

Abstract Submitted  
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**Installation of the MSE-LIF Diagnostic on NSTX**<sup>1</sup> E.L. FOLEY, F.M. LEVINTON, Nova Photonics, M.D. BERN, Duke University, C.J. BLUMENFELD, Columbia University — The motional Stark effect with laser-induced fluorescence diagnostic (MSE-LIF) is presently being installed on NSTX for demonstration in the 2011 run year. The MSE-LIF will enable radially resolved measurements of the magnetic field pitch angle and magnitude, both of which can be used to constrain plasma equilibrium reconstructions. A diagnostic neutral beam with low axial energy spread, low divergence, and high reliability has been developed. It operates routinely at 35 kV and 40 mA. A laser has been developed with high power ( $\sim 10$  W) and optimal linewidth match to the neutral beam ( $\sim 6$  GHz). The laser wavelength is near 651 nm for a match to the Doppler-shifted Balmer-alpha transition in the beam neutrals. The unique high-power, moderate linewidth laser system utilizes a 19 emitter diode laser bar and feedback from a volume holographic grating. A magnetic shield protects the ion source from the NSTX stray fields. This poster will present the final system design and give predictions for performance on NSTX.

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