ToF Meeting

2024/10/8

Sinshu univ

Kyohei Ono

Background data Hit rate distribution

➢ **Use background data**

data in S3 in eic-shell

Proton Beam Gas background data :

S3/eictest/EPIC/EVGEN/BACKGROUNDS/BEAMGAS/proton/pythia8.306-1.0/
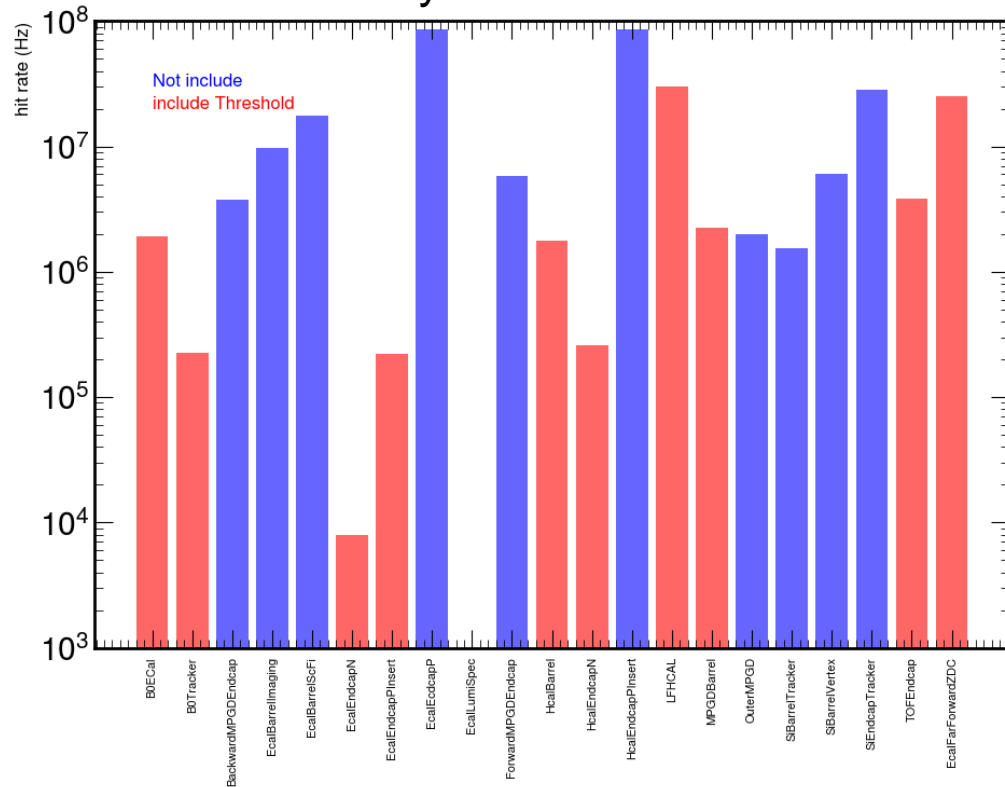
➢ **Method**

- Calculation of hit rate

$$\text{hit rate}[\text{s}^{-1}] = \frac{\text{total hits} \times \text{cross section}[\text{mb}] \times \text{luminocity}[\text{mb}^{-1}\text{s}^{-1}]}{\text{total events}}$$

