

Thank you!

Abstract Submitted  
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**Separatrix  $E \times B$  Shear Flows and Turbulence Propagation in the C-2U FRC; Reflectometry Upgrades for C-2W** LOTHAR SCHMITZ, Tri Alpha Energy, Inc., UCLA, DANIEL FULTON, Tri Alpha Energy, Inc., CALVIN LAU, IHOR HOLOD, ZHIHONG LIN, UCI, BIHE DENG, HIROSHI GOTA, TOSHIHIKO TAJIMA, MICHL BINDERBAUER, Tri Alpha Energy, Inc., THE TAE TEAM — Ion-scale modes were shown to be stable in the C-2/C-2U FRC core, in agreement with gyrokinetic simulation results, with a characteristic inverted toroidal wavenumber spectrum confirmed via Doppler Backscattering (DBS). Multi-scale turbulence ( $2 < k_{\theta} \rho_s \leq 40$ ) has been observed via DBS in the mirror-confined scrape-off layer plasma, also in qualitative agreement with recent global gyrokinetic simulations. These simulations indicated radial inward propagation to the outer layer of the FRC core. Recent detailed analysis of turbulence interaction with large-scale  $E \times B$  flow near the FRC separatrix, via DBS, also confirm radial inward turbulence propagation, but the radial turbulence correlation length exhibits a pronounced minimum just outside the separatrix at all wavenumbers, indicating effective radial transport barrier formation. An advanced Doppler Backscattering diagnostic design for C-2W, and prospects for simultaneous measurements of magnetic fluctuations via Cross-Polarization Scattering (CPS) will be discussed.

Lothar Schmitz  
TAE, UCLA

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