§10. Application of EIRENE to LHD/HD

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A tool for 3-Dimensional analysis of edge region in Large Helical Device (LHD) has been developed. The tool consists of mesh generation part, neutral transport part and visualization (post-processing) part. It should be noted that the plasma transport part is not implemented yet, thus a plasma profile is assumed. In the neutral transport part, a standard neutral particle transport code EIRENE [1] is used.

Experiments with Helical Divertor (HD) plate of carbon have been performed in Large Helical Device (LHD) since 1999. The above-mentioned tool has been applied to the LHD/HD configuration.

Figures show the example of calculation; Fig.1 is the plasma parameter given for test calculation, Fig.2 and 3 show the hydrogen atom density profile on poloidal planes $\phi = 0.6°$ and $\phi = 15.2°$, respectively. One of interesting results is asymmetry of neutral distribuion.

The plotting software IDL is used to visualize results. However, utilizing the virtual reality system CompleX-cope for 3-Dimensional Divertor analysis is planned.

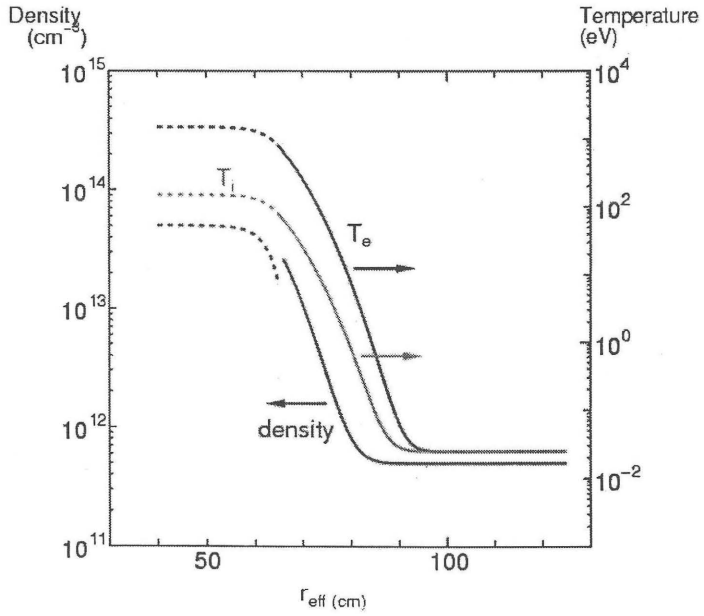

Fig. 1: Plasma parameter given for calculation

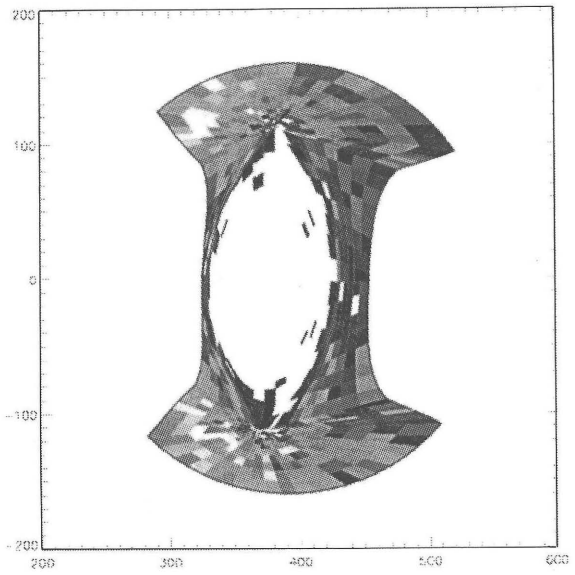

Fig. 2: Hydrogen atom density profile at $\phi = 0.6°$.

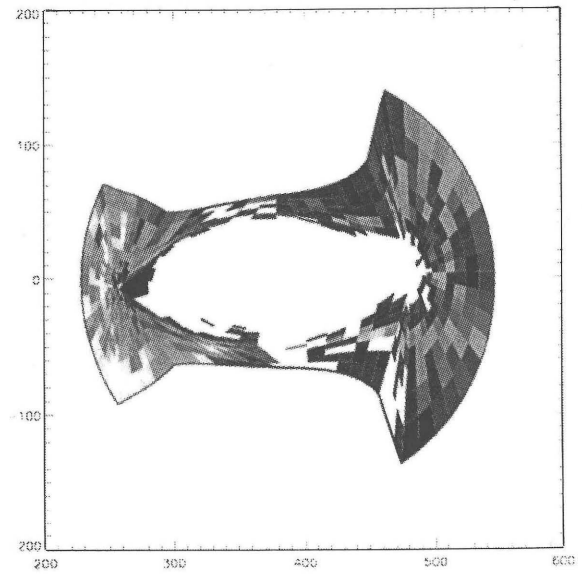

Fig. 3: Hydrogen atom density profile at $\phi = 15.2°$.

Reference

1) Reiter, D.: J. Nucl. Mater. **196-198** (1992) 80; Reiter, D.: EIRENE Manual (1996)