

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Spectroscopic observations of scrape-off layer electron temperature and density in an advanced beam-driven field-reversed configuration

DMITRY OSIN, TANIA SCHINDLER, Tri Alpha Energy, TAE TEAM — A Scrape-Off Layer (SOL) of an advanced beam-driven Field-Reversed Configuration (FRC)¹ was experimentally studied employing a compact dual-wavelength imaging system. A nearly 10 cm SOL plasma region adjacent to the FRC core was examined with relatively high spatial 0.2 cm and temporal 25 μ s resolutions. Injection of a helium jet into the C-2U confinement vessel ensured local measurements in the observed SOL region. Time-resolved electron temperature and density were determined from a ratio of the obtained 2D spectral images of neutral He lines. The SOL plasmas were studied in two different configurations of edge-biasing systems^{2, 3}: passively biased electrode plates and active LaB6 cathode. Observed electron temperatures and densities are presented for both passive and active configurations of edge-biasing systems.

1. M.W. Binderbauer et al., Phys. Plasmas 22, 056110 (2015).
2. M. Tuszewski et al, Phys. Rev. Lett. 108, 255008 (2012).
3. M. Thompson et al, Bull. Am. Phys. Soc. 59, UP8.00011 (2014).

Dmitry Osin
Tri Alpha Energy

Date submitted: 08 Aug 2016

Electronic form version 1.4