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Laser Thomson Scattering Diagnostics in the Low-Temperature Plasmas HYUN-JONG WOO, KYU-SUN CHUNG, Hanyang University — Laser Thomson Scattering (LTS) is the non-invasive method for measuring the electron temperature and its density, which can be used for the calibrations of electric probes within collisional and magnetized plasmas. For LTS diagnostics in the low-temperature plasmas, one need to special optics for detection of the scattered light with restricting the Rayleigh and Stray lights. For this, one uses the Triple Grating Spectrometer (TGS), which is composed of Rayleigh block (notch filter for Rayleigh light) and double grating filter (DGF). All focusing lenses are used with achromatic doublet configuration for reducing the non-linear optical effects such as spherical aberration, coma, etc. The specifications of the grating and achromatic doublet lens are 1800 gr/mm with the dimensions of 84 mm $\times$ 84 mm and 400 mm of focal length with the diameter of 100 mm, respectively. In this configurations, the linear dispersion is given as 1.006 nm/mm. Considering the dimension of Charged Coupled Device (CCD) with the linear dispersion, the LTS system can be measure the electron temperatures of less than 10 eV (in most laboratory plasmas). The initial measurement of LTS measurement and comparative study with single probe are done in Divertor Plasma Simulator (DiPS) with the following plasma parameters; plasma density of $10^{11} - 10^{13}$ cm^{-3}, electron temperature of 1-4 eV, and the magnetic field of 0.2-1 kG, respectively.

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