

Abstract Submitted
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Radiative Measurements on C-2W TIMOTHY DEHAAS, ANTON BONDARENKO, MATT TOBIN, TAE Technologies — TAE Technologies' current experimental device, C-2W, is an advanced, beam-driven, field-reversed configuration (FRC) with advanced divertors, end bias electrodes, and an active plasma control system [1]. The emergence of C-2W's high performance regime has highlighted the need for further expansion of diagnostic systems to understand equilibrium behavior, global stability, and power loss mechanisms. To that end, the experiment has been fitted with an ensemble (over 300 channels) of XUV and soft X-Ray sensing diodes. The ensemble contains a mixture of both collimated and uncollimated views with broad spatial coverage. The collection of measurements yields the total radiated power from the plasma and has already been used to demonstrate the mitigation of impurity radiation to below 200 kW [2]. Recently, additional units have been deployed to provide axial coverage of the machine, yielding an axial emission profile. The system has been integrated into the active plasma control system to produce estimates of density and axial position control. Similarly, the diagnostic is fitted with differing thin, metallic, optical filters for coarse spectral resolution. Several Be filters have been added with the express purpose of identifying fast electron production. Initial observation of plasma emission profiles and x-ray production will be presented. [1] H. Gota et al, Nucl. Fusion 59, 112009 (2019). [2] T. DeHaas, A. DuBois, APS-DPP 2019 Poster UP10.00131

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