

Abstract Submitted
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Far infrared laser interferometry and polarimetry diagnostics for C-2W FRC experiment BIHE DENG, MARK ROUILLARD, PING FENG, MICHAEL BEALL, GREG SETTLES, GREG SNITCHLER, SHAWN ZIAEI, Tri Alpha Energy, Inc., TAE TEAM — C-2W field-reversed configuration (FRC) experiments [1] are focused to resolve major physics issues facing the future of FRC devices. To achieve these goals, it is essential to measure the plasma equilibrium dynamics and monitor plasma fluctuations. One of the critical diagnostics under development is a 14-chord three-wave far infrared (FIR) laser interferometry and polarimetry system, which can provide simultaneous high temporal resolution measurements of density and Faraday rotation profiles with high accuracy. It is based on the previous successful experience of FIR polarimetry and interferometry measurements in C-2U FRC plasmas [2]. The physics considerations and the electro-opto-mechanical design and development of the system will be described, with discussions on challenges and solutions specific to diagnosing the high beta FRC plasmas. Initial experimental data will also be presented. [1] M.W. Binderbauer et al., AIP Conference Proceedings 1721, 030003 (2016). [2] B.H. Deng, et al., Rev. Sci. Instrum., 87, 11E125 (2016).

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