

Abstract Submitted
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Improvements, upgrades, and plans for Thomson scattering on DIII-D¹ T.N. CARLSTROM, D. DU, F. GLASS, C. LIU, M. WATKINS, GA, A.G. MCLEAN, LLNL — The Thomson scattering diagnostic on DIII-D consists of 3 beam lines that probe vertically, horizontally, and in the divertor region of the tokamak, with 54 spatial locations, edge spatial resolution down to 5 mm, and 10 Nd:YAG lasers. In its 25-year history, the collection lens optics and interference filters degraded and have been replaced, restoring previous performance. In addition, improved calibrations and detector temperature control (± 0.1 C) have reduced systematic errors. Cross calibration with the CO₂ interferometer and ECE cut-off have improved the density calibration. Improvements to the beam line and lasers have increased the laser energy delivered to the scattering volume in the plasma. Future plans include moving the divertor system to measure regions of high triangularity using in-vessel mirrors to redirect the laser beam; adding a wide angle lens to the horizontal system to view the entire plasma radius near the plasma mid plane; and reversing the direction of the laser beam on the horizontal system to reduce the scattering angle and compressing the spectrum in wavelength space so that higher central Te measurements (<5 KeV) can be made with improved accuracy.

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