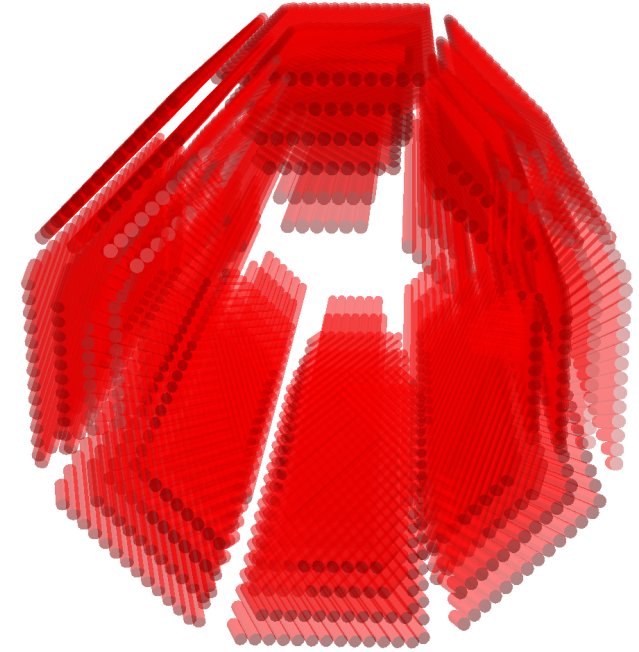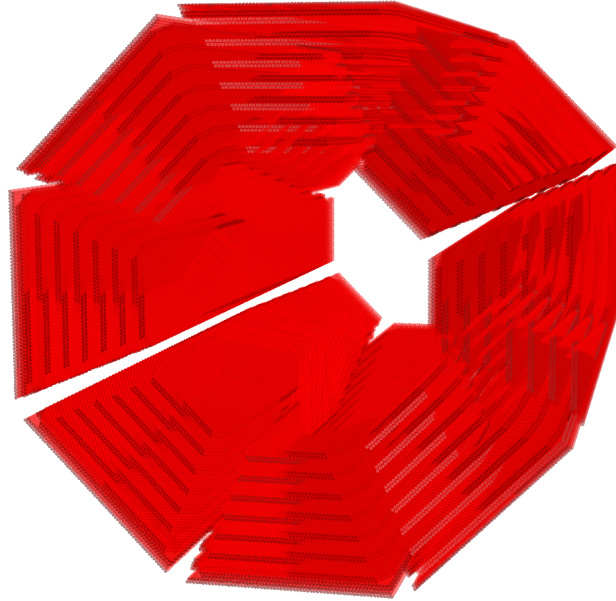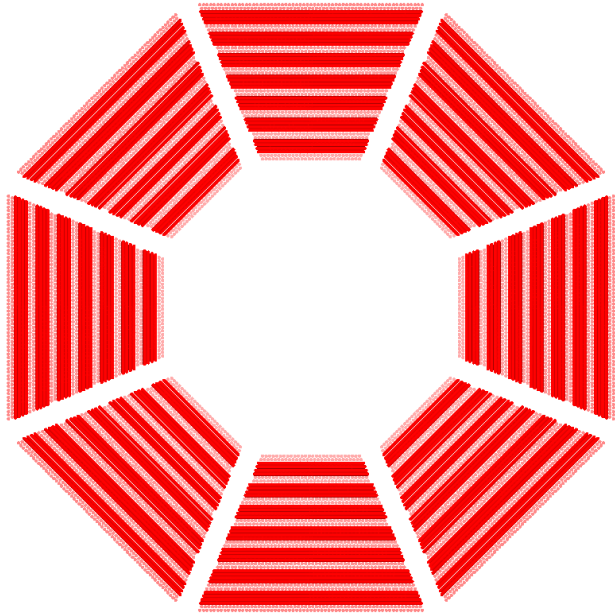# Momentum resolution dependence on straw tube orientation

Ruslan Akhunzyanov
JINR

SPD S&C meeting, Oct 26, 2021

Straw tracker geometry


```
SpdTsTBGeoMapper* mapper = SpdTsTBGeoMapper::Instance();

mapper->SetStrawModulePars(1,   0., 'e', 1.0, 0);

mapper->SetStrawLayerPars(1,    0., 'e', 1.0, 0.);
mapper->SetStrawLayerPars(1,    0., 'o', 1.0, 0.);
mapper->SetStrawLayerPars(1,   deg, 'e', 1.0, 0.);
mapper->SetStrawLayerPars(1,   deg, 'o', 1.0, 0.);
mapper->SetStrawLayerPars(1,  -deg, 'e', 1.0, 0.);
mapper->SetStrawLayerPars(1,  -deg, 'o', 1.0, 0.);
```
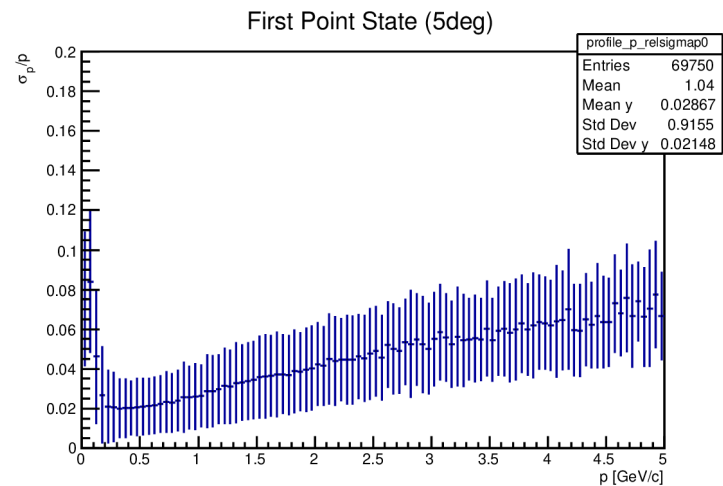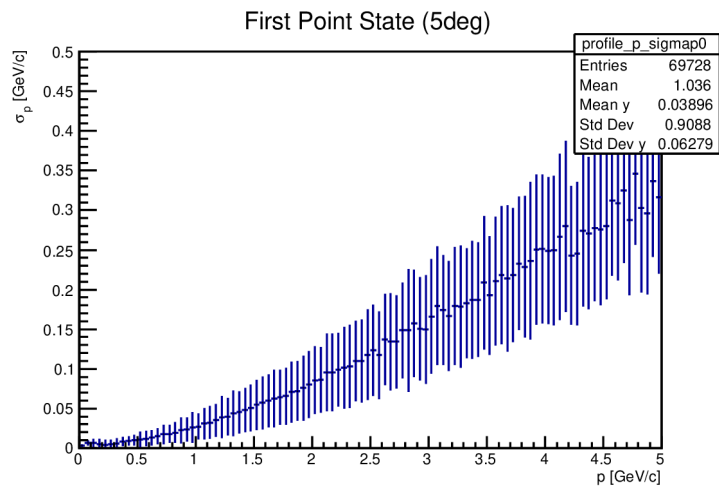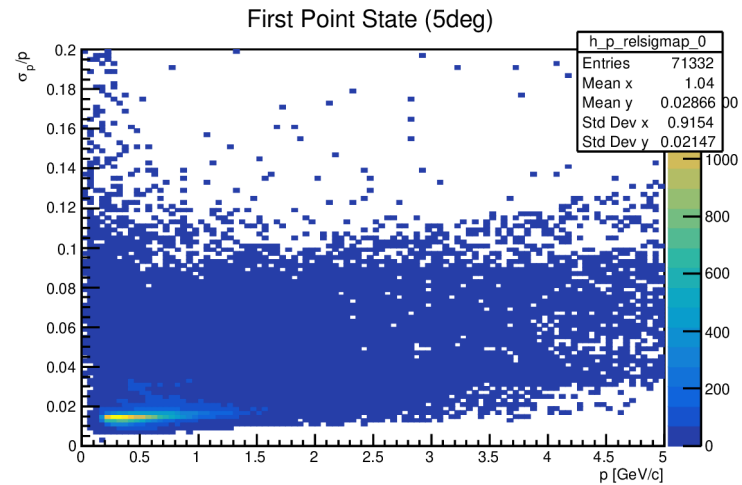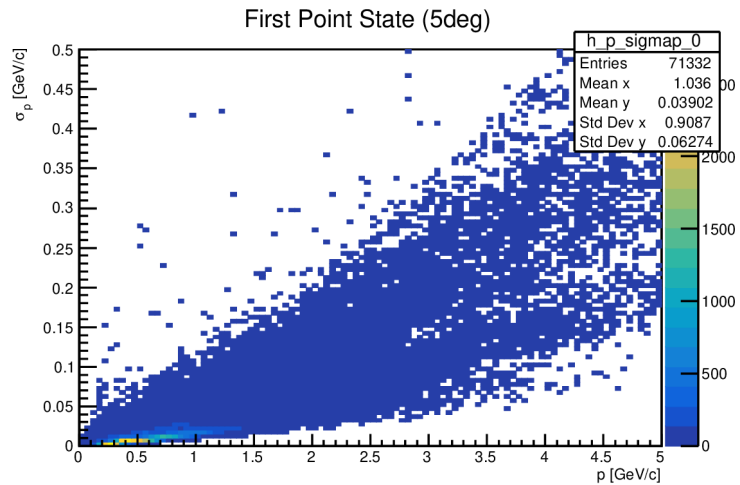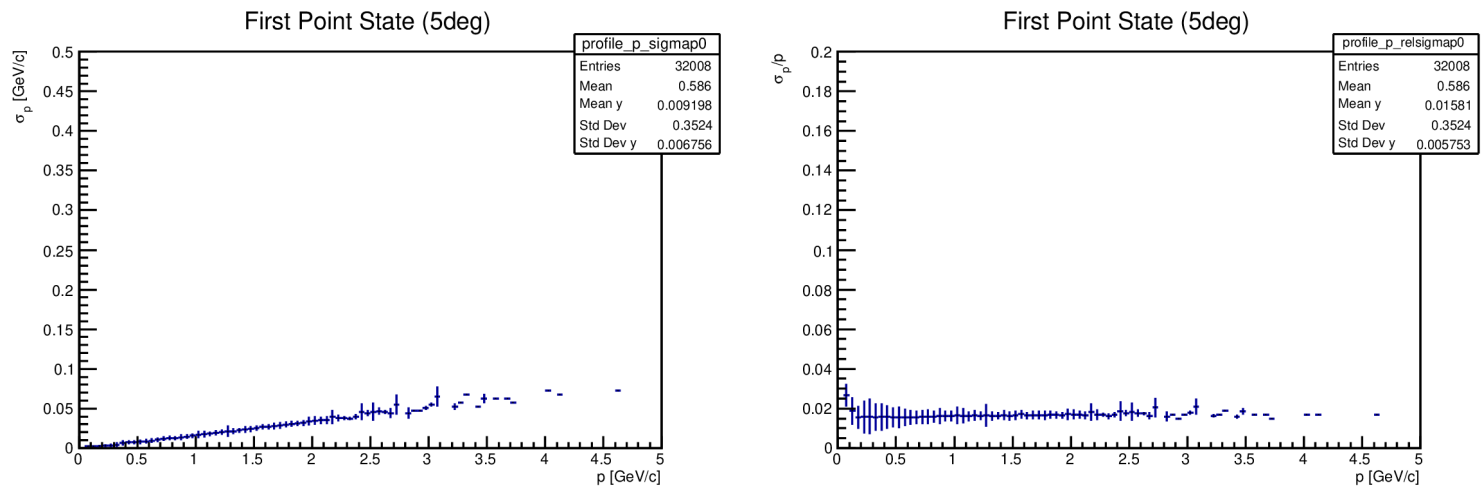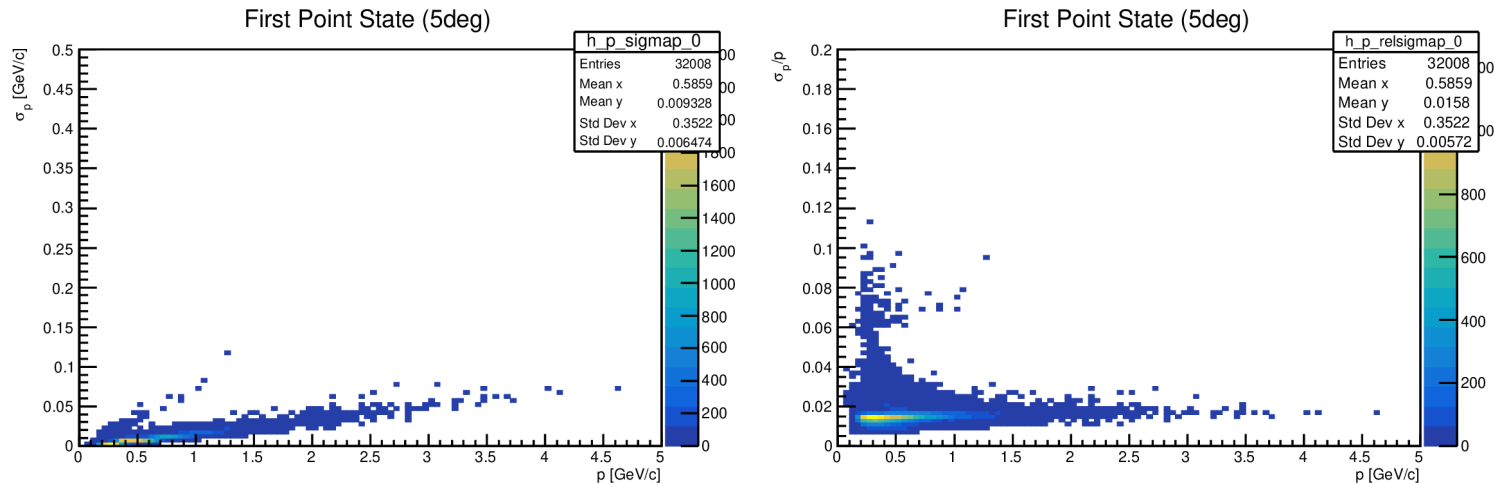
*(picture with enlarged tubes and gaps
between layers for better visibility)*

