

CENTRAL THOMSON SCATTERING UPGRADE ON DIII-D

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The existing 36 channel Thomson scattering system on the DIII-D tokamak measures the plasma temperature and density in the core region. However, with the recent interest in core peaked density profiles, coverage needs to be extended into the magnetic axis. This paper addresses the technical issues involved with extending the viewing region from a radius of 195 cm to 165 cm. At least one of the existing 7 core laser beams will be re-routed to probe the plasma tangentially instead of vertically. To do this, a rigid extension of the existing laser/collection optics tower must be built to route the laser to a nearby tangential port. A fiber bundle array from one of the two core plasma collection optics sets will be rotated to allow up to 10 of the 36 core channels to view along this new beam path. A new in-vessel absorbing glass laser dump must be developed since there are no available laser beam exit ports. The close proximity of this laser dump to the viewing region presents stray light issues that must be resolved to allow for an accurate density calibration using Rayleigh scattering in argon gas.

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