

§4. Recent Results from YAG Thomson Measurement on CHS

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In this fiscal year, we installed YAG Thomson system on CHS. The system was moved from Higashiyama site to Toki site the year before. There were several problems on the installation. (1)increase of stray light (2)trigger error of timing system by noise. We resolved the stray light problem by the installed newly designed baffle plate to the laser injection port. The trigger error problem was resolved by the reduction of the noise which is caused by contaminated electrical ground. We also overhauled the YAG laser system. Consequently, we get 20-30% improvement of output power of the YAG laser from last campaign in Higashiyama site. Now, the YAG Thomson profile data are manipulated by MDS plus which is developed by MIT plasma laboratory. The profile data is automatically saved to data set on MDS plus, and easily operated using the MDS plus tool.

We show the recent results of the YAG Thomson measurement. First, we show the result of ECH plasma

experiment. Injected ECH power is ~200 kW. Fig.1 (a) shows time evolution of ECH plasma. The plasma is maintained in almost steady state during 90 ms. The central electron temperature is ~1.5 keV. The central electron density is ~ 1.0×10^{12} cm⁻³. Fig.1(b) and (c) show the profiles of the electron temperature and density respectively. The temperature profile is peaked, while the density profile is flattened. Secondly, we show the result of NBI plasma experiment. In Toki site, incident direction of two NBIs are modified to two co-injection from balanced injection. The plasma is produced by the 150 kW ECH injection. The injected power of two NBI are 600 kW and 750 kW respectively. Fig.2 (a) shows the time evolution of NBI plasma. The central electron temperature is ~600 eV. The maximum central electron density is ~ 8×10^{13} cm⁻³. The electron temperature is gradually decreased as the density steeply increased. Fig. 2 (b)and(c) show broad profiles about both the temperature and the density. By assuming that the ion temperature is equal to the electron temperature, the kinetic stored energy is ~4kJ. The confinement time is ~2.9 ms which is a little bit lower than the ISS95 confinement time of ~3.6 ms, which might be due to an insufficient wall conditioning for high density.

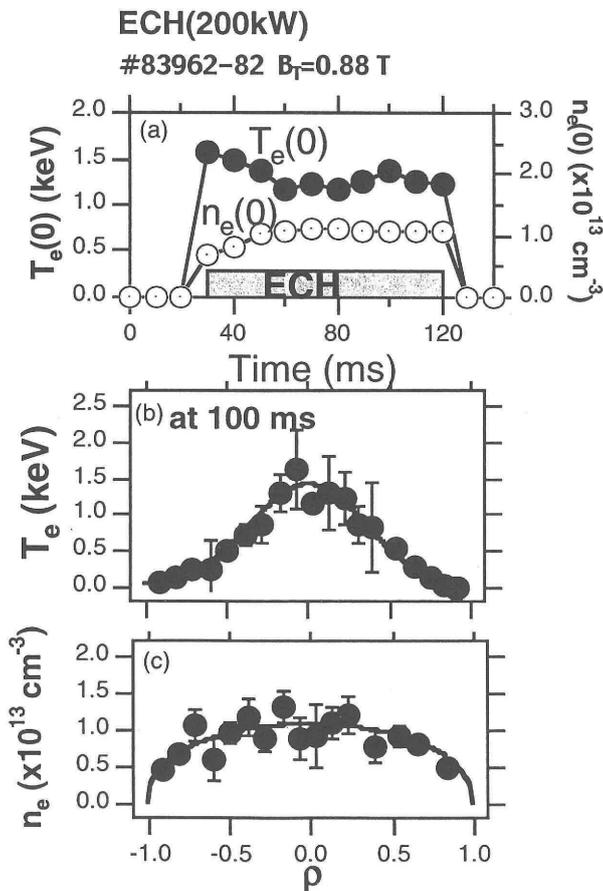


Fig.1 Results of YAG Thomson measurement of ECH plasma

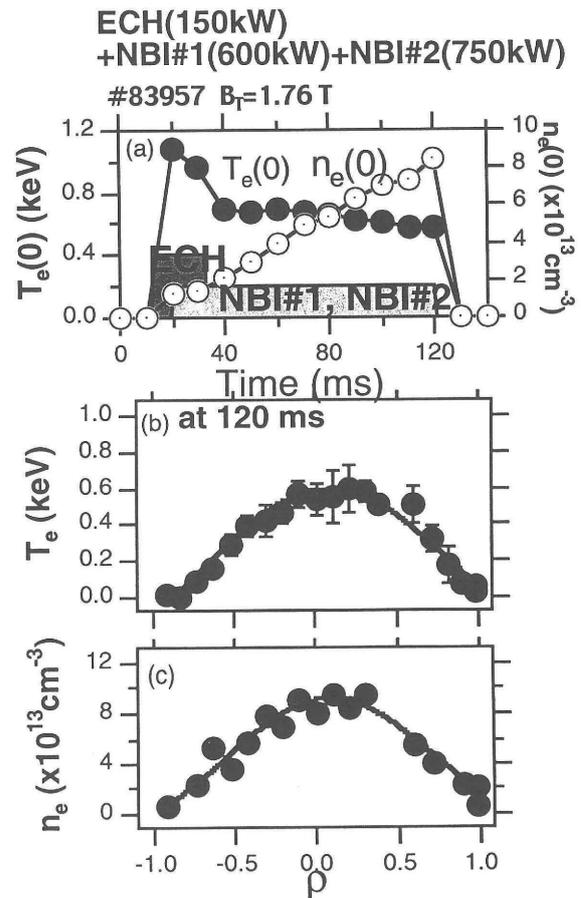


Fig.2 Results of YAG Thomson measurement of NBI plasma