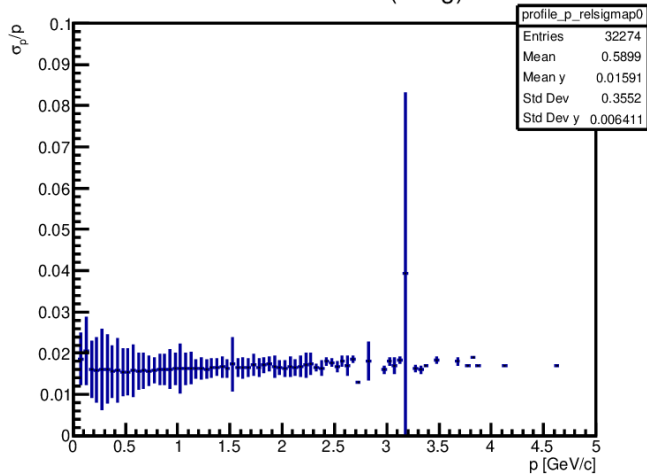Angle is varied from 0 to 20 degrees.

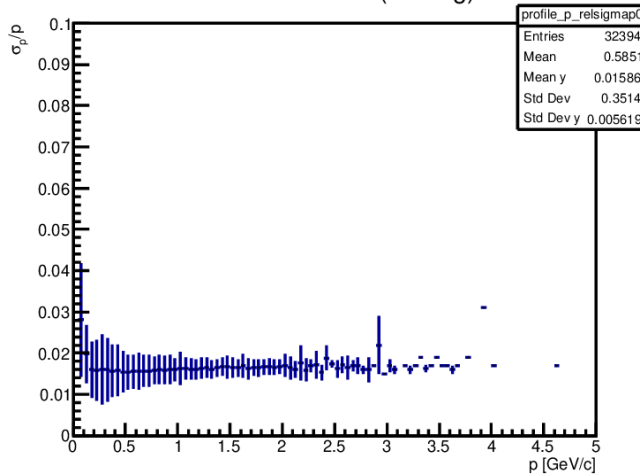# With ITS, all tracks

With ITS, only tracks in barrel

With ITS, only tracks in barrel

No ITS, only tracks in barrel

No ITS, only tracks in barrel
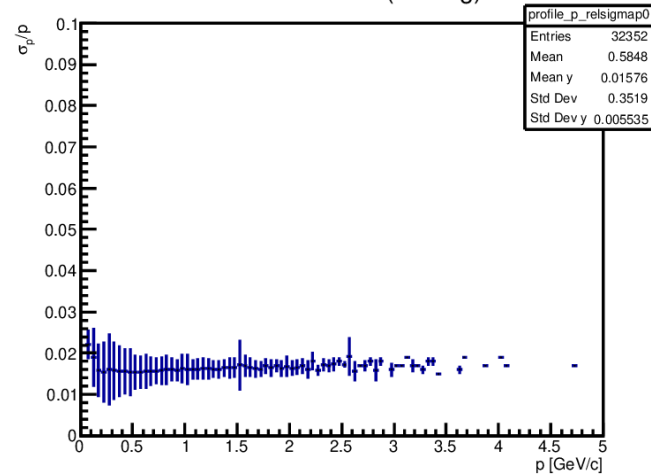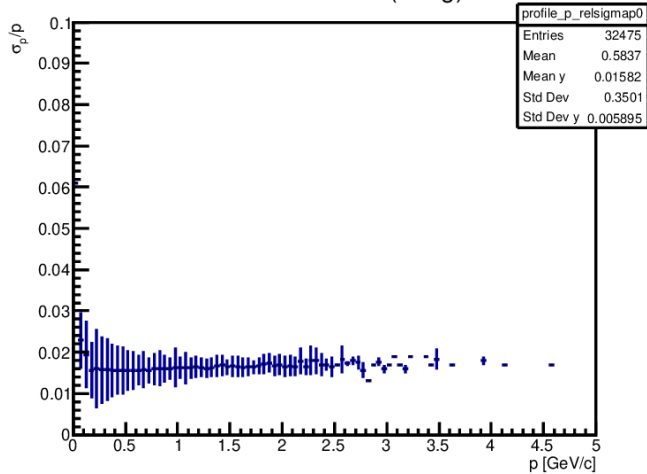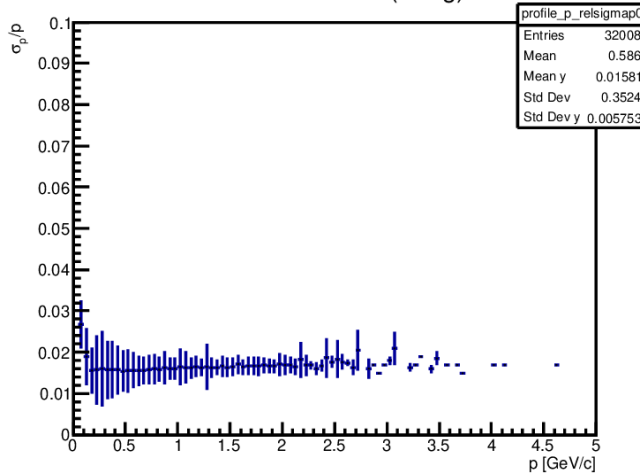
No ITS, only tracks in barrel

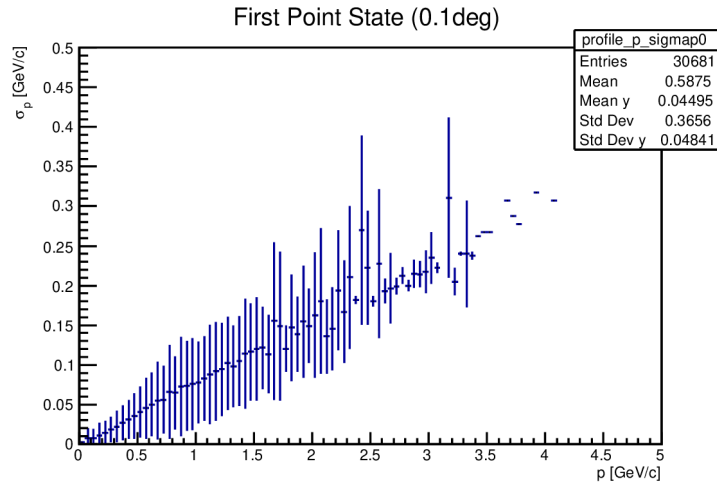

First Point State (0.5deg)

First Point State (0.5deg)

