## 7P78 EMC3-EIRENE計算グリッドを用いた LHDボロメータ計測のトモグラフィー開発 Development of tomography for LHD bolometry with EMC3-EIRENE-defined grids

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Bolometry is an important measurement for plasma confinement devices to estimate the radiation loss from plasmas. In particular, it is used to elucidate the mechanism of radiative collapse and to avoid it to achieve a high-density steady-state plasma [1]. One of the most useful tools to analyze the radiation from plasmas is tomography which enables the reconstruction of a spatial radiation profile. We focus on the resistive bolometer arrays installed in the Large Helical Device (LHD) and develop a 2D tomography system using the EMC3-EIRENEdefined grids based on the magnetic field structure [2].

LHD magnetic field structure has a 3D configuration. However, regarding 2D tomography, we assume that a radiation profile has uniformity in the magnetic flux direction because the area where resistive bolometers at 6.5L-I and 6.5L-O are installed has relatively little toroidal variation. Figure 1 shows the lines of sight (LoS) of 6.5L-I and 6.5L-O projected onto the poloidal cross section at 249° in toroidal angle. The calculated ray transfer matrix (geometry matrix) [3] is shown in figure 2.

In the poster session, we will discuss tomographic reconstructions.

[1] B. J. Peterson et al., Plasma Fusion Res. 1, 045  $\boxed{\Xi}$  (2006).

[2] Y. Feng et al., Plasma Phys. Control. Fusion **59**, 034006 (2017).

[3] S. Kajita, et al., Contrib. Plasma Phys., **56**, 847 (2016).







Figure 2 The result of summing the ray transfer matrix of all bolometer foils.