§13. Study of Divertor Simulation Using End-region of a Tandem Mirror


As a future research plan of Plasma Research Center, University of Tsukuba, making use of the advantage of open magnetic field configuration, we have started a study of divertor simulation under the closely resemble to actual fusion plasma circumstances and we directly contribute the solution for realizing the divertor in toroidal devices.

Figure 1 shows the schematic view of the vacuum vessel in the west end-mirror region, together with the location of the diagnostic equipment. In order to perform a simultaneous measurement of heat and particle fluxes, a set of calorimeter and directional probe has been inserted from the bottom of the vacuum vessel \( z_{\text{EXIT}} = 30 \text{ cm} \) up to the center axis of GAMMA 10. A set of movable target plates was also made to obtain a visible spectroscopic data from the interactions between the plasma and the target materials \( z_{\text{EXIT}} = 70 \text{ cm} \). Direct energy analysis of end loss ion was started using end loss energy analyzer (ELIEA) located at the end-tank \( z_{\text{EXIT}} = 300 \text{ cm} \).

In high heat-flux generation experiments, net heat flux density during the ECH pulse was investigated. According to the increasing ECH power, the heat flux continues to increase and, in this year, superimposing the ECH pulse of 380 kW, 5 ms attained the maximum heat-flux more than 10 MW/m² at 30 cm downstream from the end-mirror coil on axis. This value comes up to the heat-load of the divertor plate of ITER, which indicates significant neutral compression and enhancement of recycling.

The presentations and publications from this collaborative research are listed below:

3) H. Takeda, et al., ibid, P/PMIF-8.