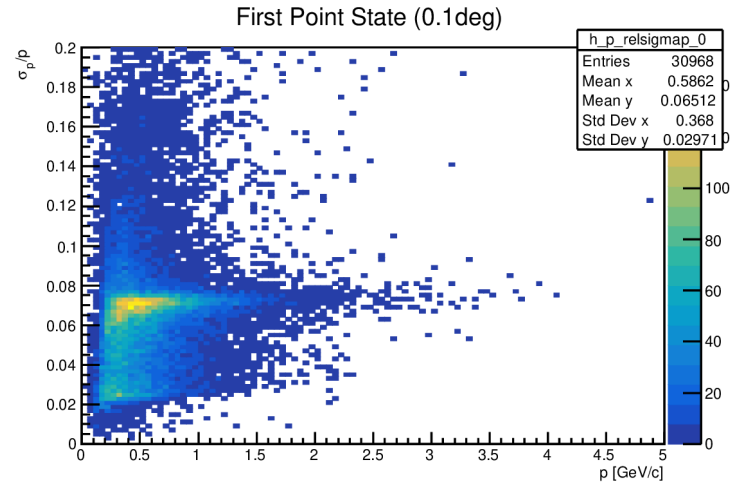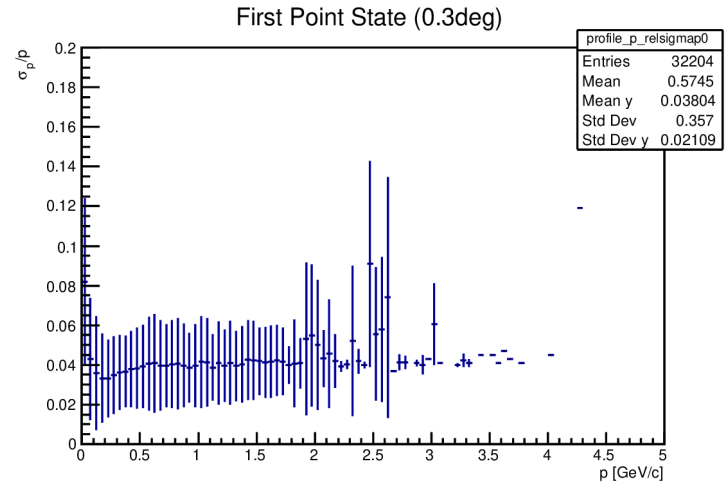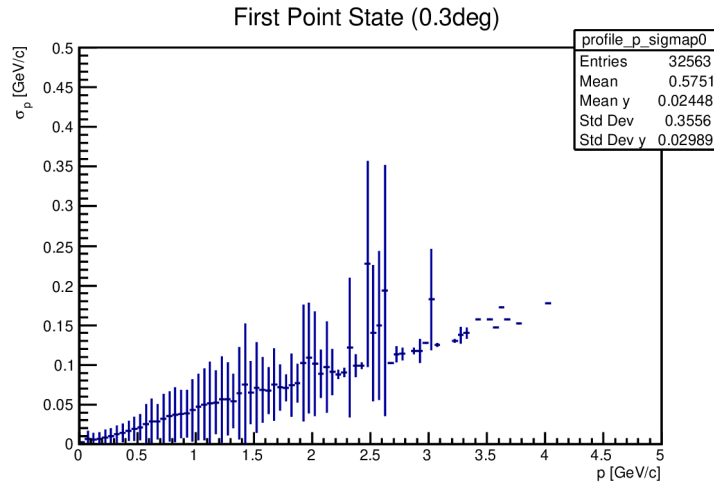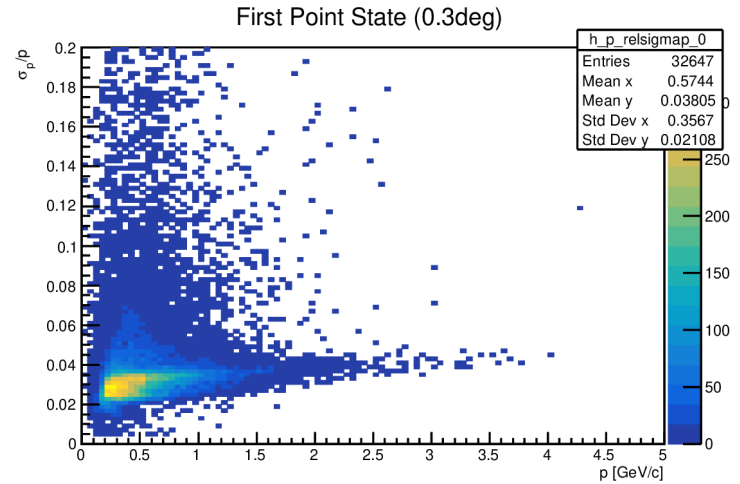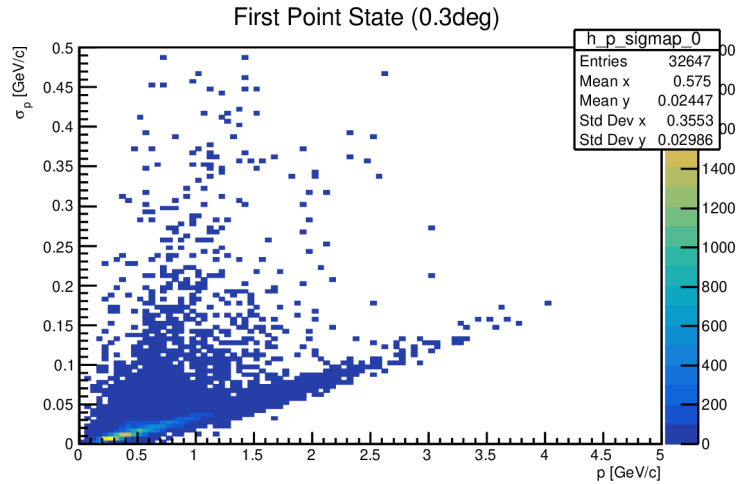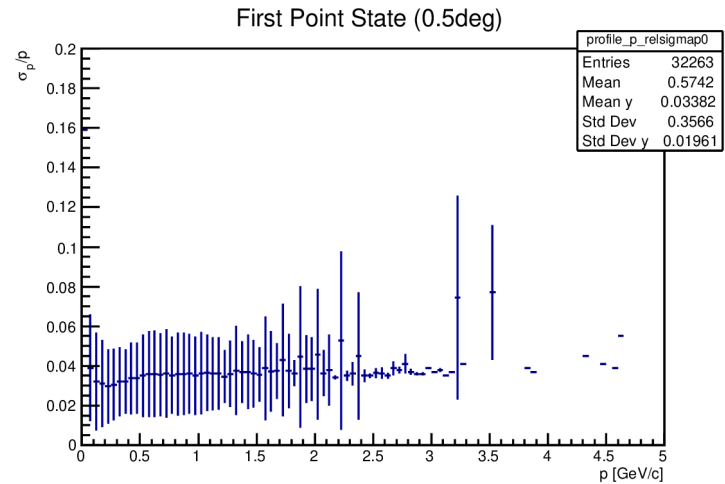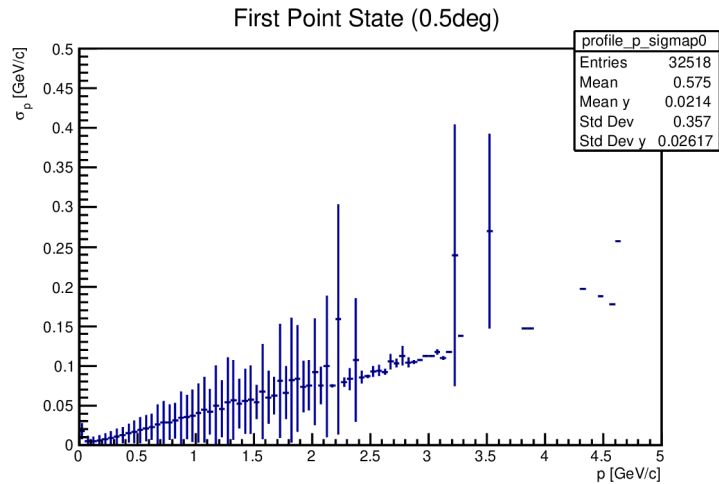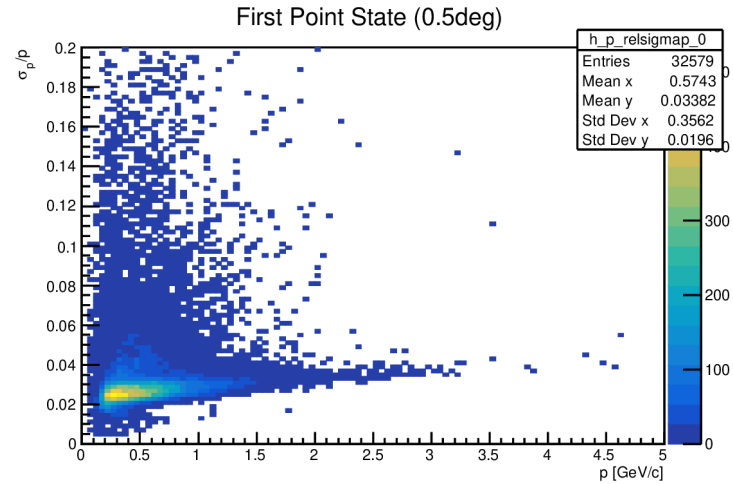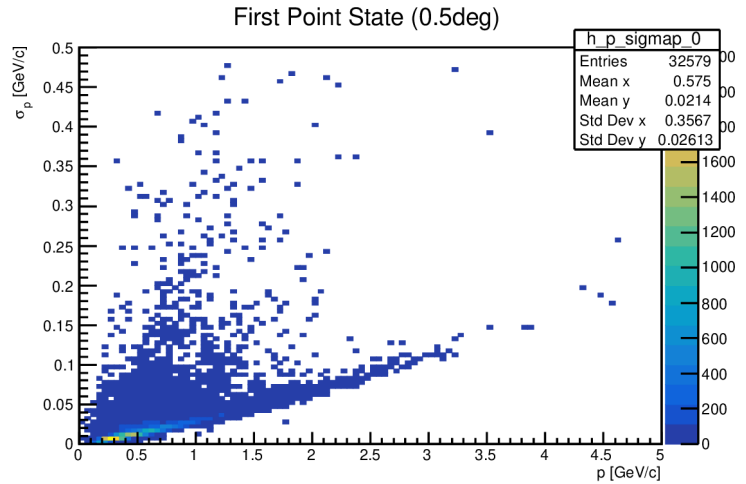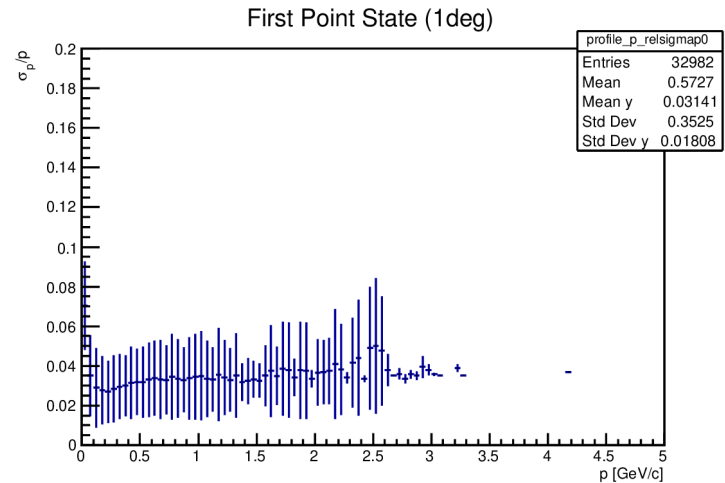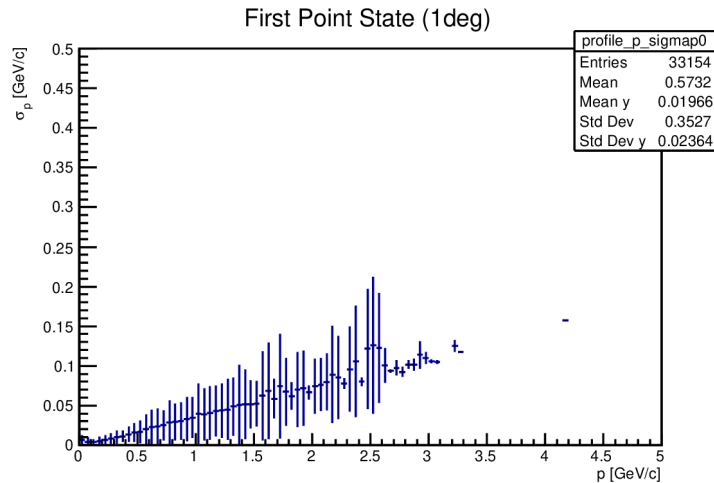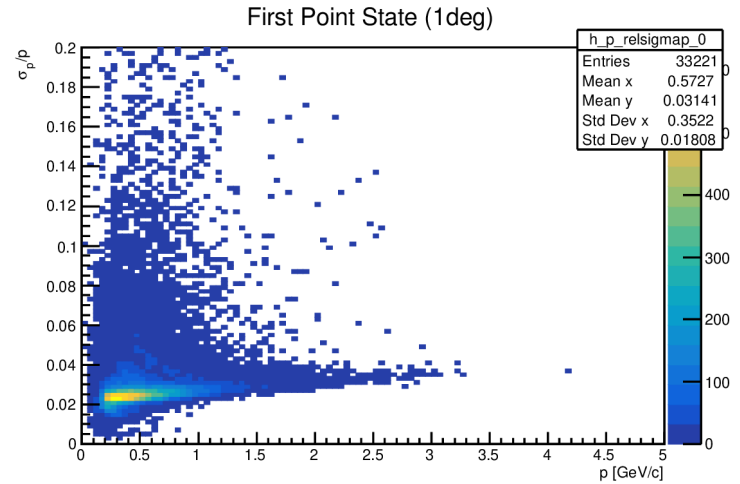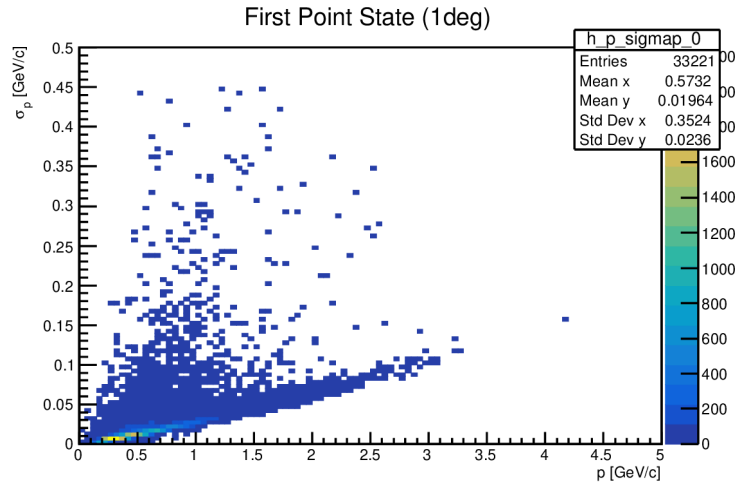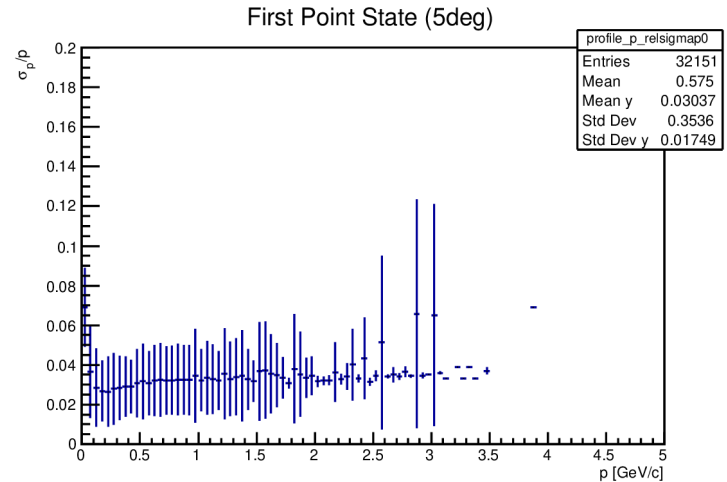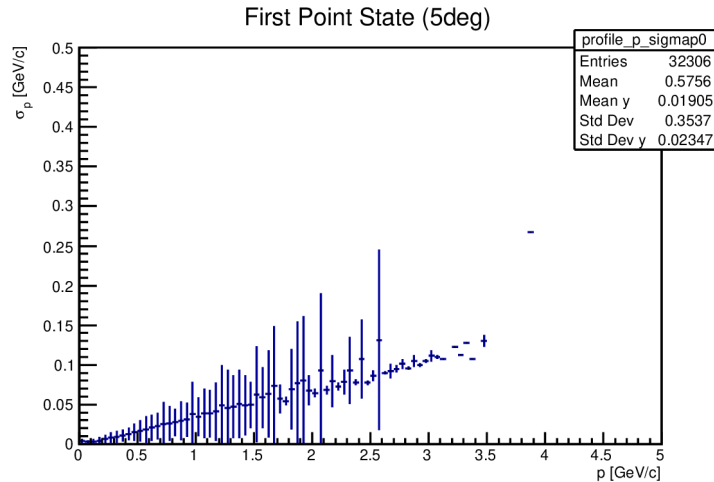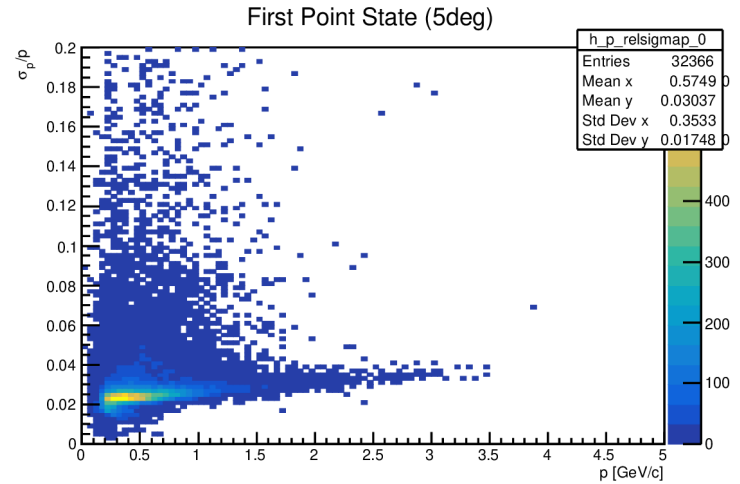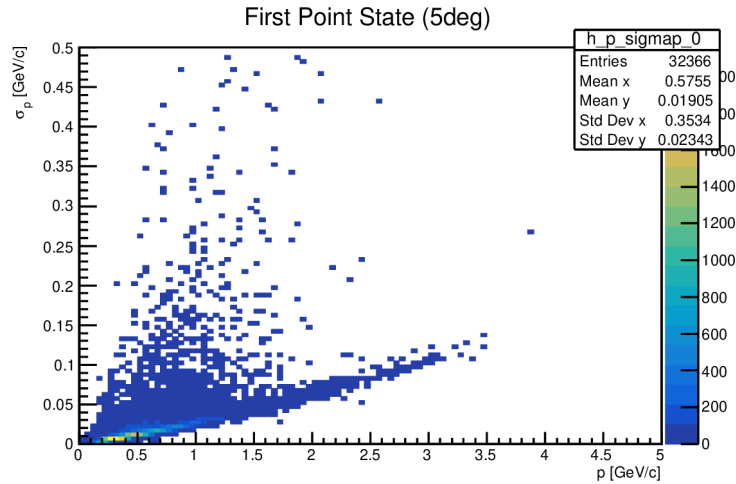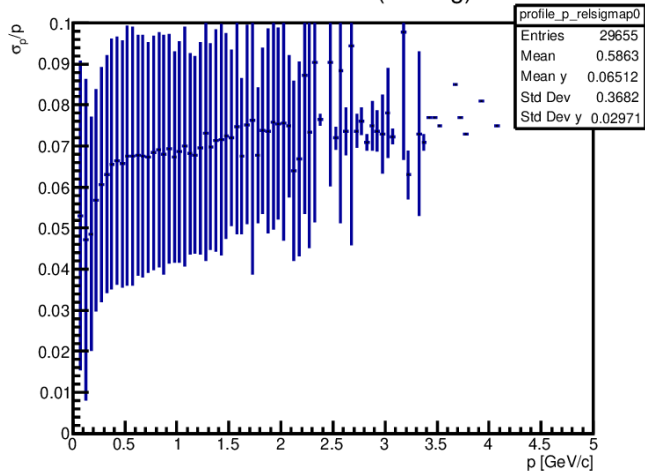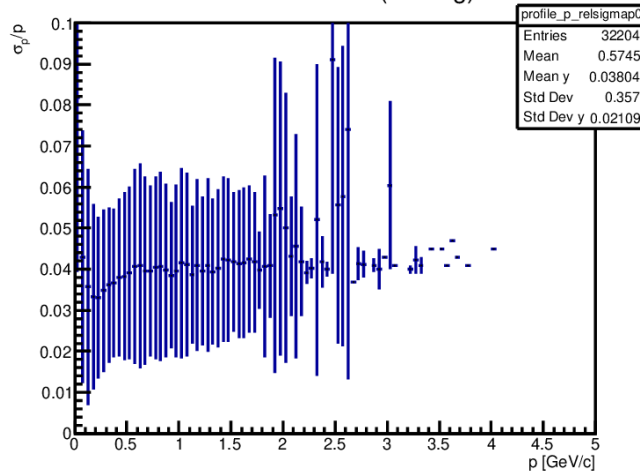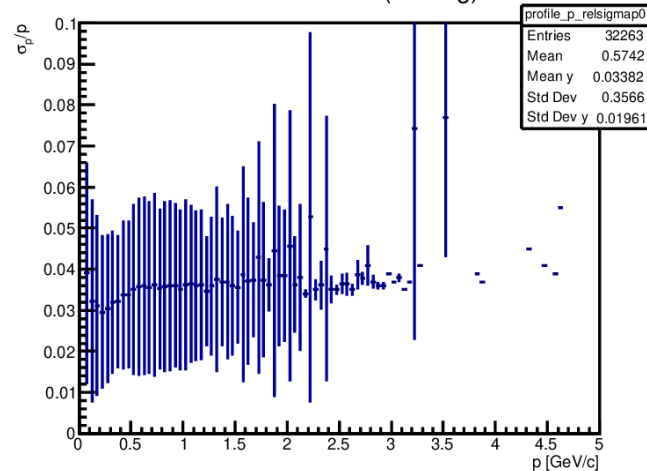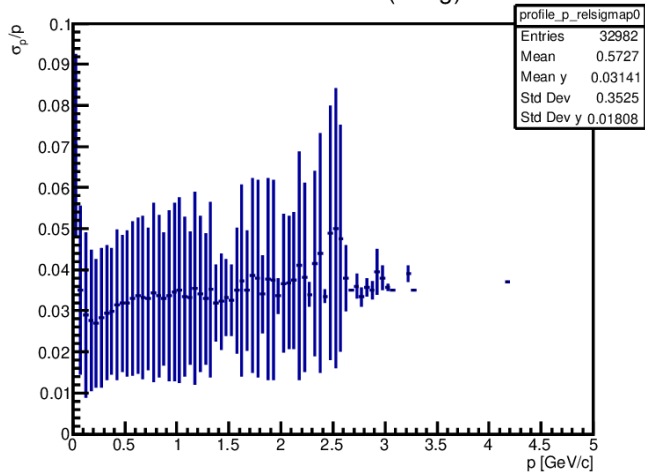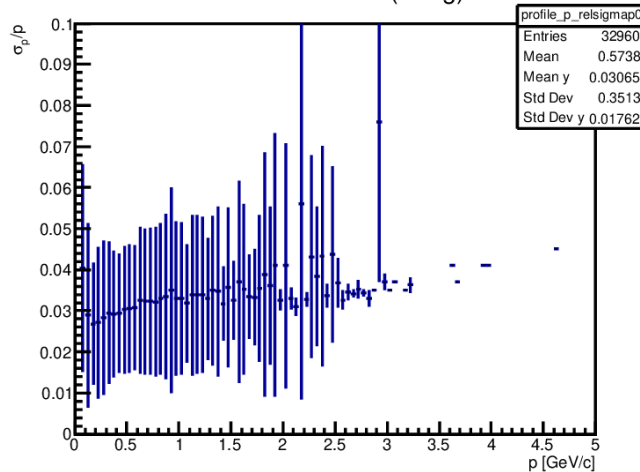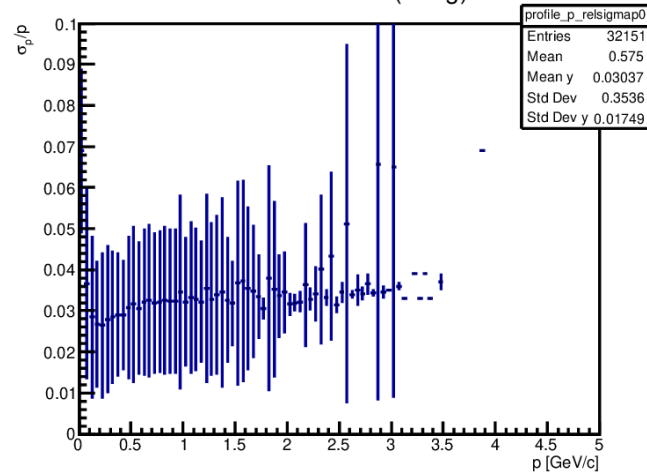First Point State (0.5deg)