Cross section and luminosity information was referenced from the background wiki
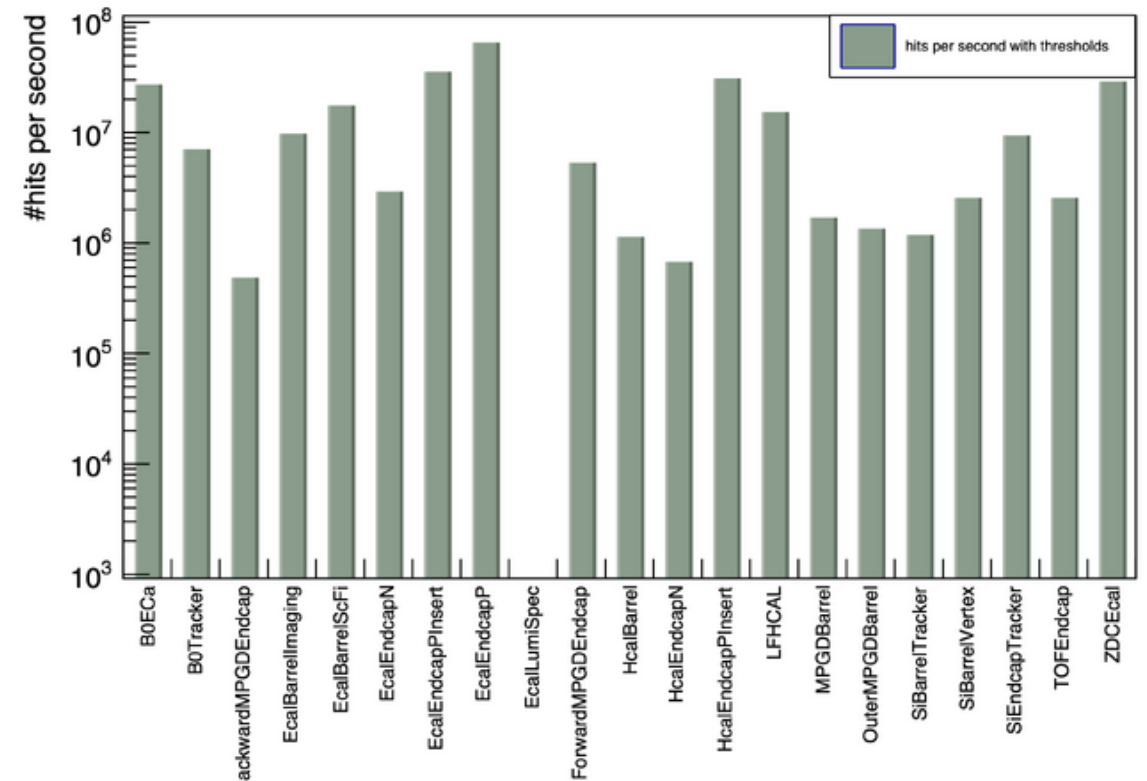
