

Flux loop array

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1. Purpose

Measure the slow and weak magnetic fluctuation which appears when the significantly large magnetic island produced by the RMP (Resonant Magnetic Perturbations) coil changes. Applying the spatial Fourier decomposition to the toroidal profile, toroidal mode number is derived.

2. Name of analysis (Kaiseki) data / module of MyView2

Integrated data can be obtained by “Kaiseki-data server”. The diagnostics name is “Flxloop”

3. General Description (Port, field line, time resolution, spatial resolution, number of channels, etc.)

Flux loop array has 9 flux loops set at 1-O, 2-O, 3-O, 4-O, 5-O, 7-O, 8-O, 9-O, 10-O (Fig. 1).

Flux loop @ ‘O-port’ has $N = 10$ [turn] wound at the ports whose cross-sections are $S = 1.2$ [m²] and have a total cross-section of $NS = 12$ [m²turn].

They detect the component of the magnetic field in the major radial direction. Measured physical object is the perturbed magnetic flux Φ^R . The flux loops measure the major radial component of the perturbed magnetic field δb_1 from the perturbed magnetic flux at the flux loop ($\delta b_1 = \Phi^R/NS$). The δb_1 is the plasma response magnetic field detected at the position of flux loop and has the major radial direction.

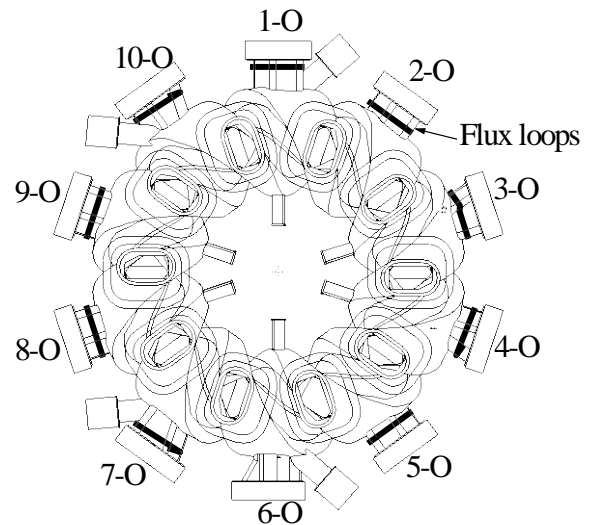


Figure 1 Toroidal array of flux loop.

4. Requirement in use

None

5. Description of analysis (Kaiseki) data / module of MyView2

The diagnostics name is “Flxloop”

6. Others

None

References

[1] Narushima, Y., et. al., 2007 Plasma and Fusion Research 2: S1094–S1094. doi:10.1585/pfr.2.S1094