

Abstract Submitted
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Optimization of Optical Filters for the LIBEAM Diagnostic¹

SEAN MCGUIRE, Whitworth University, C.C. PETTY, D.M. THOMAS, General Atomics, B. HUDSON, ORISE — In tokamak plasmas with an edge transport barrier, a measurement of the edge current density is necessary to understand plasma stability. A LIBEAM diagnostic system has been deployed on DIII-D that measures Zeeman polarimetry of the 2S-2P lithium resonance line in order to determine the magnetic field and corresponding current density within the edge pedestal region. Emission of the lithium resonance line is split by the local magnetic field producing three closely spaced spectral components; isolation of the σ^- spectral component is required for measurement of the local magnetic field. A double Fabry-Perot etalon system is currently used for this purpose but a narrower bandpass is desired. This research will determine whether the installation of an exit pinhole will improve the etalon's finesse. However, transmitted light intensity is near a minimum threshold and the efficiency of the entire optical system must be examined and maximized. Optimization may include the installation of new detectors, lenses and fibers.

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