ToF Japan Meeting

2024/10/9

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バックグラウンドデータのヒットレート算出

➢使用したデータ

eic-shell内のS3にあるデータを使用

Proton Beam Gas background data :

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

➢方法

- hit rateの計算方法

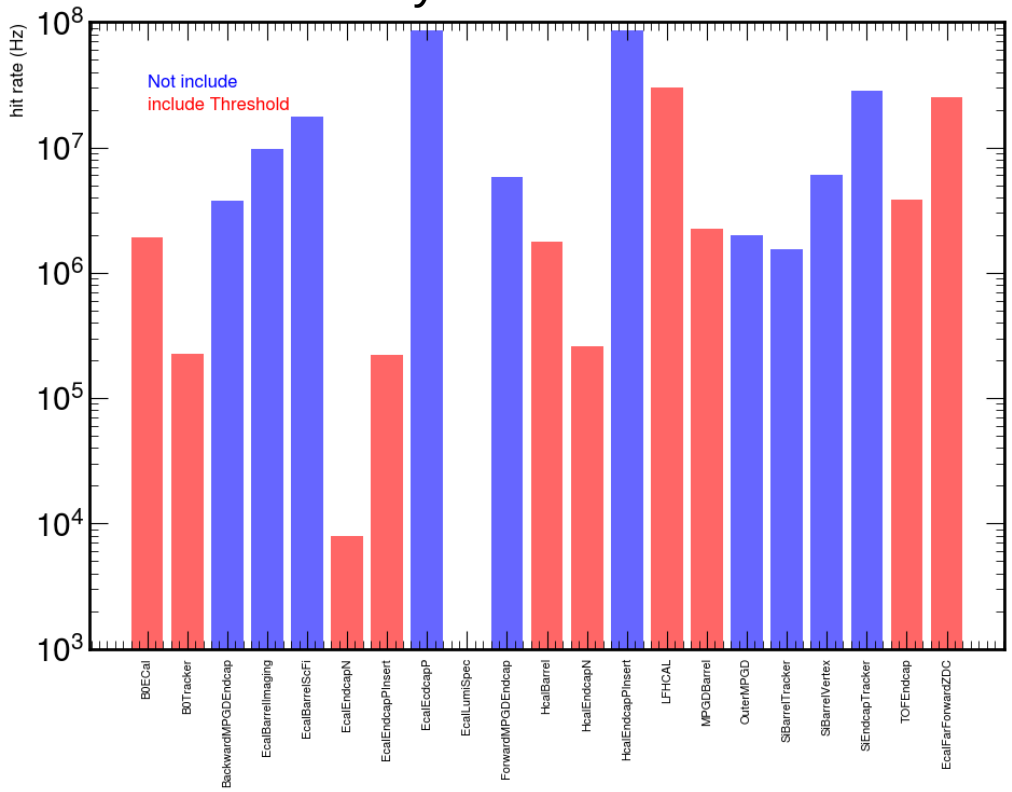
$$\text{hit rate}[\mathrm{s}^{-1}] = \frac{\text{total hits} \times \text{cross section}[\mathrm{mb}] \times \text{luminocity}[\mathrm{mb}^{-1}\mathrm{s}^{-1}]}{\text{total events}}$$

