Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Edge MSE measurements on the DIII-D tokamak

B.S. VICTOR, C.T. HOLCOMB, S.L. ALLEN, W.H. MEYER, M.A. MAKOWSKI, LLNL — The edge motional Stark effect (MSE) diagnostic on DIII-D has recently been upgraded to provide better constraints on the current density in the outer half radius, including high-spatial resolution measurements in the H-mode pedestal. The channels have been upgraded with new bandpass filters with FWHM of 0.3 nm and >90% transmission at the central wavelength, and improved detector positioning. A spectrometer has been used to measure the $\sigma$ and $\pi$ lines for each of the edge channels to optimize the new filter selection. These upgrades are expected to improve our ability to assess current drive and stability in various DIII-D plasmas. Comparisons will be shown between the Sauter and NEO bootstrap current models and these new measurements in fully non-inductive plasmas. We will present calculations of the ideal MHD $\beta_N$-limit in various scenarios that use the improved measurements. Finally, changes in the edge pitch angle during ELMs are examined.

Supported by US DOE under DE-AC52-07NA27344, DE-FC02-04ER54698, DE-FG02-04ER54761, DE-SC0010661, and DE-AC02-09CH11466.

B.S. Victor
LLNL

Date submitted: 16 Jul 2015
Electronic form version 1.4