First Point State (0.5deg)

No ITS, only tracks in barrel

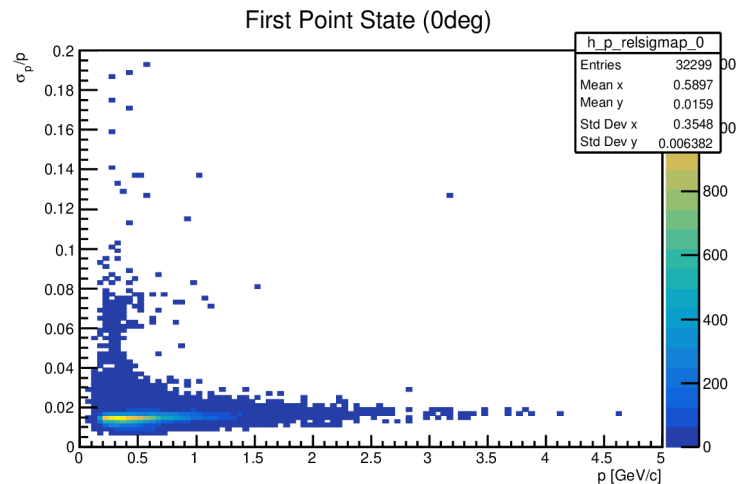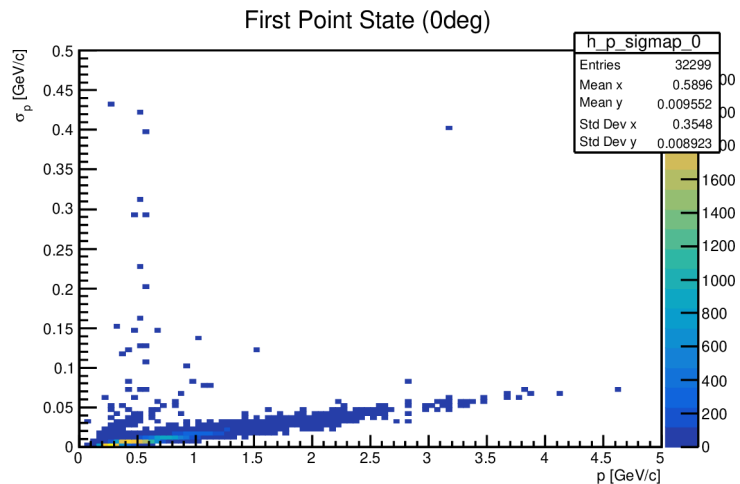# No ITS, only tracks in barrel
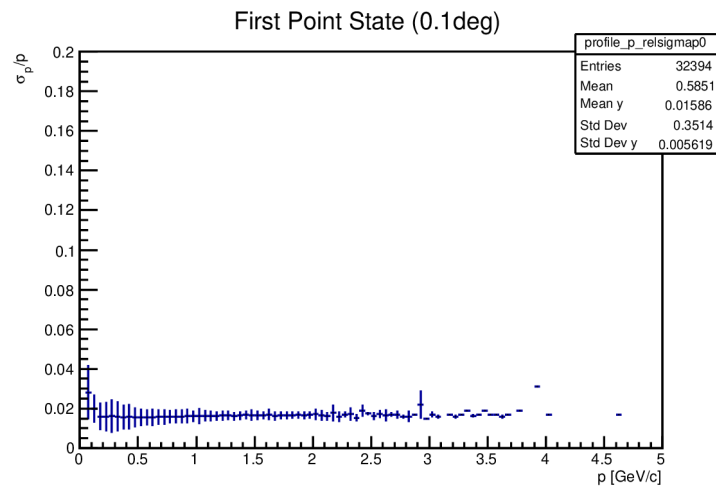
No ITS, only tracks in barrel
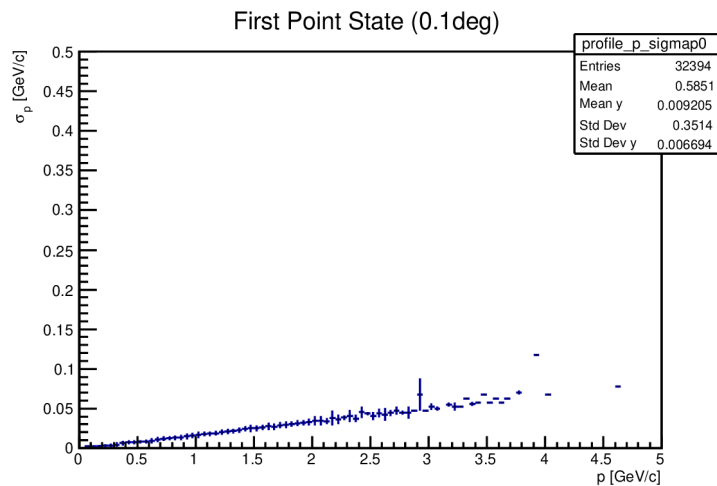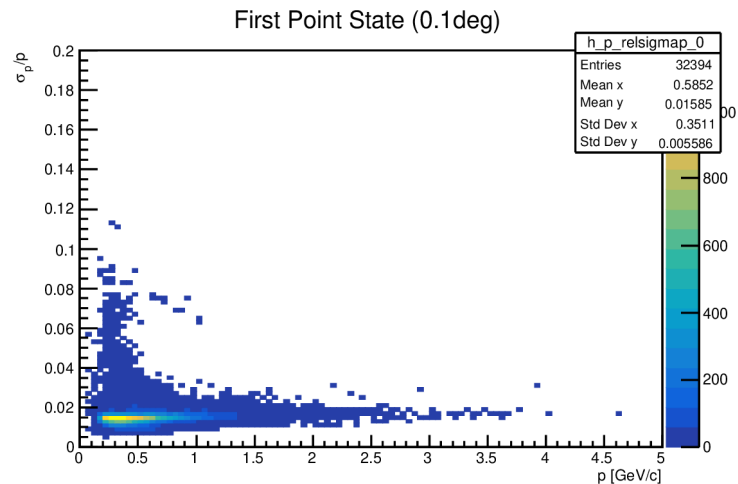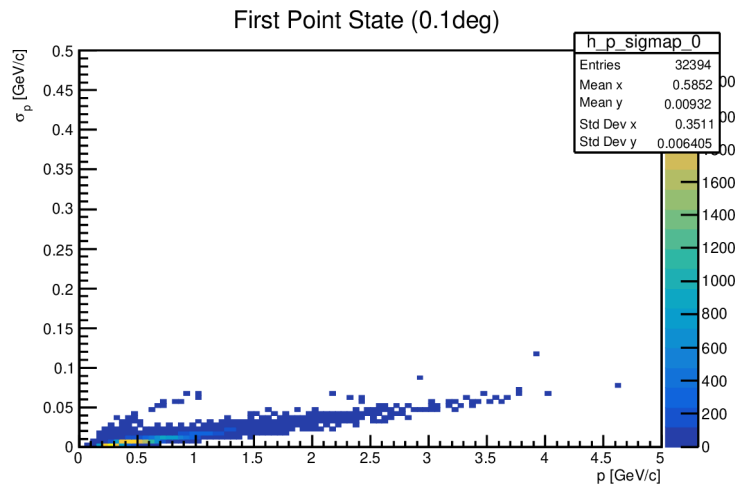
Conclusions

