

Abstract Submitted  
for the DPP19 Meeting of  
The American Physical Society

**Effect of electrode biasing on C-2W electron temperature** MANJIT KAUR, University of California, Irvine, PETER YUSHMANOV, VLADIMIR SOLOKOV, KAN ZHAI, AND THE TAE TEAM, TAE Technologies Inc. — In TAE Technologies’ current experimental device, C-2W (also called “Norman”) [1], record-breaking, advanced beam-driven field reversed configuration (FRC) plasmas are produced. FRCs are sustained in the central confinement vessel (CV) in the steady state utilizing variable energy neutral beams, advanced divertors, end bias electrodes, and an active plasma control system. In this presentation, we study the effect of end electrode bias both under steady-state and transient conditions on the  $e^-$  temperature ( $T_e$ ) measured using a Thomson scattering diagnostic in the mid-plane of CV. The steady-state analysis allows distinguishing between the effects of bias voltage versus current. Dynamic bias allows measuring  $T_e$  rise/decay rates and thus makes it possible to analyze the effect of bias on  $e^-$  confinement. The effectiveness of biasing – fraction of current and voltage delivered to CV – is analyzed using a single-sided bias where electrodes on the opposite end act as floating electrostatic probes. A strong correlation of  $T_e$  with the bias is observed, which might be an indication of  $e^-$  heating by the applied bias. [1] H. Gota et al., Nucl. Fusion 59, 112009 (2019).

Manjit Kaur  
University of California, Irvine

Date submitted: 03 Jul 2019

Electronic form version 1.4