

Abstract Submitted  
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**Overview of C-2U FRC Experimental Program and Plans for C-2W** H. GOTA, M.W. BINDERBAUER, T. TAJIMA, S. PUTVINSKI, M. TUSZEWSKI, S. DETTRICK, S. KOREPANOV, A. SMIRNOV, M.C. THOMPSON, X. YANG, M. CAPPELLO, Tri Alpha Energy, Inc., A.A. IVANOV, BINP, TAE TEAM<sup>1</sup> — Tri Alpha Energy’s experimental program has been focused on a demonstration of reliable field-reversed configuration (FRC) formation and sustainment, driven by fast ions via high-power neutral-beam (NB) injection. The world’s largest compact-toroid experimental devices, C-2 [1] and C-2U [2], have successfully produced a well-stabilized, sustainable FRC plasma state with NB injection (input power,  $P_{NB} \sim 10+$  MW; 15 keV hydrogen) and end-on coaxial plasma guns. Remarkable improvements in confinement and stability of FRC plasmas have led to further improved fast-ion build up; thereby, an advanced beam-driven FRC state has been produced and sustained for up to 5+ ms (longer than all characteristic system time scales), only limited by hardware and electric supply constraints such as NB and plasma-gun power supplies. To further improve the FRC performance the C-2U device is being replaced by C-2W featuring higher injected NB power, longer pulse duration as well as enhanced edge-biasing systems and substantially upgraded divertors. Main C-2U experimental results and key features of C-2W will be presented.

[1] M.W. Binderbauer *et al.*, Phys. Plasmas **22**, 056110 (2015).

[2] M.W. Binderbauer *et al.*, AIP Conference Proceedings **1721**, 030003 (2016).

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