- Momentum resolution (for tracks passing through the barrel) is totally defined by vertex detector (?!) and does not depend on straw tube angle.

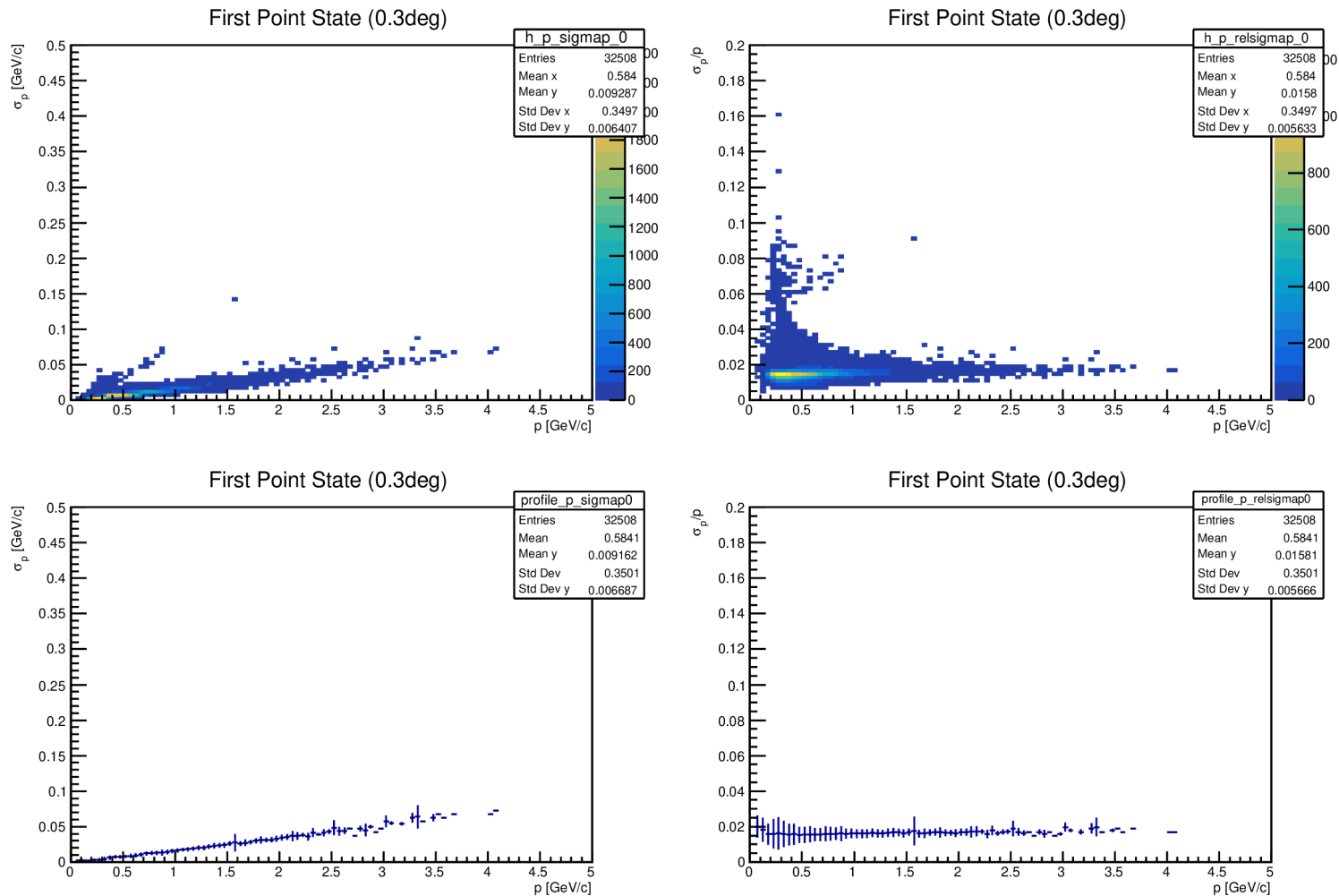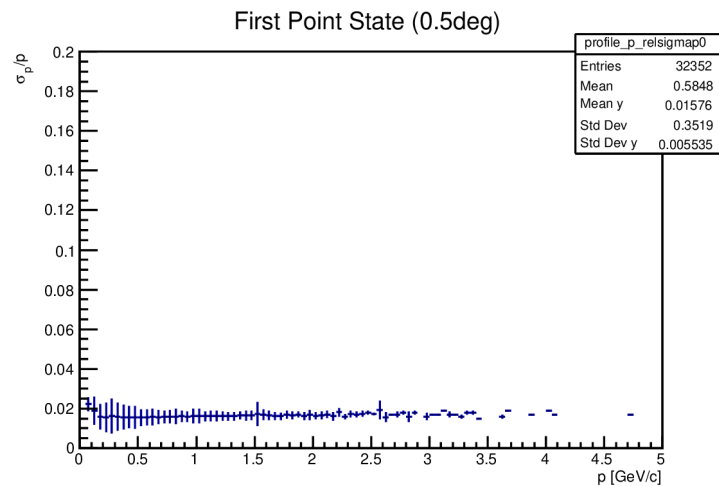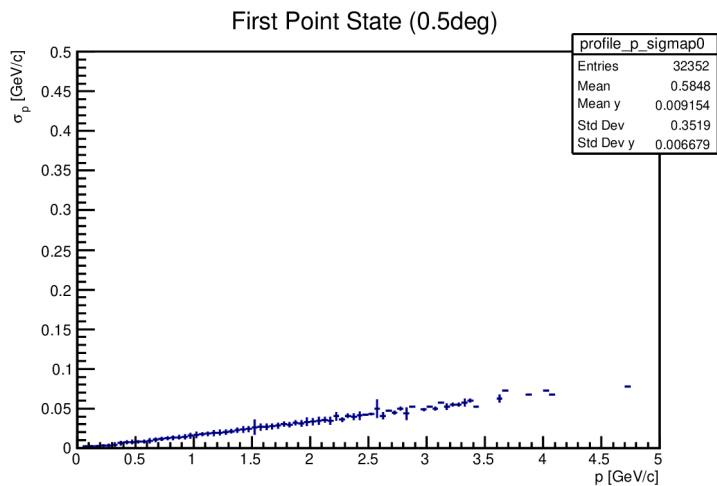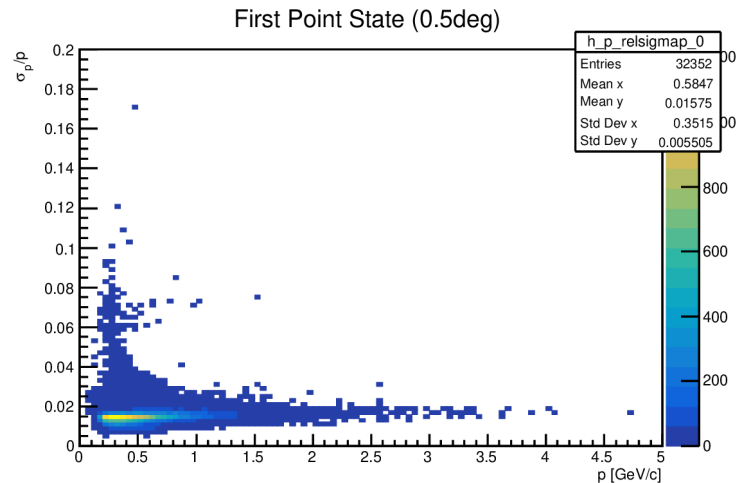- Even without vertex detector, σ_p/p does not change starting from angle ≈ 1°.
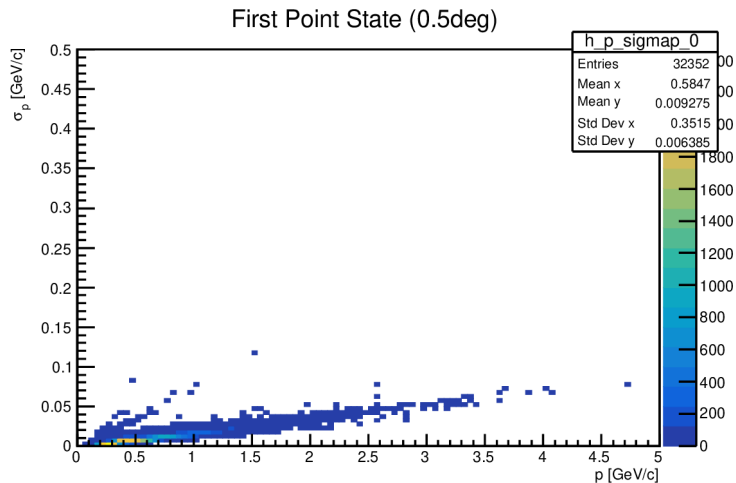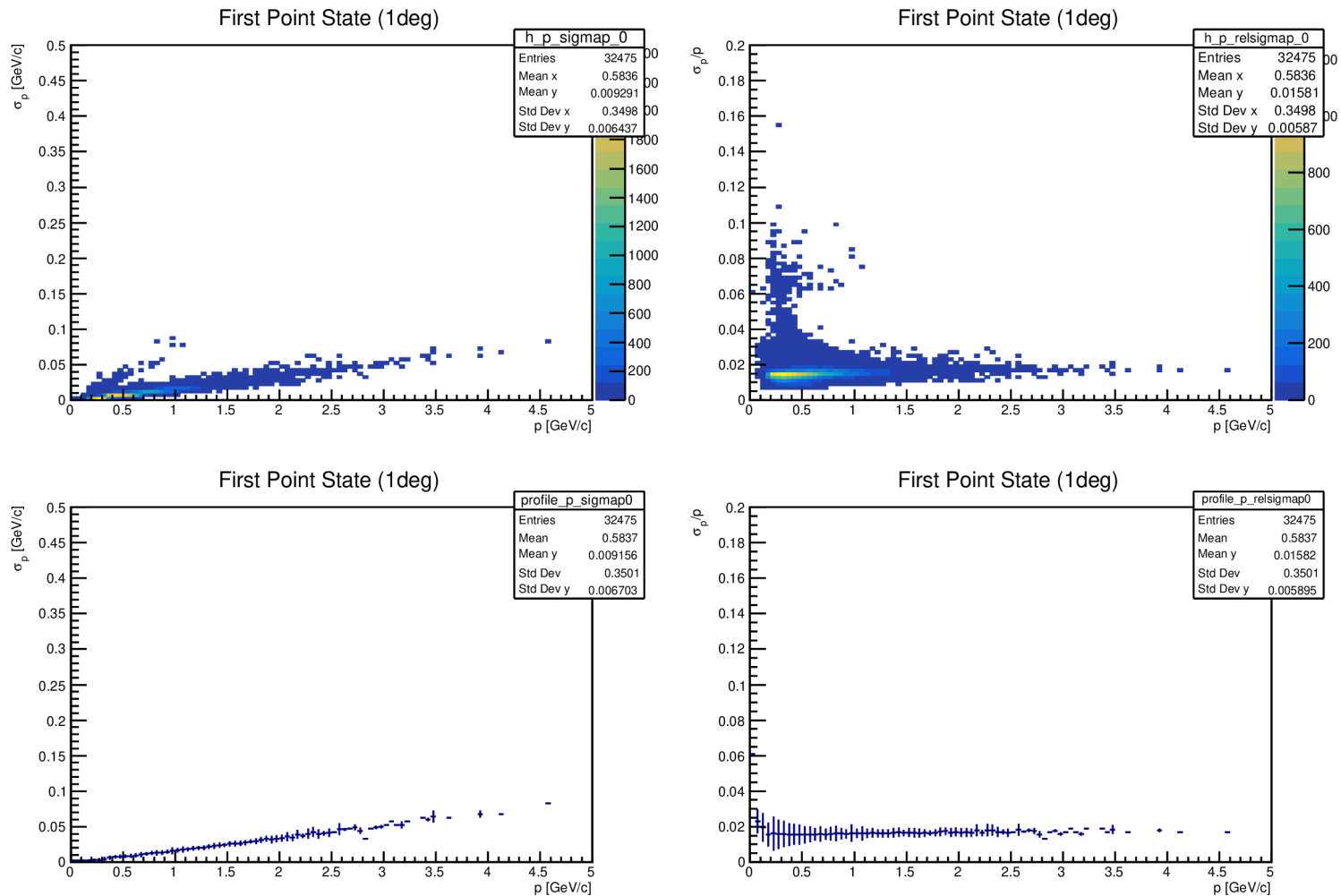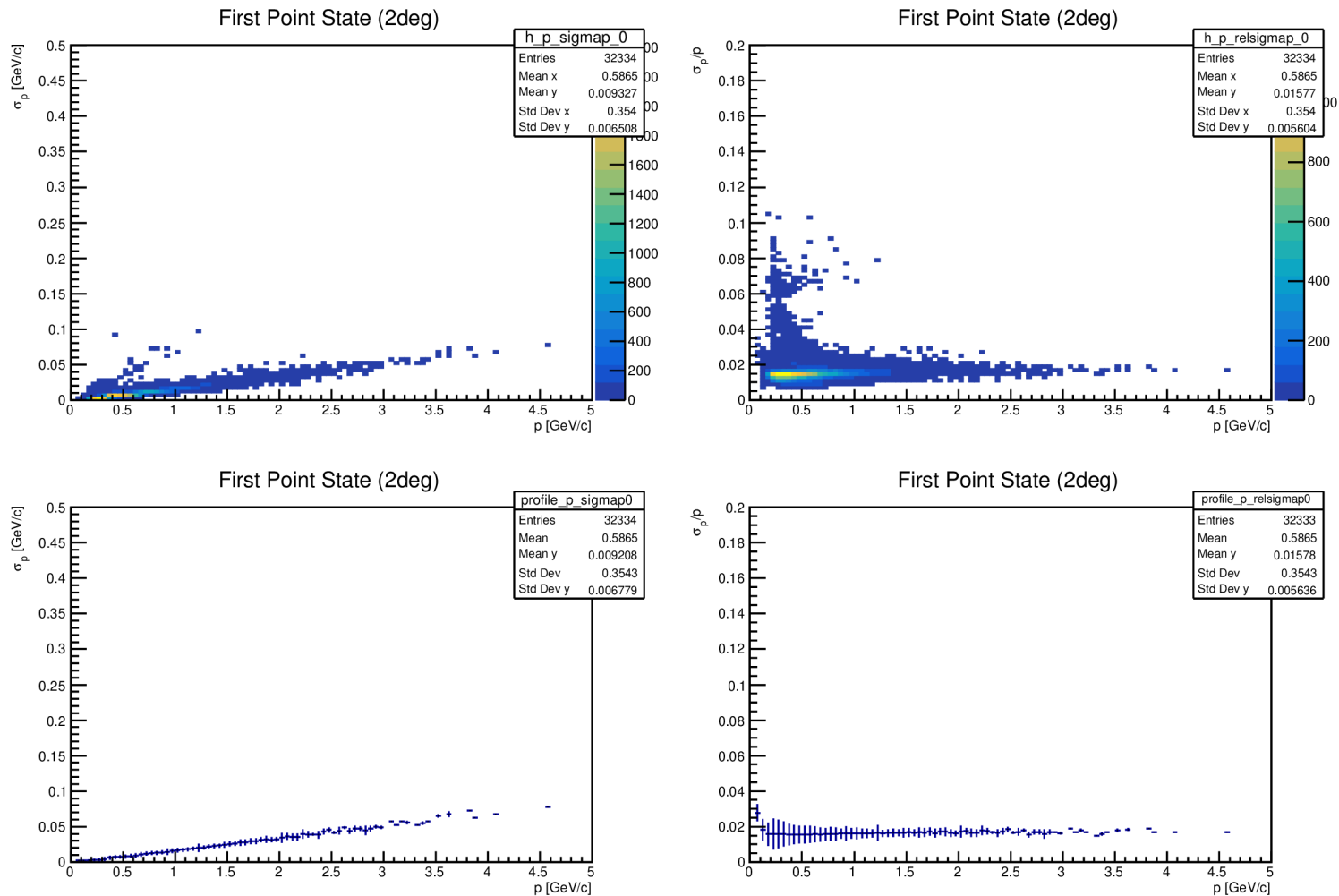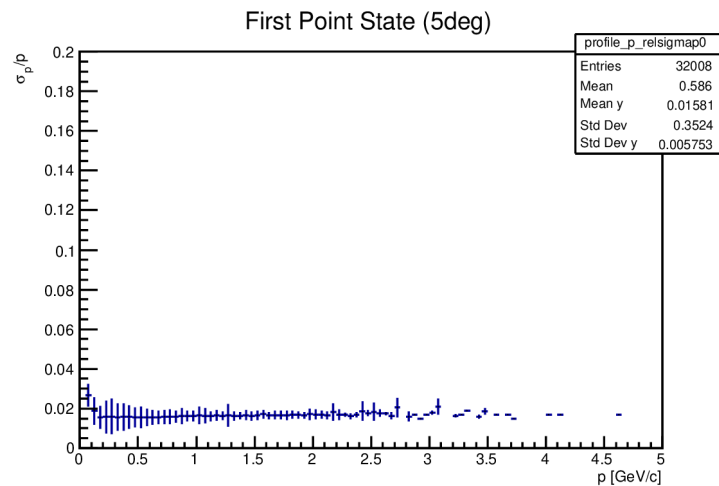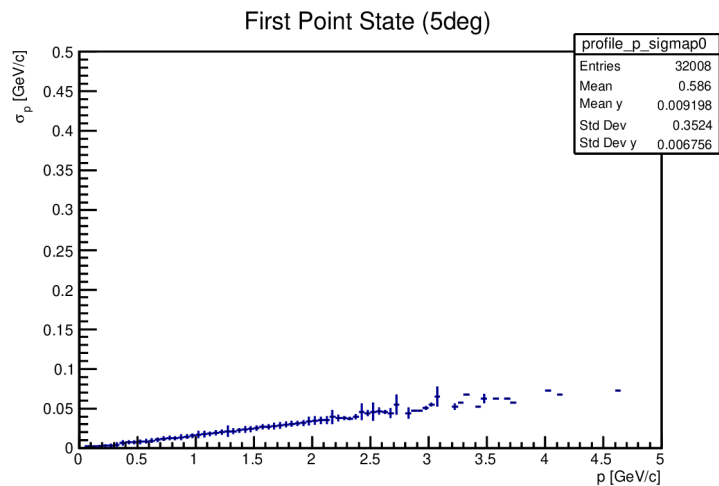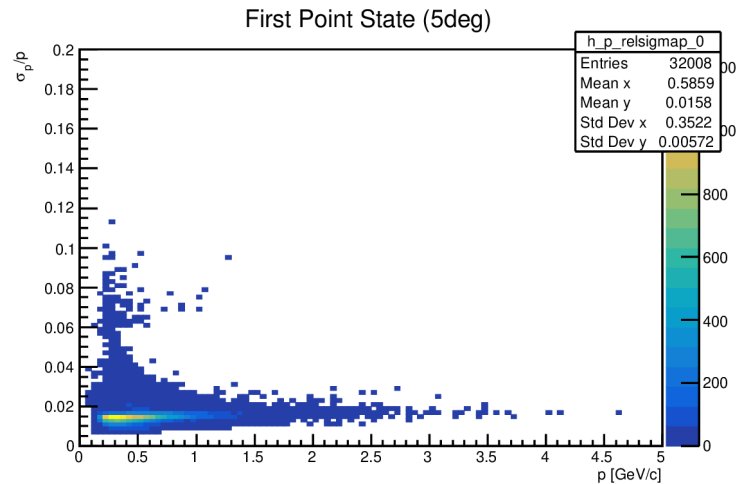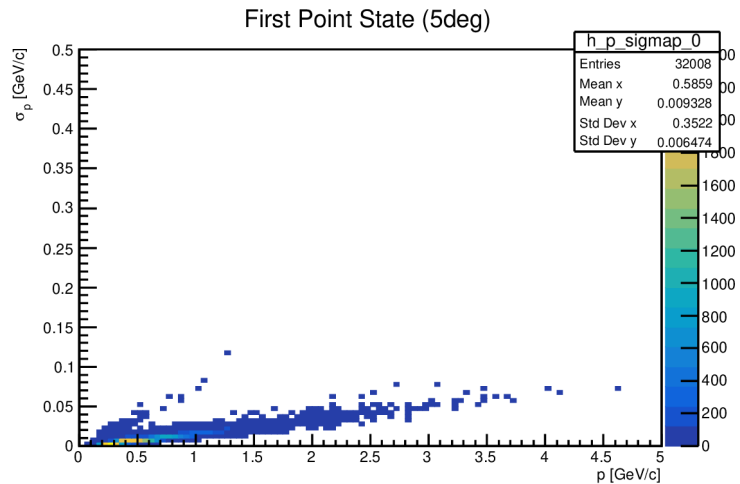
backup

