

Z_{eff} measurement with Bremsstrahlung

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1. Objective

Radial profile of Z-effective from the Bremsstrahlung continuum emissivity measurement

2. Apparatus

2.1. Optical fiber array

- 44 fibers which covers a horizontally elongated plasma cross section.
- The absolute line-integrated intensity of the Bremsstrahlung continuum at 530 nm is measured by a visible spectrometer equipped with a CCD detector.
- Time resolution: 0.1ms

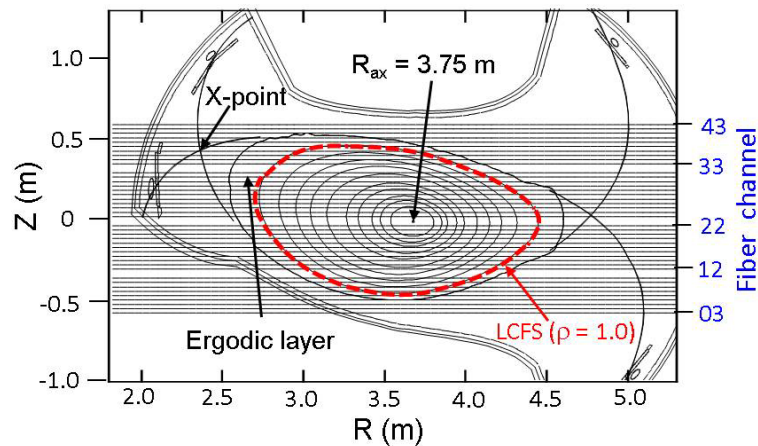


Fig. 1. Viewing chords for the Bremsstrahlung measurement

2.2. Port assembly

- The fiber array is installed on #10-O (Fig. 2)

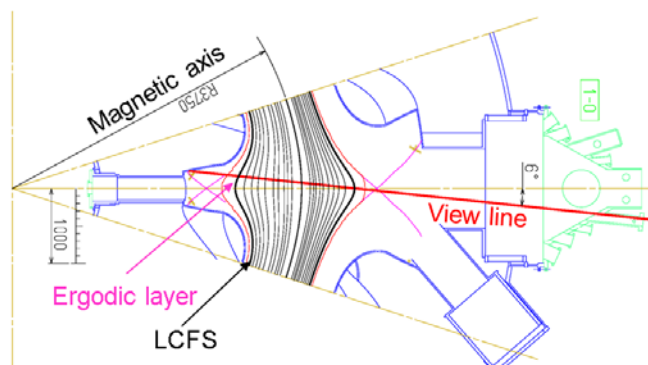


Fig. 2. Installed port location and upper view of the lines-of-sight.

3. Operation

- Before experiment: opening shutters and turning on power supply
- After experiment: closing shutters and turning off power supply

4. Remarks

- High-density operation produces better result.
- Example of data analysis (see Fig. 4)

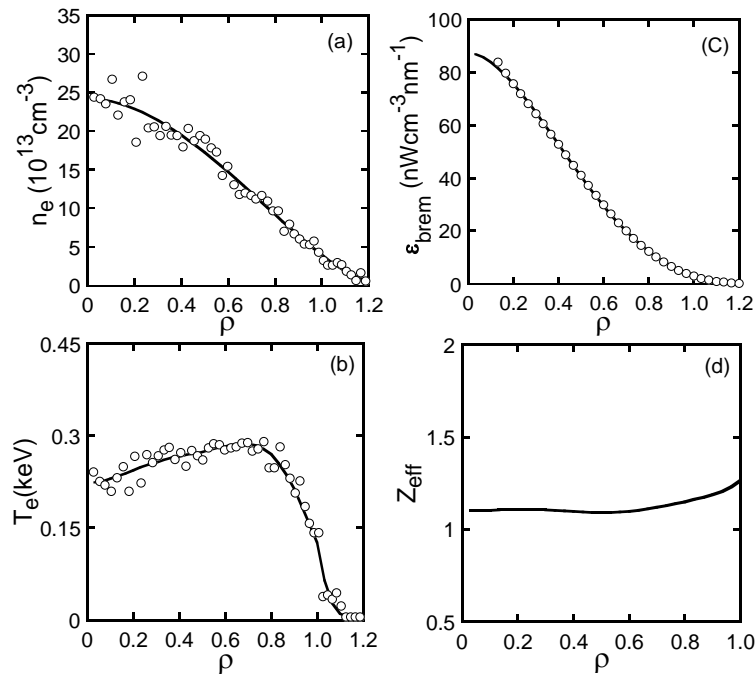


Fig. 3. Example of radial profiles of the Bremsstrahlung emissivity and the Z_{eff} .

References

- [1] S.Morita, M.Goto et al., Phys. Scripta **T91** (2001) 48.
- [2] H.Nozato, S.Morita et al., J. Plasma Fusion Res. **5** (2002) 442.
- [3] H.Nozato, S.Morita, M.Goto et al., PoP **11** (2004) 1920.
- [4] H.Nozato, S.Morita et al., J. Plasma Fusion Res. **7** (2006) 14.
- [5] H.Nozato, S.Morita, M.Goto et al., PoP **13** (2006) 092502.
- [6] H.Yamazaki, S.Morita and M.Goto, FED **81** (2006) 2817.
- [7] H.Y.Zhou, S.Morita, M.Goto et al., RSI **79** (2008) 10F536.
- [8] H.Y.Zhou, S.Morita, M.Goto et al., JAP **107** (2010) 053306.
- [9] H.Y.Zhou, S.Morita, M.Goto et al., RSI **81** (2010) 10D706.
- [10] H.Y.Zhou, S.Morita, M.Goto et al., PFR **5** (2010) S1021.
- [11] H.Y.Zhou, S.Morita, M.Goto et al., JJAP **49** (2010) 106103.
- [12] C.F.Dong, S.Morita et al., PFR **6** (2011) 2402078.

and others