

Abstract Submitted
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Preparation of the motional Stark effect with laser-induced fluorescence diagnostic for installation on NSTX¹ M.D. BERN, Duke University, E.L. FOLEY, Nova Photonics, Inc. — The motional Stark effect with laser-induced fluorescence (MSE-LIF) diagnostic allows for the measurement of internal magnetic field pitch angle and magnitude—this data can be used as a constraint for plasma equilibrium reconstructions. The MSE-LIF diagnostic utilizes the Stark effect by injecting into the plasma a neutral beam of hydrogen, which experiences a $v \times B$ electric field in its reference frame. This electric field causes splitting and polarization of the Balmer-alpha spectrum, which allows for measurements of magnetic field magnitude and pitch angle respectively. MSE-LIF will improve on the traditional MSE diagnostic by employing a narrow line-width laser and diagnostic neutral beam. Resolution of spectral lines with MSE-LIF will be possible for low magnetic fields (<0.1 T). In the future, MSE-LIF could prove to be attractive for low field machines where MSE on a heating beam is not possible. This poster will cover modifications to the diagnostic neutral beam and other components of the MSE-LIF system in preparation for installation on NSTX for the 2011 run year.

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Michael Bern
PPPL, Duke University

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