With ITS, only tracks in barrel
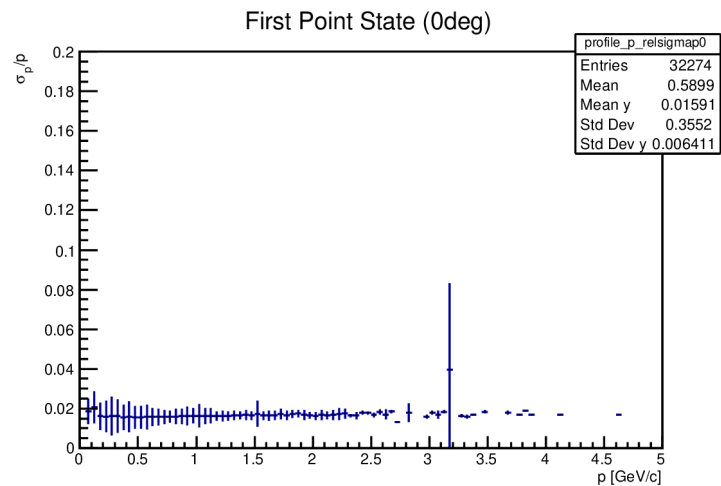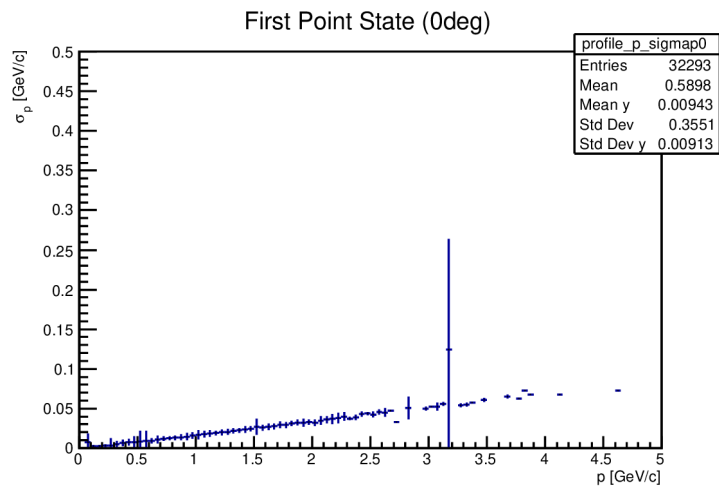
With ITS, only tracks in barrel

