

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Equilibrium reconstructions using imaging MSE on the DIII-D tokamak¹ B.S. VICTOR, C.T. HOLCOMB, S.L. ALLEN, LLNL, A. THORMAN, J. HOWARD, ANU — For the first time, an imaging motional Stark effect (IMSE) diagnostic has been successfully implemented on DIII-D. This poster presents initial results on incorporating these measurements into EFIT equilibrium reconstructions. IMSE provides a 2D image of the polarization angle as a function of major radius and vertical position. The single, wider bandpass filter used with IMSE allows for polarization angle measurements across multiple neutral beams and with variable beam voltage. The traditional MSE systems on DIII-D only work with one beam at a constant voltage. In addition to 2D data with improved spatial resolution, IMSE has provided the lowest major radius internal plasma magnetic measurements on DIII-D, producing new equilibrium constraints. Advanced tokamak scenarios with $q_{min} > 1.5$ are studied in detail with the new constraints provided by the IMSE system. The additional constraints are being used to assess ideal, resistive, and energetic particle stability in these scenarios.

¹Supported by US DOE under DE-AC52-07NA27344, DE-FC02-04ER54698, and DE-FG02-04ER54761.

B.S. Victor
LLNL

Date submitted: 14 Jul 2016

Electronic form version 1.4