

# Soft X-ray detector array system using scintillator

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## 1. Objective

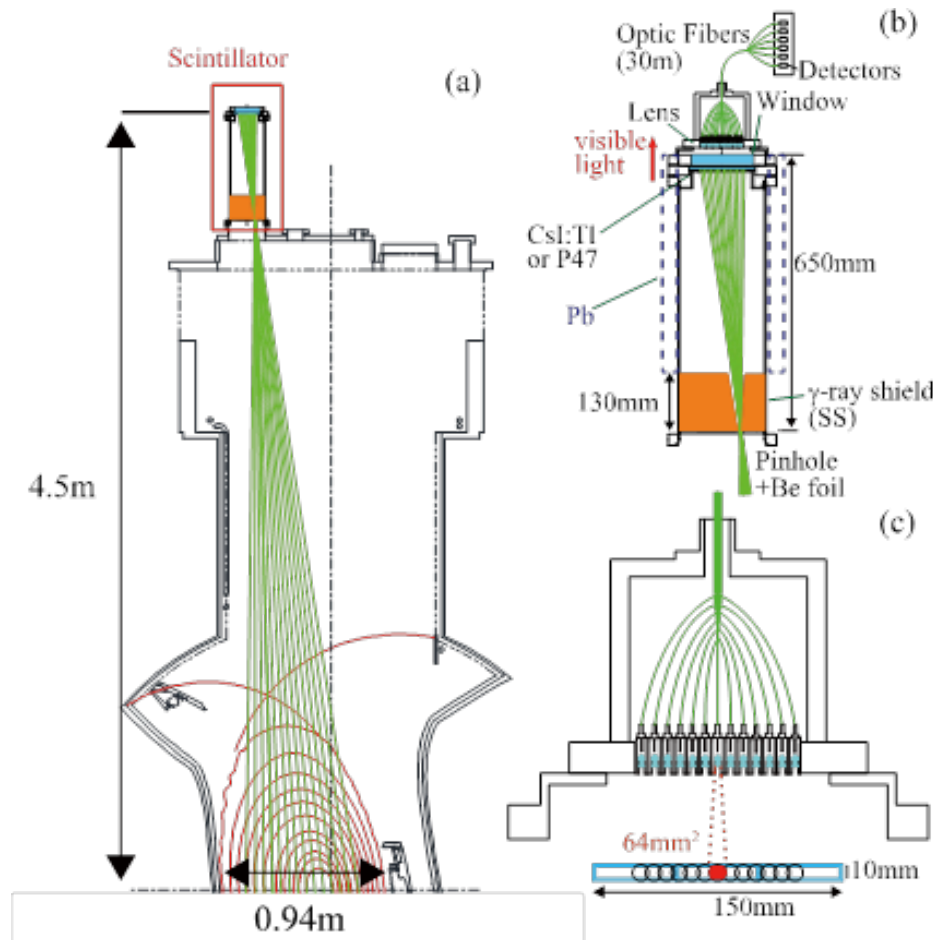
Measure the radial soft X-ray emission profile from LHD for equilibrium and stability analysis.

## 2. Apparatus

### 2.1. System

- Consist of 13ch scintillator detector set on 3.5U (see Fig. 1). The positions where the sight lines cross the equatorial plane are 3.43579m $\pm$ 2.826cm, (3.48869m $\pm$ 2.463cm), 3.53795m $\pm$ 2.463cm, (3.58721m $\pm$ 2.463cm), 3.63647m $\pm$ 2.463cm, (3.68573m $\pm$ 2.463cm), 3.73498m $\pm$ 2.463cm, (3.78424m $\pm$ 2.463cm), 3.8335m $\pm$ 2.463cm, (3.88276m $\pm$ 2.463cm), 3.93202m $\pm$ 2.463cm, (3.98128m $\pm$ 2.463cm), 4.03417m $\pm$ 2.826cm. Seven channels have been installed. Position with () is not implemented at the present moment.

- Soft X-ray is converted to visible light and detected by PMT (Hamamatsu H10723-210). Frequency up to 200kHz can be covered.



*Fig. 1. Schematic design of the scintillator-based diagnostic. (a) Sight lines (green lines) in a vertically elongated cross sectional view at 3.5U port of LHD are shown. (b) An expanded view of the red box region of (a) is shown. (c) Sensitive areas on the scintillator screen are shown.*

### **3. Operation**

It is operated routinely. In order to change the gain of the detector (not in plan), it is required to enter the LHD experimental hall.

### **4. Available data by “Retrieve”**

#### **4.1. LABCOM**

SXmp, ch 41-53

#### **4.2 Kaiseki-data server**

Not yet determined.

### **5. Remarks**

### **References**

[1] T. Bando, S. Ohdachi, et. al., Rev. Sci. Instrum. **87**, 11E317 (2016)