

Abstract Submitted  
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**Effect of Divertor Field on FRC Jet Dynamics** T. ROCHE, B. DENG, H. GOTA, D. GUPTA, K. ZHAI, Tri Alpha Energy, THE TAE TEAM — A suite of plasma diagnostics has been implemented to measure various plasma parameters in the jet of the C-2 Field-Reversed Configuration (FRC) [1] at Tri Alpha Energy. Langmuir probes measure local electron density and temperature as well as floating potential at various axial positions on the divertor side of the magnetic mirror. These probes are translated in space to generate radial profiles of the plasma parameters over many series of shots. A microwave interferometer measures line-integrated electron density and a  $D_\alpha$  fan measures the neutral hydrogen emissivity in the center of the divertor. The strength of the magnetic field in the divertor region affects the profiles of the jet. We also discovered that the dynamics of the FRC, at the mid-plane, affect the jet profiles in the divertor. Most notably, when the  $n = 1$  instability develops, it is observable in the jet as well. Density profiles indicate that the jet is hollow in the region of large magnetic field close to the mirror on the divertor side, a.k.a., the necking region. Measurements also show that this hollowness is preserved as the plasma follows the expanding field lines into the (much larger diameter) divertor.

[1] M. Tuszewski et al., Phys. Rev. Lett. 108, 255008 (2012)

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