With ITS, only tracks in barrel

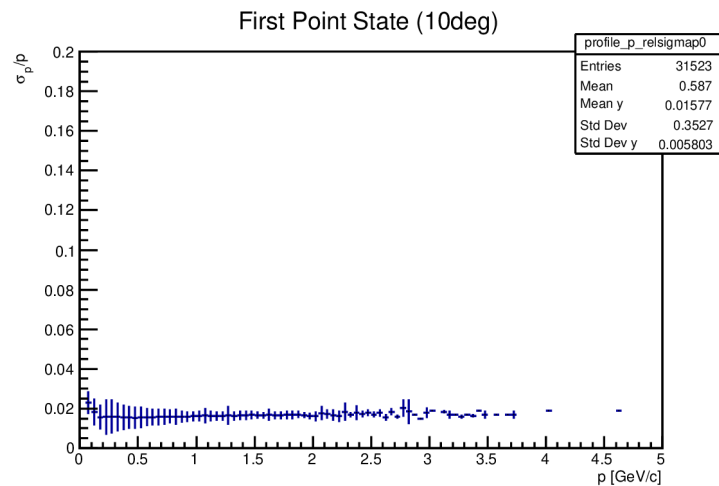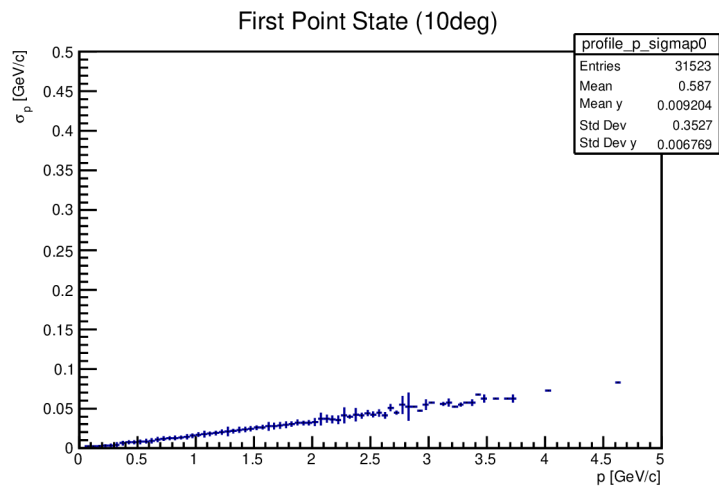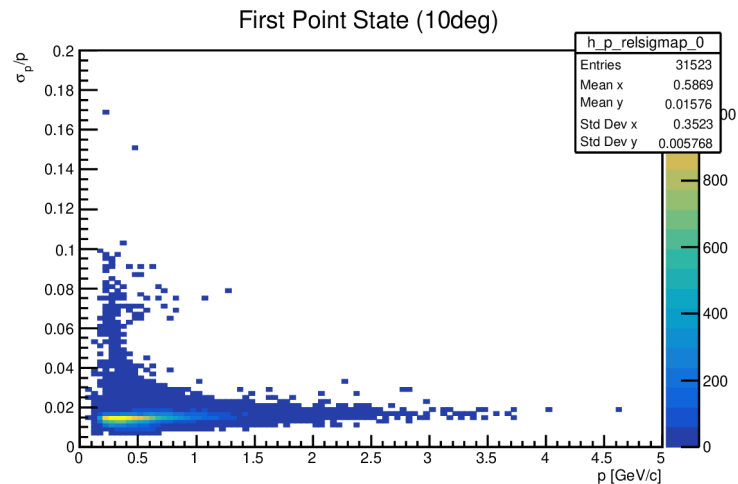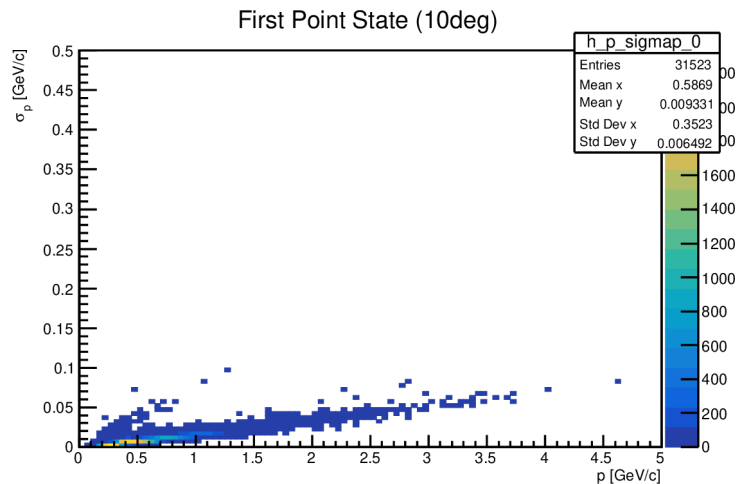# With ITS, only tracks in barrel
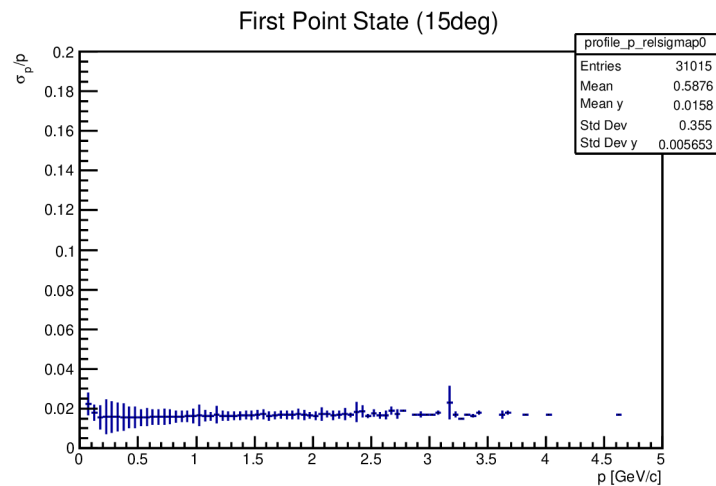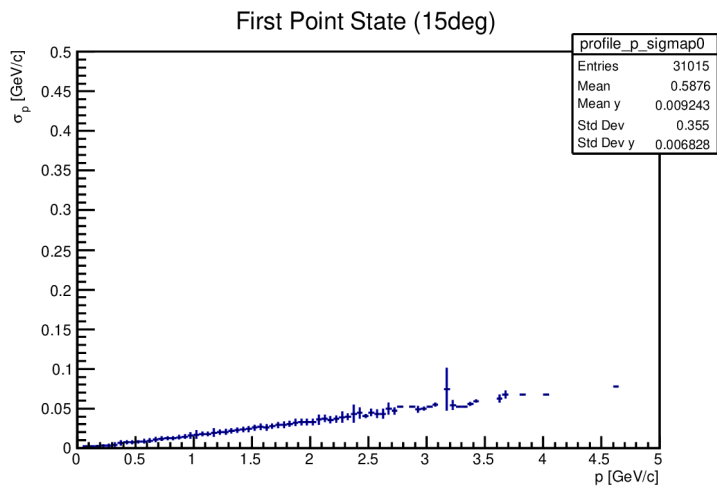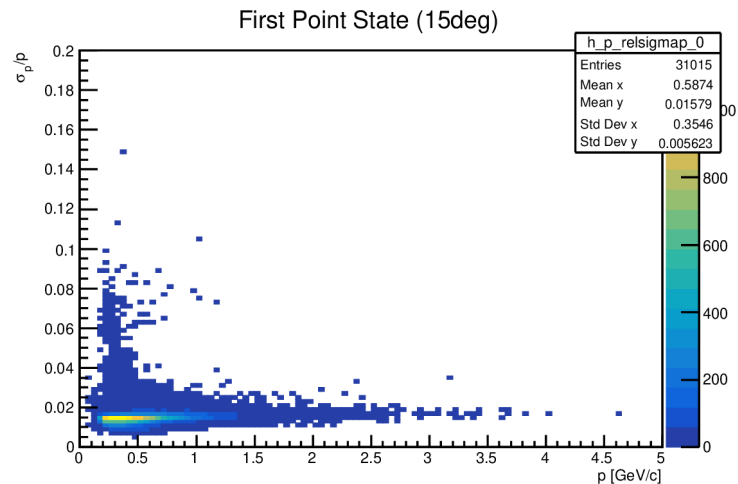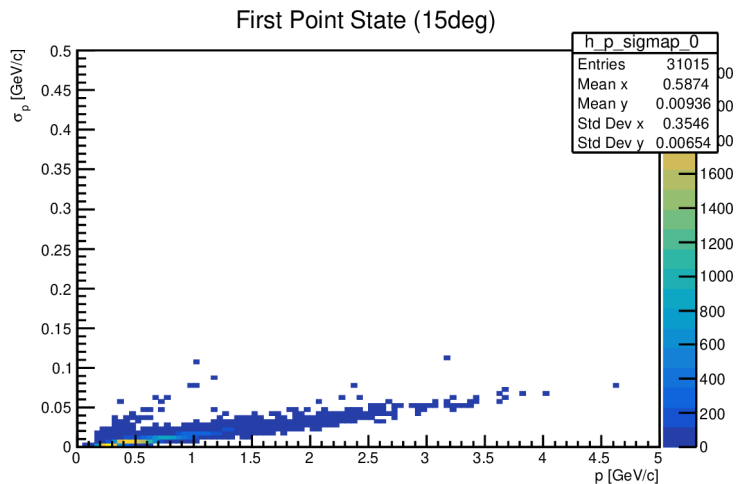
With ITS, only tracks in barrel
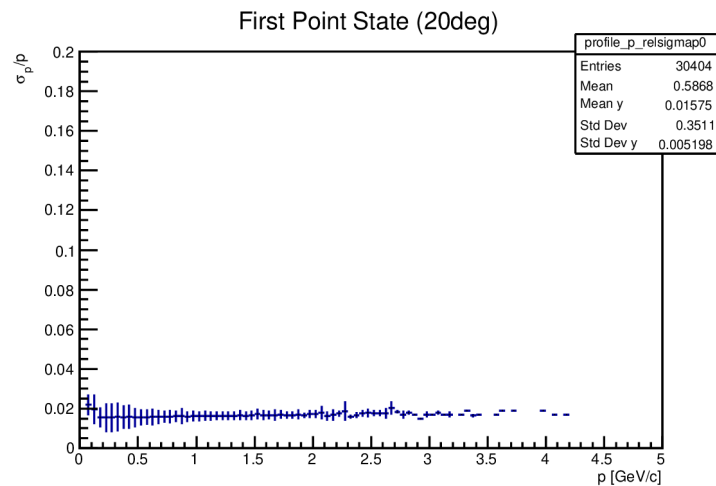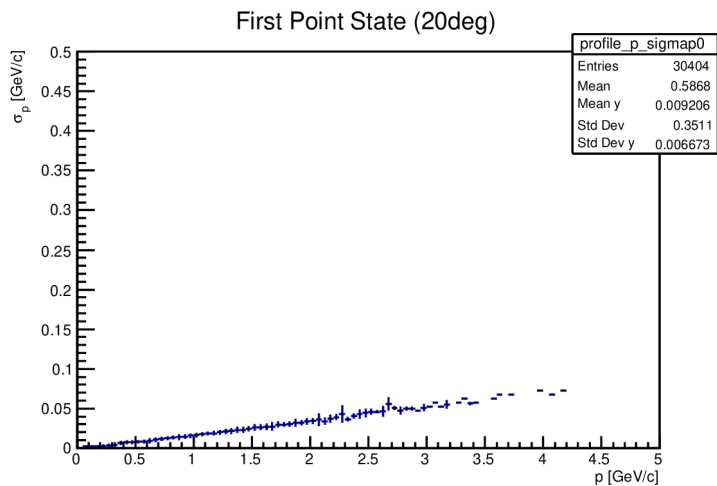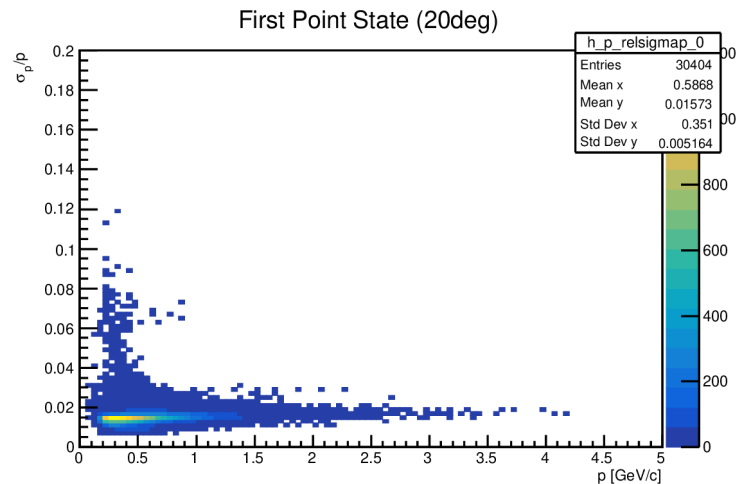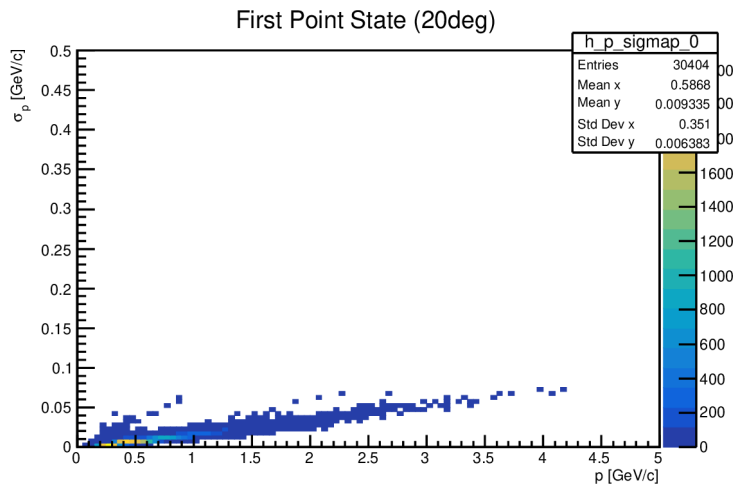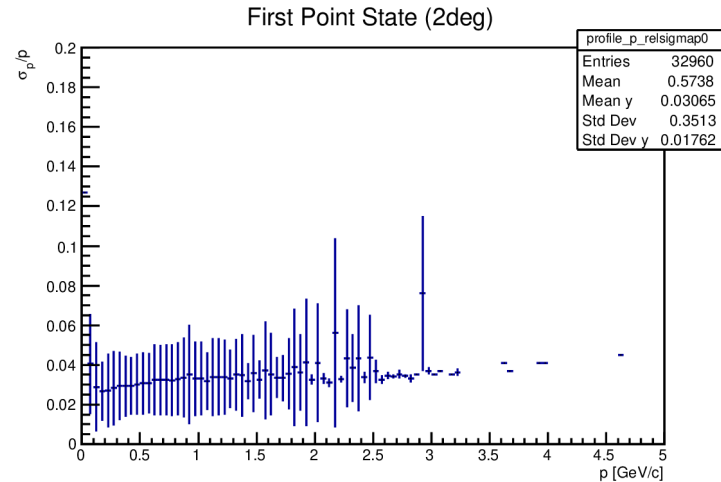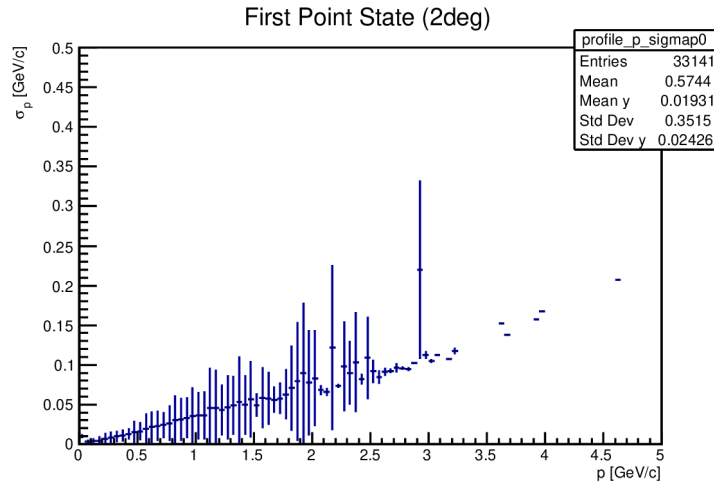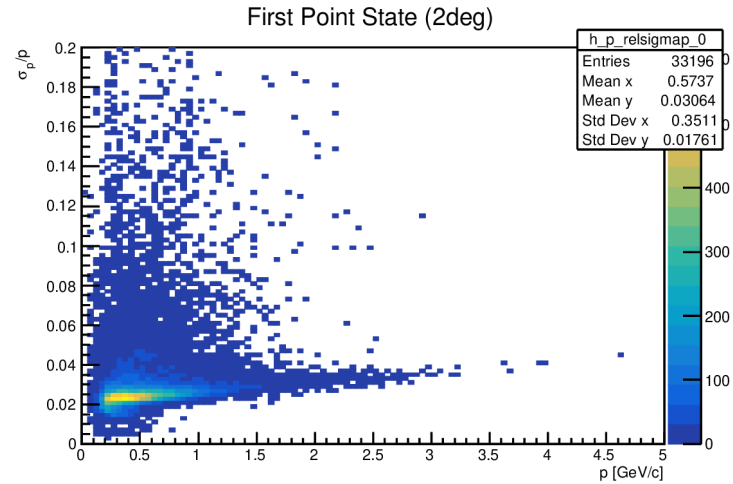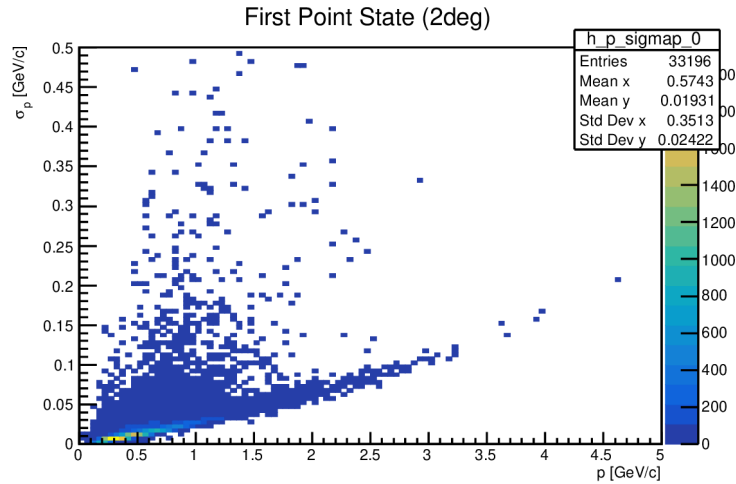
With ITS, only tracks in barrel

