

## §1. Construction of Plasma Diagnostics Laboratories

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The building of the Plasma Diagnostics Laboratories was constructed in this fiscal year as is shown in Fig.1. The total area of the laboratory is about 2800 m<sup>2</sup> which is separated into one large sized, one medium sized and nine small sized laboratories. One of the main laboratories is a large experimental room (37.8 x 21.6 m<sup>2</sup>) with a lifting facility of 10 ton, where the large sized diagnostic instruments such as Thomson scattering, FIR laser interferometer, the fast neutral particle energy analyzer (FNA) and so on will be installed for preparations to be done before installation to the LHD torus hall in the main experimental building. Figure 2 shows the inside view of the large experimental room just after construction. There will be also installed a plasma production device, TPD-II machine, which is useful for the development of spectroscopic measurements and for education of the graduate school students.

One of the most challenging diagnostics on the LHD is the 6MeV heavy ion beam probe[1] to measure the plasma potential profile, which will be installed in the medium sized laboratory (12.6 x 21.6 m<sup>2</sup>) with the lifting facility of 5 ton. For the protection of  $\gamma$ -radiation produced in the process of the tandem acceleration of the heavy ion beam, this laboratory is surrounded by the concrete wall of 0.6 m thick, which is effective to reduce the

radiation level lower than 0.6  $\mu$ S/hr just outside of the laboratory.

In small laboratories (for spectroscopy, diagnostic pellet, neutron diagnostics, data acquisition and analysis system, MM/sub-MM wave diagnostics, and so on), we are carrying out further improvement and calibration of each diagnostic instrument constructed for the LHD, and also the development of new diagnostic technique. For helping these jobs, a lifting facility of 1 ton is equipped in each laboratory.

### Reference

- 1) Fujisawa, A. et al., Ann. Rev. NIFS, 1992-1993 (1993)

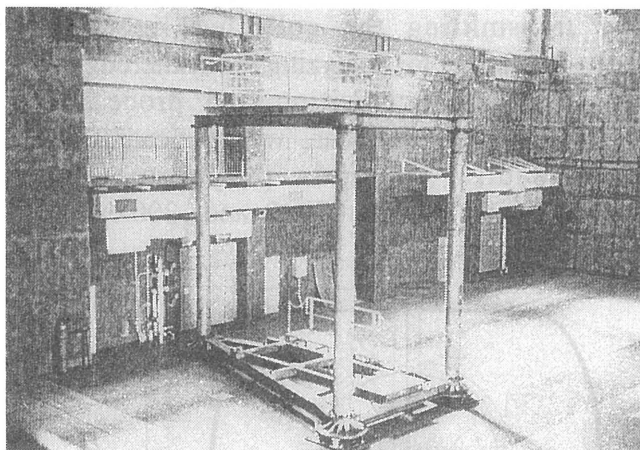


Fig.2. A inside view of the large experimental room. The test stand of FIR laser interferometer is assembled.

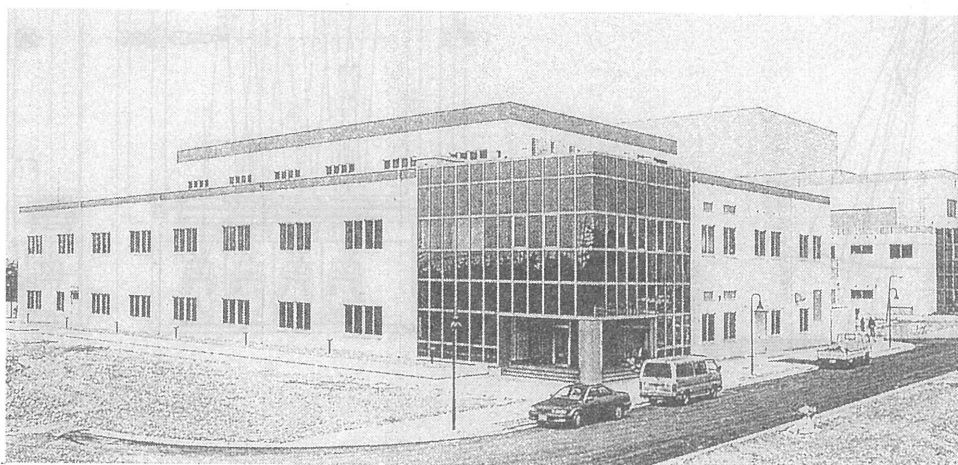


Fig.1. The side view of the Plasma Diagnostics Laboratories from the south.