W HTPD 2018 [2] A. Ottaviano Characterization of System Components for Thomson Scattering Diagnostics on C-2W HTPD 2018

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