

Abstract Submitted
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Interferometry technique to measure 2D FRC equilibria on TAE's Norman device ROGER SMITH, Tri Alpha Energy, JESUS ROMERO, MARCO ONOFRI, SEAN DETTRICK, SANGEETA GUPTA, LAURA GALEOTTI, Tri Alpha Energy, Inc, THE TAE TEAM TEAM — The mid-plane multi-chord FIR interferometer system on the C-2W device (Norman) is used in conjunction with the equilibrium (EQ) field coils and trim coil set to move the plasma axially and thereby determine the equilibrium density profiles in both r and z . Lifetimes for plasmas in Norman are now routinely as long as 30 milliseconds. This allows sufficient time to displace the field reversed configuration (FRC) plasma meters on a millisecond time scale using waveform controlled EQ coils and actively driven trim coils with feedback control. The FRC is typically 2 m long and the confinement vessel (CV) is 6 m in length which allows a generous capability to interrogate the plasma over its half-length and sufficient time to restore the equilibrium to its center position. Details of the FRC density distribution and fluctuation behavior in both r and z past the X point are discussed as well as implications of the coupling of NBI power to a displaced FRC. The implications of the measured profiles as inputs and validation to numerical modeling with respect to heating and sustainment of the FRC by NBI will be presented and discussed.

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