

Abstract Submitted
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Fast Global Imaging of the C-2 Field-Reversed Configuration and Divertor Plasmas ERIK GRANSTEDT, Tri Alpha Energy, A.L. ROQUEMORE, Princeton Plasma Physics Laboratory, A. LONGMAN, R. HAYASHI, E. YANKOSKI, Tri Alpha Energy, THE TAE TEAM — Two high-speed, filtered cameras have been used to view the dynamics of the C-2.¹ Field-Reversed Configuration (FRC) and divertor plasmas. The first used a re-entrant viewport to achieve a global, quasi-axial view of the FRC plasma in order to examine macroscopic plasma evolution, rotation, and non-axisymmetric perturbations. This instrument consisted of a Phantom v7.3 camera coupled to imaging optics via a 15-ft, 1000×800 pixel coherent fiber bundle. A filter wheel was set between shots to view edge-dominated emission from neutral D, C III, or Li I–II, or core-dominated emission from O III–V. Perturbations rotating in the ion diamagnetic direction were observed both during the FRC and after the transition to an open field-line plasma. The divertor instrument consisted of a Phantom v5.2 camera with D_α filter and was used to examine divertor neutral density under various gas puffing, magnetic field, and electrode biasing configurations. Both instruments were photometrically calibrated to measure absolute emissivity in order to obtain estimates of neutral and impurity density.

¹M. Tuszewski, *et al* Physical Review Letters **108**, 255008 (2012)

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