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2.26 Diagnostic Suite of the C-2W Advanced Beam-Driven Field-Reversed Configuration Plasma Experiment

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The new C-2W experiment (also called "Norman") at TAE Technologies, Inc. studies the evolution of field-reversed configuration (FRC) plasmas sustained by neutral beam injection. Data on the FRC plasma performance is provided by a comprehensive suite of diagnostics that includes over 600 magnetic sensors, four interferometer systems, multi-chord far-infrared polarimetry, two Thomson scattering systems, ten types of spectroscopic measurements, multiple fast imaging cameras with selectable atomic line filters, bolometry, reflectometry, neutral particle analyzers, and fusion product detectors. Most of these diagnostic systems are newly built using experience and data from the preceding C-2U experiment [1] to guide the design process. In addition, extensive ongoing work focuses on advanced methods of measuring the internal FRC magnetic field profile to facilitate equilibrium reconstruction and active control of the plasma. 1] M. C. Thompson et al., Rev. Sci. Instrum. 87, 11D435 (2016)

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