

Abstract Submitted
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Progress on the motional Stark effect with laser-induced fluorescence diagnostic¹ ELIZABETH FOLEY, FRED LEVINTON, Nova Photonics, Inc.
— The motional Stark effect with laser-induced fluorescence (MSE-LIF) diagnostic is under development to extend the MSE magnetic pitch angle diagnostic to lower fields (< 0.5 T) and enable measurement of magnetic field magnitude as well as direction. The technique involves injecting a low energy-spread neutral hydrogen beam (30 kV, 30 mA) into plasma, and using a collinear laser to excite transitions from the $n=2$ to $n=3$ atomic states in the beam atoms. The subsequent fluorescence from the same transition (Balmer-alpha, near 650 nm for the Doppler-shifted beam) is observed, and its splitting and polarization due to the $E = v \times B$ electric field in the beam frame is used to determine the background magnetic field magnitude and direction. This poster will present recent results from MSE-LIF development. A new plasma testbed for MSE-LIF, a spiral antenna helicon source, has been built.

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