Cross sectionとluminosity はbackground wikiの情報を使用した

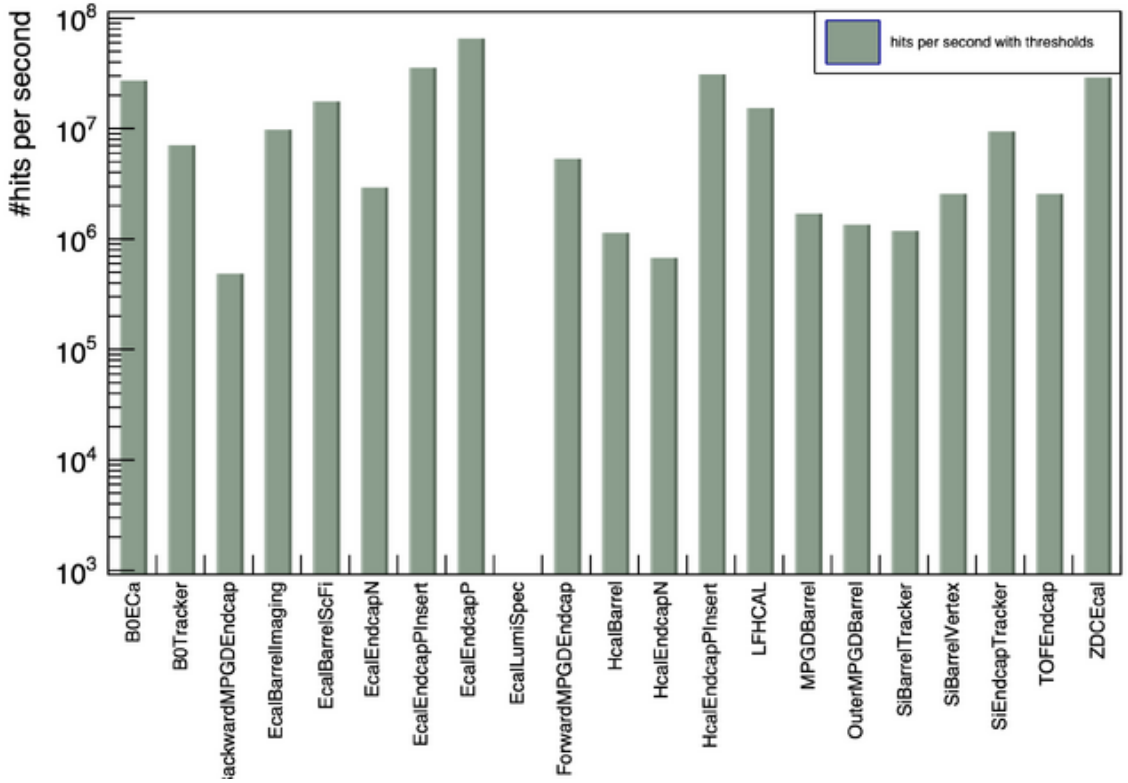
- ToF Hit rate θ vs φ

Hit rate per detector

My result



Official result

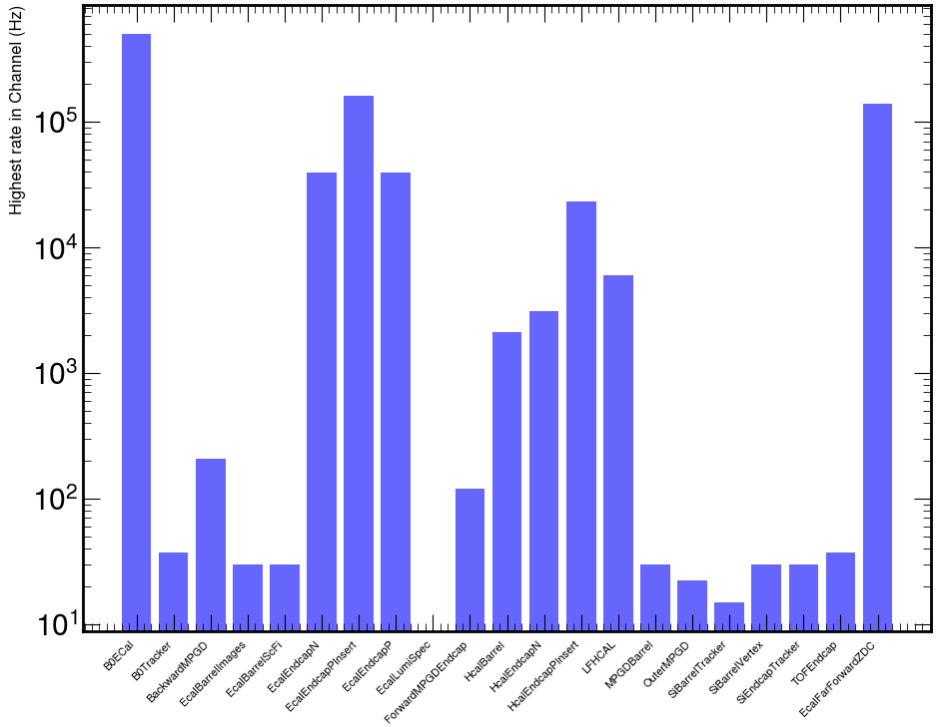


いくつか閾値情報の無い検出器が存在

