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Correcting for Background Emission Effects in DIII-D LIBEAM Measurements,* K. Kaplan, *Duke University*; D.M. Thomas, *General Atomics*; H. Stoschus, *ORISE*; X. Chen, *UC Irvine* – A novel background correction technique has been developed for the DIII-D neutral lithium beam diagnostic (LIBEAM) which is used for diagnosing the local density profile $n_e(r)$ and current density $j(r)$ in the edge ($\rho > \sim 0.8$) region of the plasma. The diagnostic relies on the Zeeman splitting of the collisionally excited lithium 2S-2P line in the tokamak magnetic field. Combined spectroscopy and polarimetry are then used to determine the magnetic field components and thence $j(r)$. Background plasma light due to imperfect spectral filtering can represent a significant systematic error in these measurements in some cases. To correct for this effect, a beam splitter was used in conjunction with 670.3 nm and 649.9 nm filters. The output signals from these two filters were then used to determine the non-beam background in real time at the observation point and account for it in the analysis. This process of correcting for background noise allows a more accurate determination of the pitch angle of the plasma under high-density conditions.

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