- ToF Hit rate θ vs φ

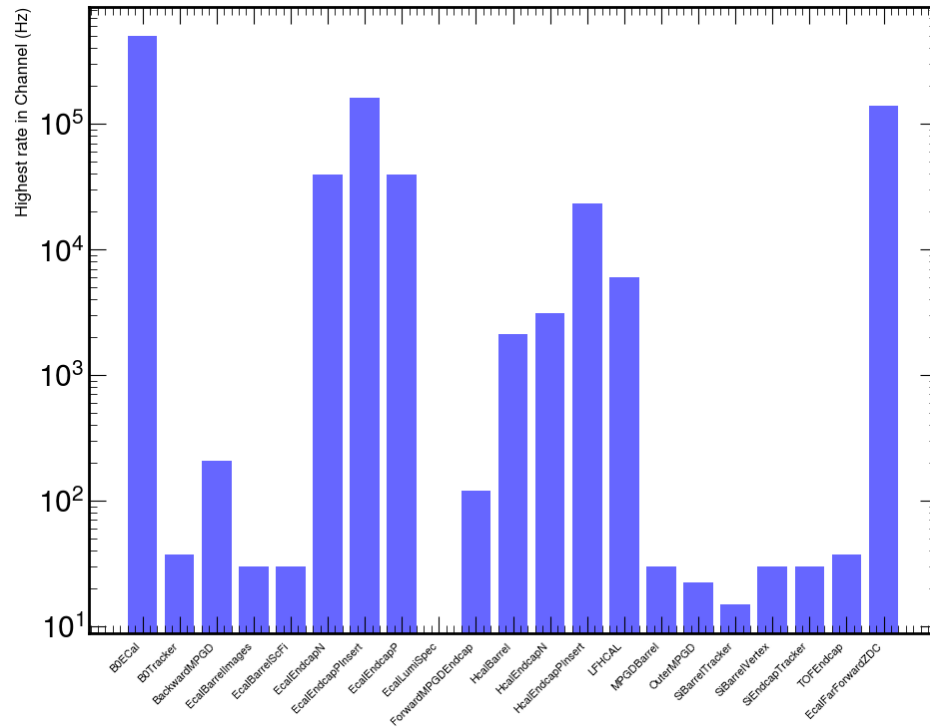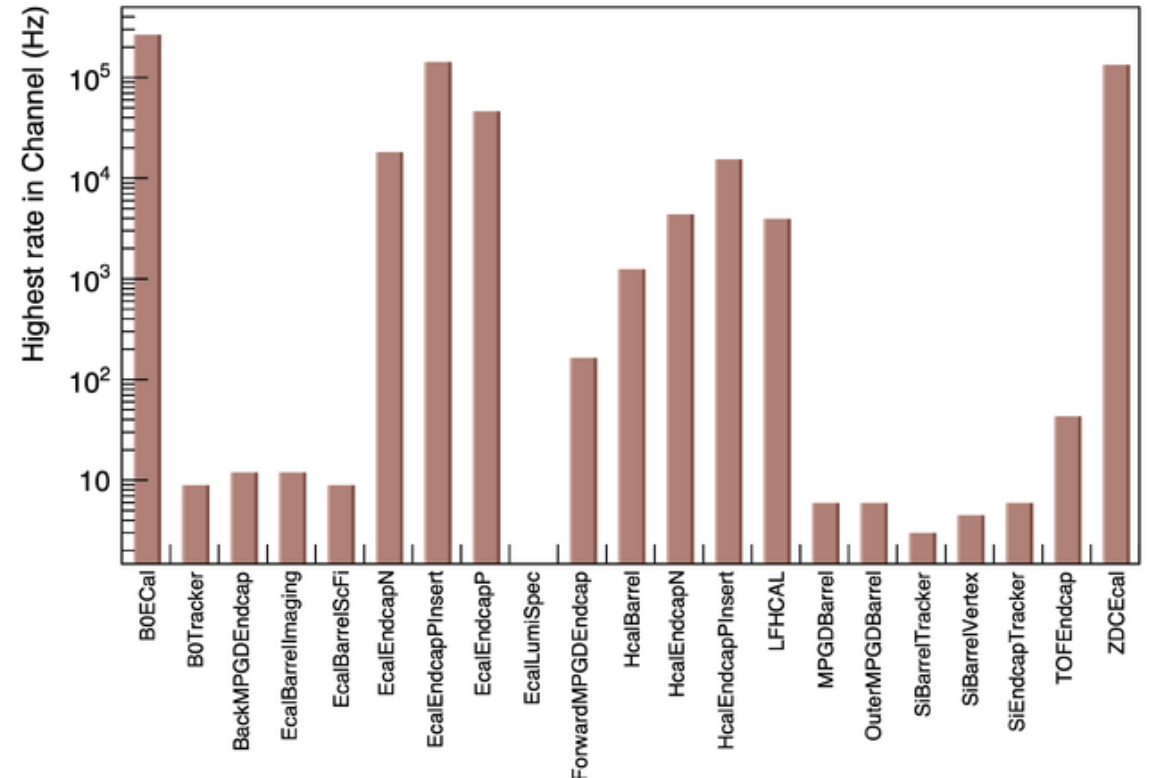# Hit rate per detector

