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Two-dimensional density profiles of rotating mode structures using the Radon transform on the C-2W experiment ROGER J SMITH, TADAFUMI MATSUMOTO, SEAN A DETTRICK, Tri Alpha Energy, Inc., TAE TEAM TEAM — In TAE Technologies' current experimental device, C-2W (also called "Norman") [1], record breaking, advanced beam-driven field reversed configuration (FRC) plasmas are produced and sustained in steady state utilizing variable energy neutral beams [NBI], expander divertors, end bias electrodes and an active plasma control system. Although global MHD modes are largely stabilized, coherent density fluctuations can be occasionally seen in the time traces of the mid-plane 14 chord far-infrared (FIR) interferometer. These benign fluctuations are due to rigid non axisymmetric density structures rotating about the plasma's axis. Of particular interest are the common FRC n=2 rotating mode and micro-burst mode activity associated with fast ions from NBI. Both are manifested as symmetric line integrated density [LID] radial profiles at any time in a modal period. A new so-called Seesaw mode has been observed that produces lopsided LID profiles that seesaw in the cycle. The high spatial and temporal resolution of the interferometer allows reconstruction of rigidly rotating 2-d density distributions including the Seesaw mode. Inverse Radon transform generated 2-d modal density structures will be presented and discussed along with correlated observations from magnetic Mirnov arrays and electrostatic probes. [1] H. Gota et al., Nucl. Fusion **59**, 112009 (2019).

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