

Abstract Submitted
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Development and Evaluation of a Motional Stark Effect with Laser Induced Fluorescence Diagnostic for Determining the Magnetic Field Magnitude and Angle in NSTX ADAM STEINER, NCSU, E.L. FOLEY, F.M. LEVINTON, Nova Photonics, A. BARLIS, Williams College — The motional Stark effect (MSE) diagnostic has been widely used for determining the magnetic field pitch angle profile in the high magnetic fields of large tokamaks. Incorporating laser induced fluorescence (LIF) and a dedicated diagnostic neutral beam into MSE systems has been shown to extend the range of applicability to lower field systems and to provide simultaneous measurements of magnetic field magnitude. An MSE-LIF system built by Nova Photonics has been characterized and redesigned for installation on NSTX. The design has taken into account spatial considerations of interfacing between the system and NSTX and allowed for the inclusion of neutral beam measurement devices including a Faraday probe and a calorimeter. An electrically insulated magnetic shielding system was developed to prevent interference from the external magnetic field of NSTX. Characterization of the neutral beam has shown good performance and agreement with theoretical values with respect to the neutral-ion ratio and species fraction.

Adam Steiner
NCSU/SULI at PPPL

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