My result

Official result

There were a few with no detector thresholds

Question : Large difference in some values
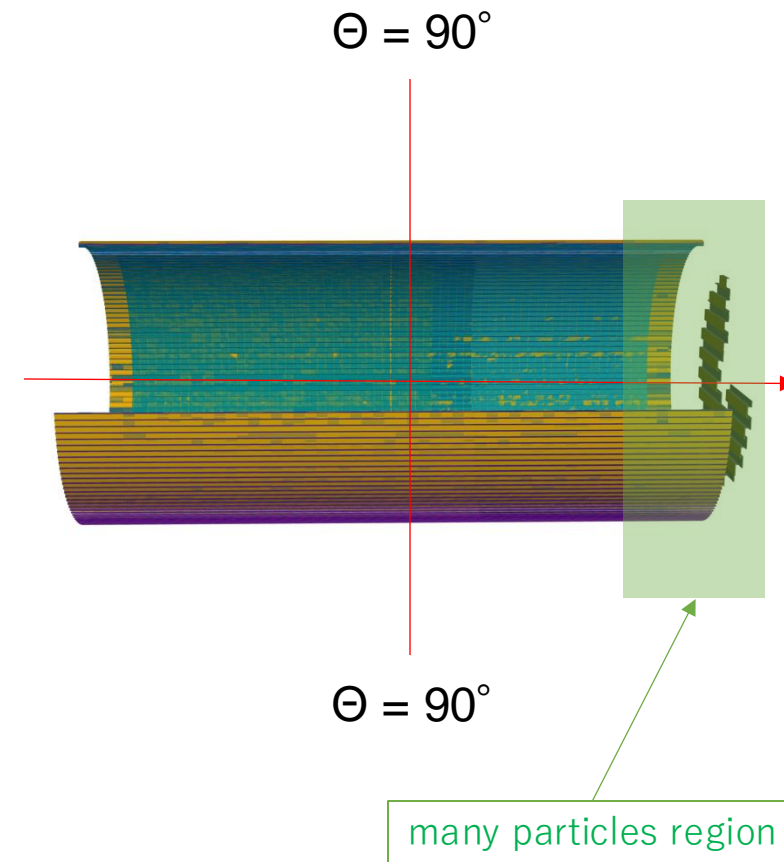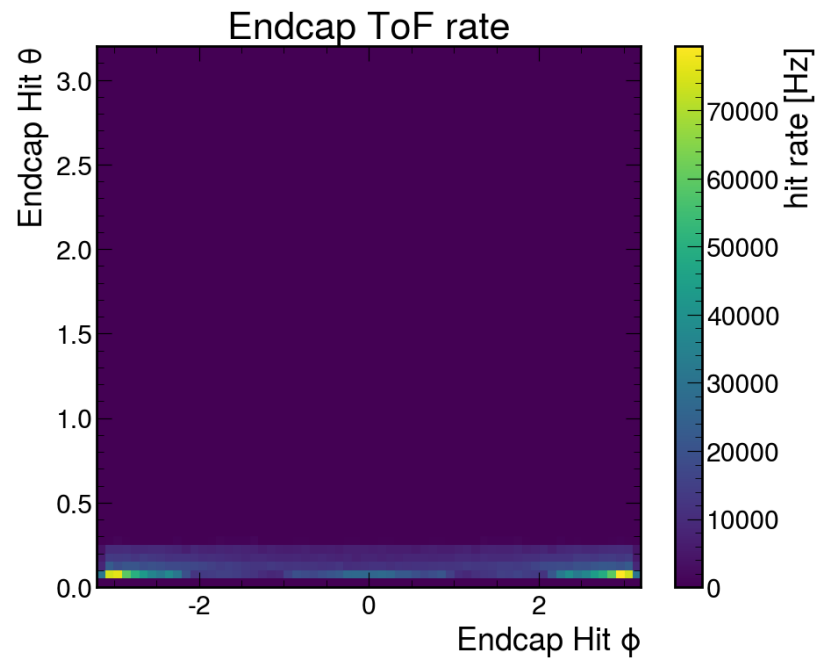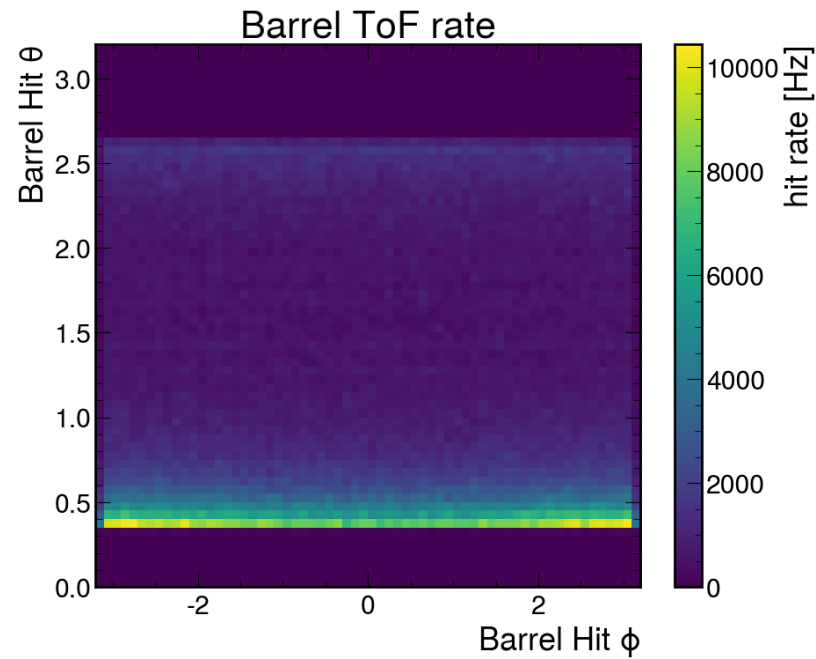
Highest rate in channel per detector

