

Plasma Physics Seminar

Physics & Astronomy Building (PAB) Room 4-330

Via Zoom: <https://ucla.zoom.us/j/92785449357?pwd=SVBTSko3bTdEUW03dzQwNks1Q2IKZz09>

Friday, May 31, 2024 at 12:30PM

Lunch will be served at 12:00PM

Advancements and Breakthroughs in C-2W's Field Reversed Configuration Experiment



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Abstract: TAE Technologies, Inc. (TAE) is dedicated to the advancement of fusion power by pursuing an alternative approach to magnetic confinement fusion: a neutral-beam driven, field-reversed configuration (FRC). FRCs are high-beta, compact toroid with no toroidal magnetic field. The geometric and magnetic simplicity of the configuration offers a promising path to clean, safe, and economically viable fusion. The central focus of TAE's experimental program is the C-2W experiment, the world's largest FRC device. This fourth-generation device was designed to achieve a set of milestones, namely the sustainment of the FRC for extended durations, the resilience of the FRC against disruptive MHD modes, and the demonstration of heating by neutral beam injection. Through systematic experimentation, C-2W has accomplished its milestones. C-2W's success is attributed to its advanced systems, including modular neutral beam injectors, edge biasing of open field lines for stabilization and enhanced electron confinement, and a real-time plasma control system for precise plasma manipulation. This presentation provides an overview of the C-2W experiment and highlights the continued advancements in performance and evolving understanding of FRC physics.