

Abstract Submitted
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Advanced Biasing Experiments on the C-2 Field-Reversed Configuration Device MATTHEW THOMPSON, SERGEY KOREPANOV, EUSEBIO GARATE, XIAOKANG YANG, HIROSHI GOTA, JON DOUGLASS, IAN ALLFREY, TRAVIS VALENTINE, NOLAN UCHIZONO, Tri Alpha Energy, THE TAE TEAM — The C-2 experiment seeks to study the evolution, heating and sustainment effects of neutral beam injection on field-reversed configuration (FRC) plasmas. Recently, substantial improvements in plasma performance were achieved through the application of edge biasing with coaxial plasma guns located in the divertors [1]. Edge biasing provides rotation control that reduces instabilities and $E \times B$ shear that improves confinement. Typically, the plasma gun arcs are run at ~ 10 MW for the entire shot duration (~ 5 ms), which will become unsustainable as the plasma duration increases. We have conducted several advanced biasing experiments with reduced-average-power plasma gun operating modes and alternative biasing cathodes in an effort to develop an effective biasing scenario applicable to steady state FRC plasmas. Early results show that several techniques can potentially provide effective, long-duration edge biasing.

[1] M. Tuszewski et al., Phys. Rev. Lett. 108, 255008 (2012)

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