My result

Official result

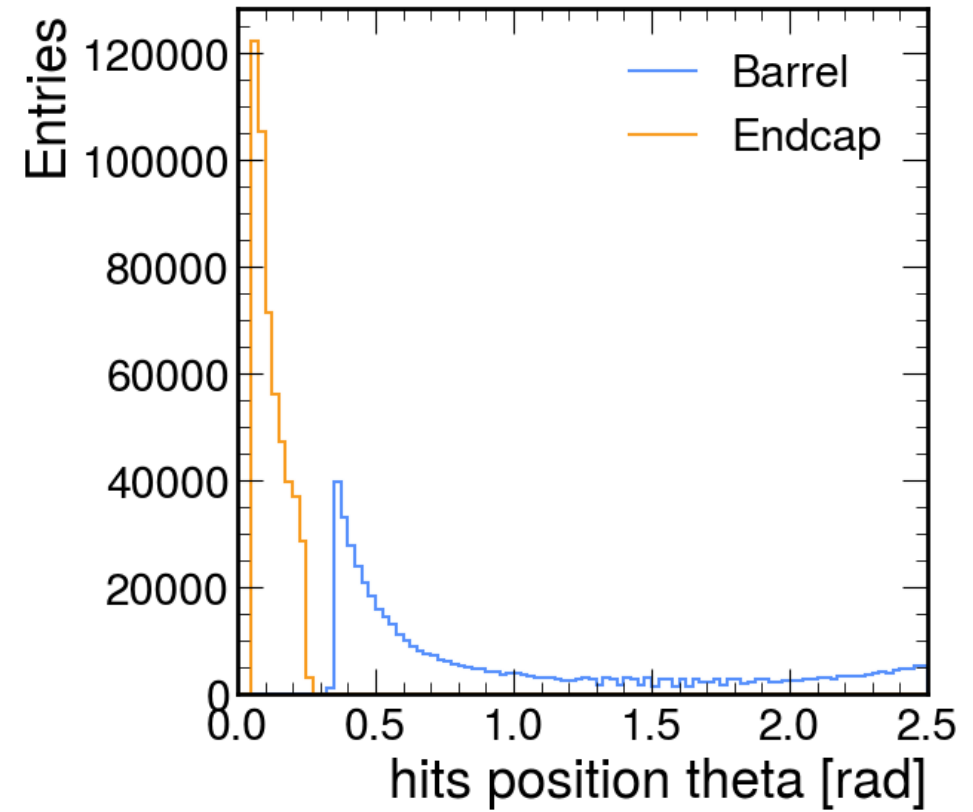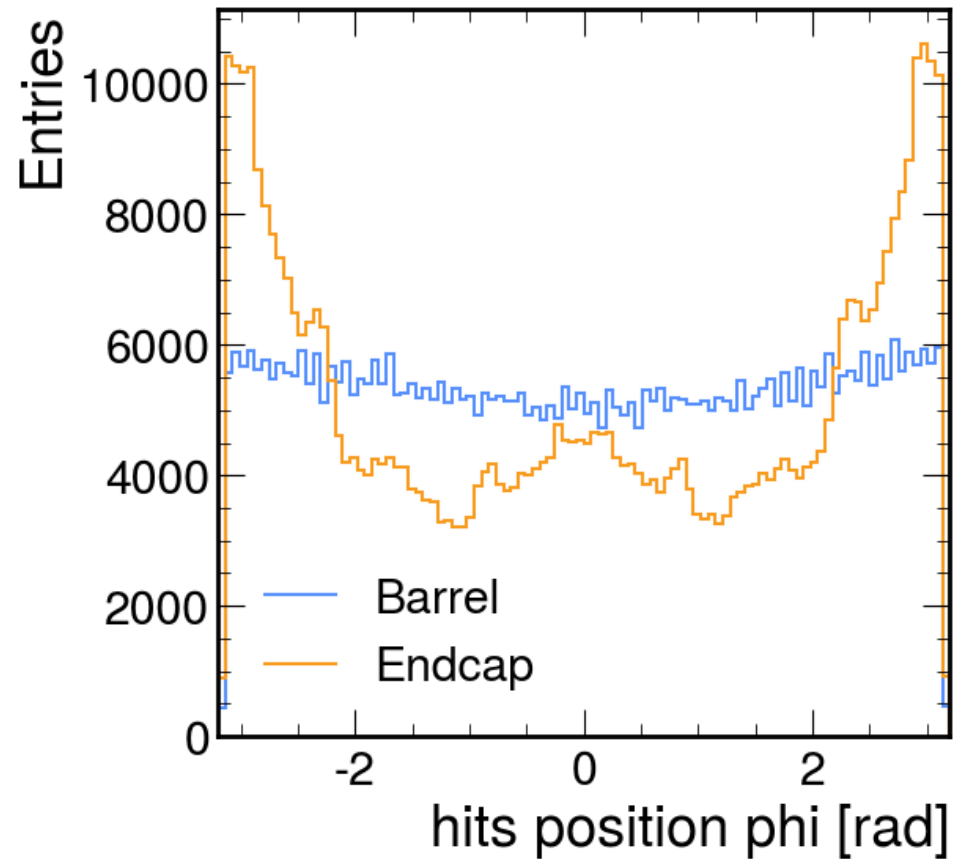# ToF Hit rate θ vs φ distribution

To do

➢ **Further background data investigation**

➢ **PID performance improvement**

BACKUP

TOF hits theta and phi

Proton background cross section luminocity

```
4        "xsec": 76.8e-3,
5        "lumi": 10e6,
6        "Ntotal": 103000
7    }
8
9
10
```