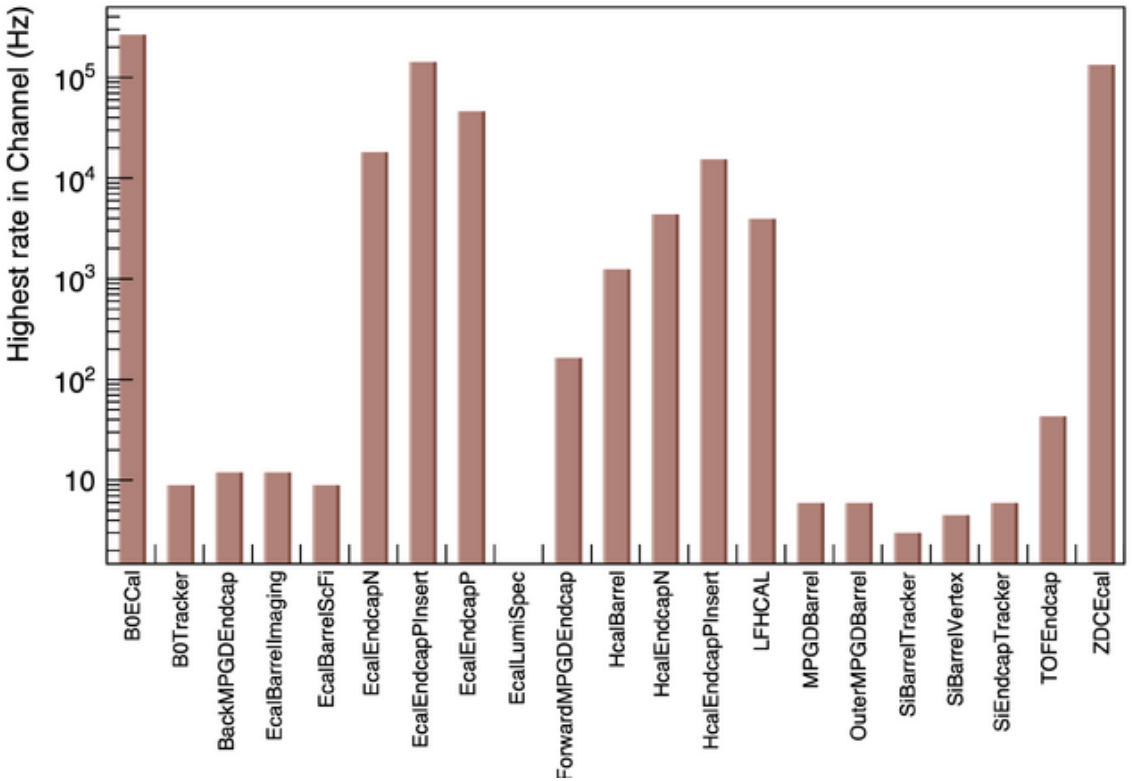
疑問：いくつか大きな違いのあるものがある

Highest rate in channel per detector

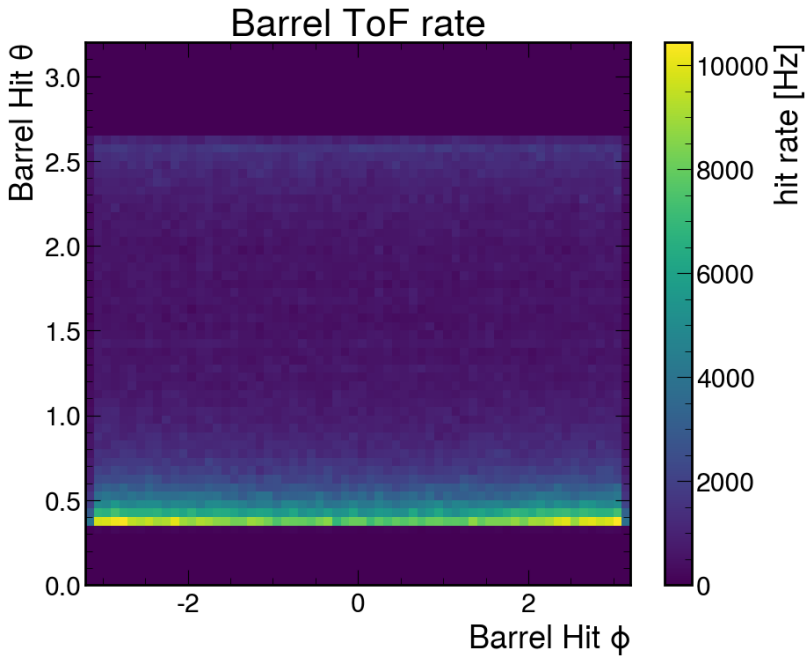
My result

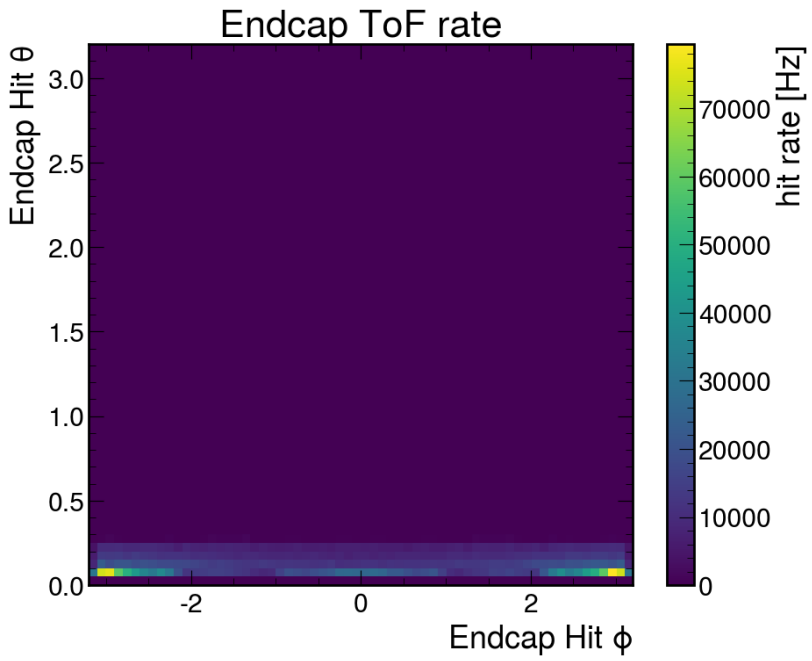


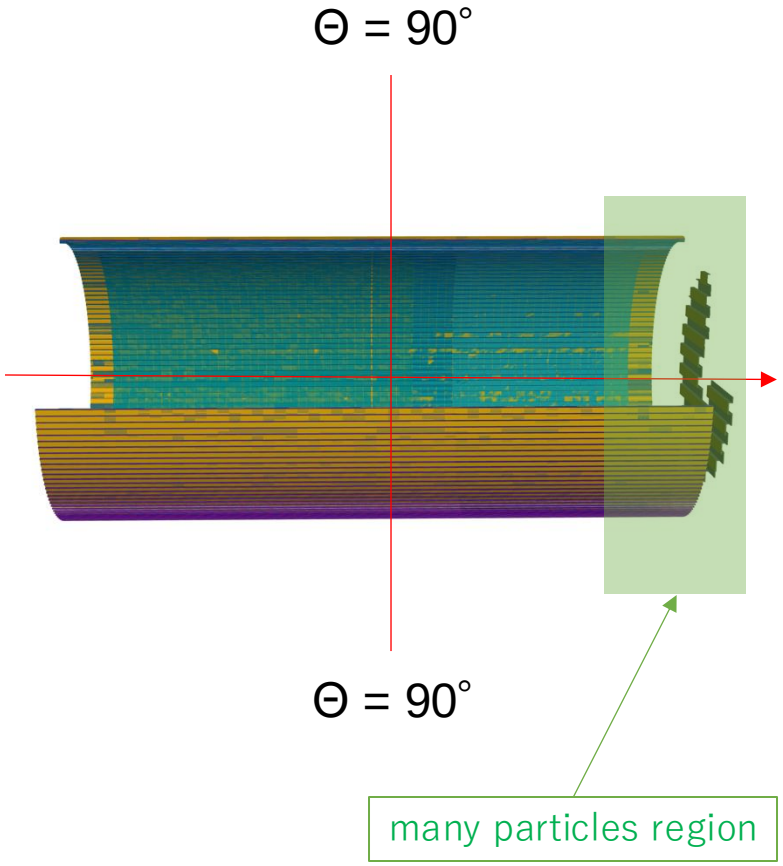
