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High Resolution Spectral Measurements of Lithium Beam-Induced Emission in Pedestal Region of DIII-D Plasmas[1] C.M. KOCH, Virginia Tech, D.M. THOMAS, General Atomics, H. STOSCHUS, ORISE — A 30 keV neutral lithium beam (LIBEAM) is used on DIII-D to measure the current density the pedestal region and test model predictions. The LIBEAM produces collisionally excited 670.8 nm resonance florescence as well emission at other wavelengths due to plasma ion charge exchange which may be studied using the appropriate spectral analysis. These measurements are being pursued using an $f/3$ transmission grating spectrometer in conjunction with a high efficiency charged coupled device (CCD) camera capable of 8 ms/frame temporal response and a resolving power approaching 20,000 at 670 nm. Surveys are being made at various wavelengths to determine the lithium beam Doppler broadened emission profile as well as to assess the prospects for determining edge ion temperature and impurity profiles based on thermal broadening and integrated spectral line intensity.

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