Official result



ToF Hit rate θ vs φ distribution





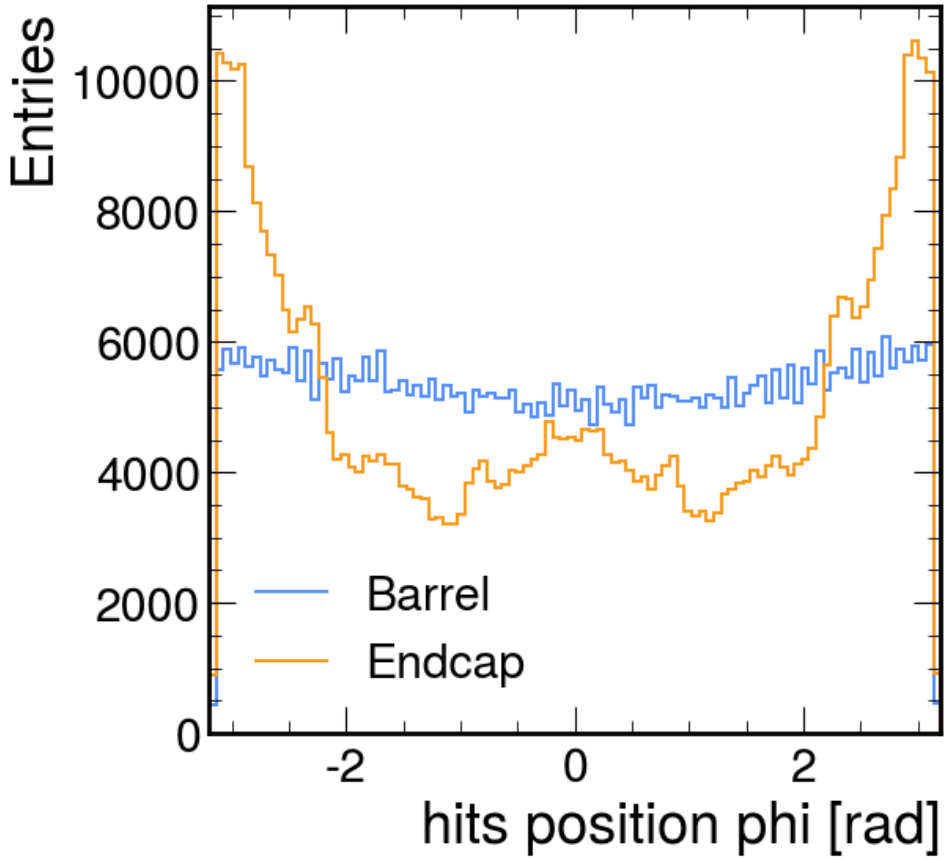


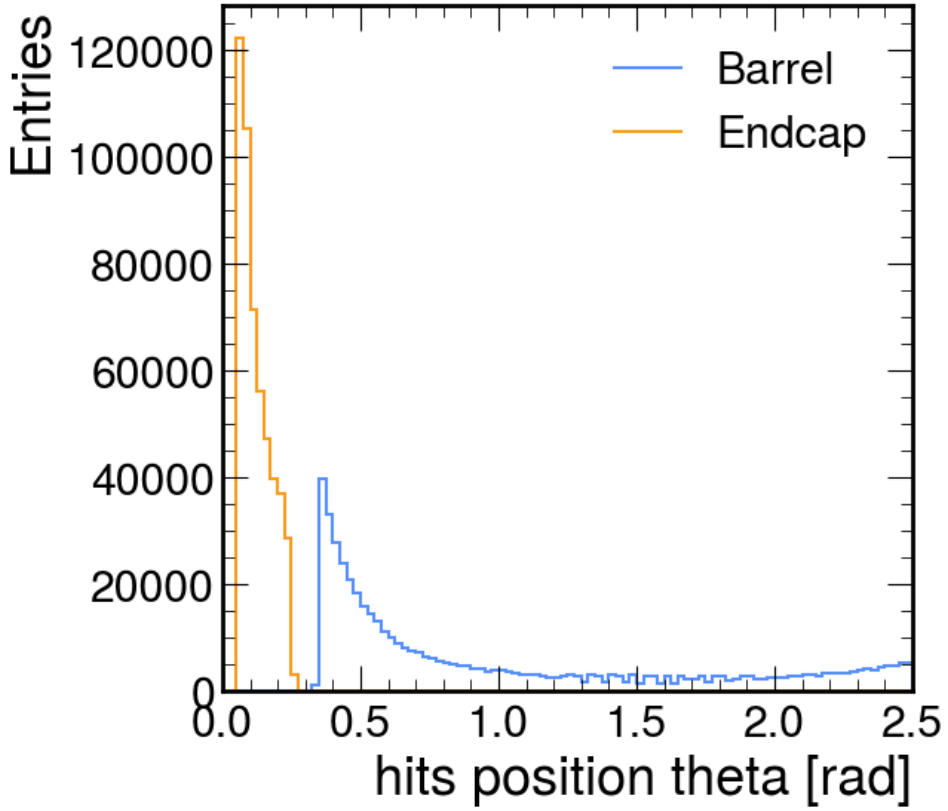
To do

- バックグラウンドデータをさらに調査
- PID performance の改善

BACKUP

ToF hits theta and phi





- Proton background cross section luminocity

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    "xsec": 76.8e-3,
    "lumi": 10e6,
    "Ntotal": 103000
}
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