With ITS, only tracks in barrel

With ITS, only tracks in barrel

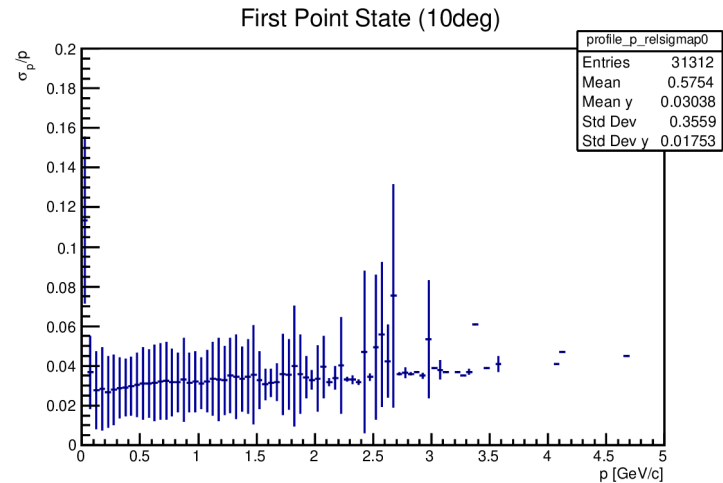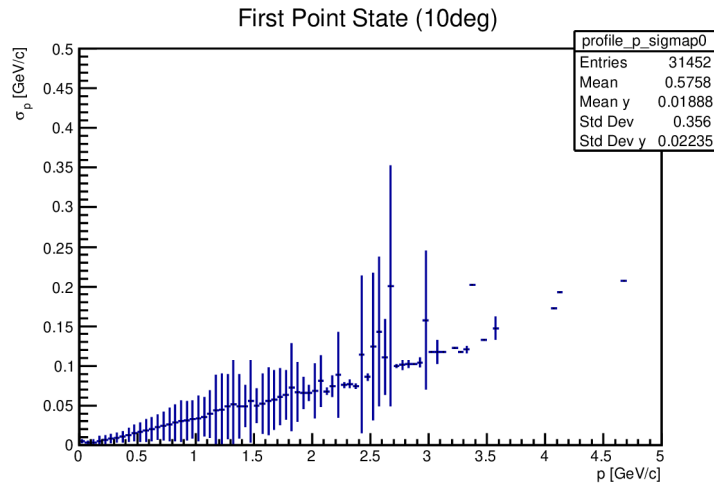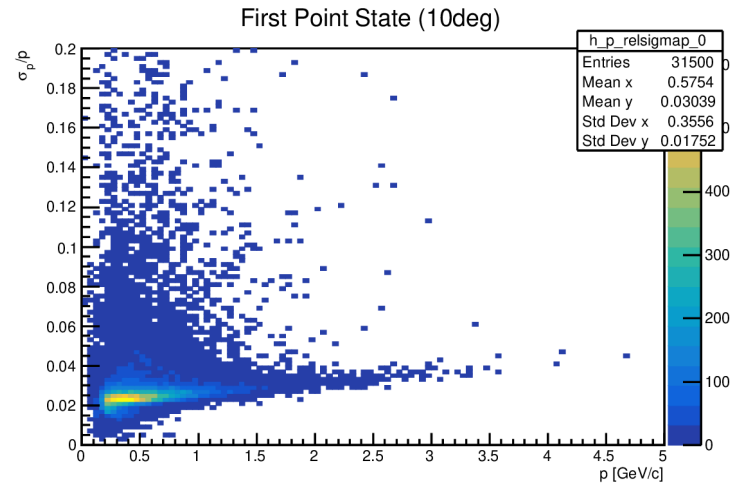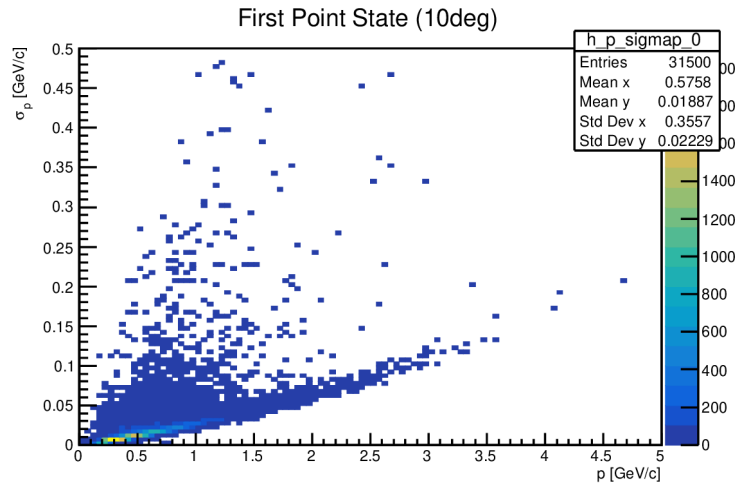# With ITS, only tracks in barrel

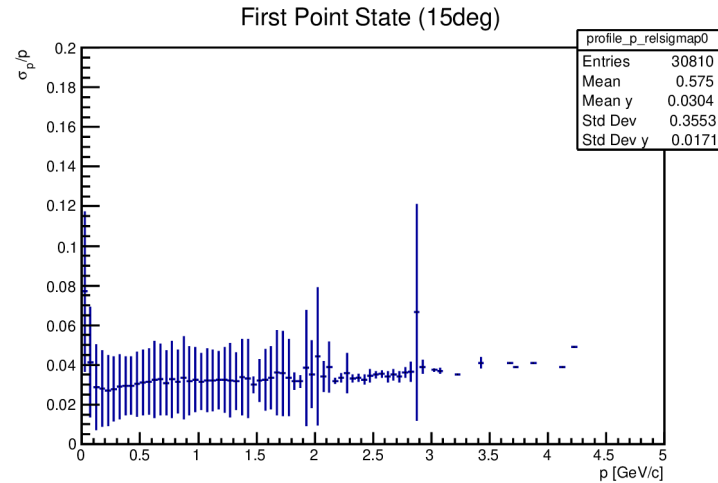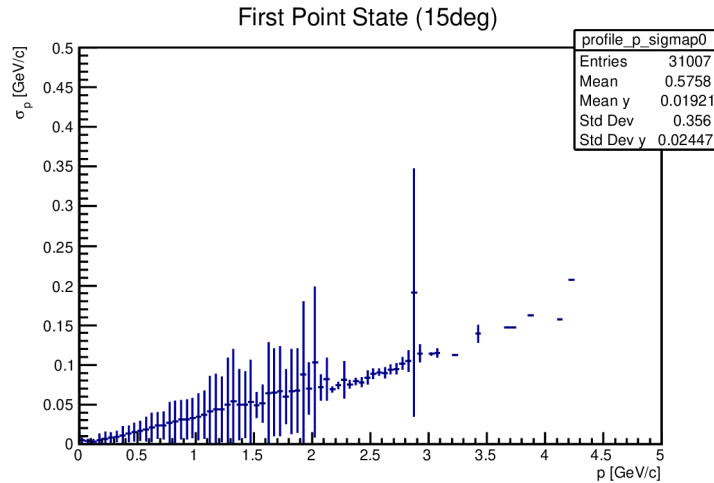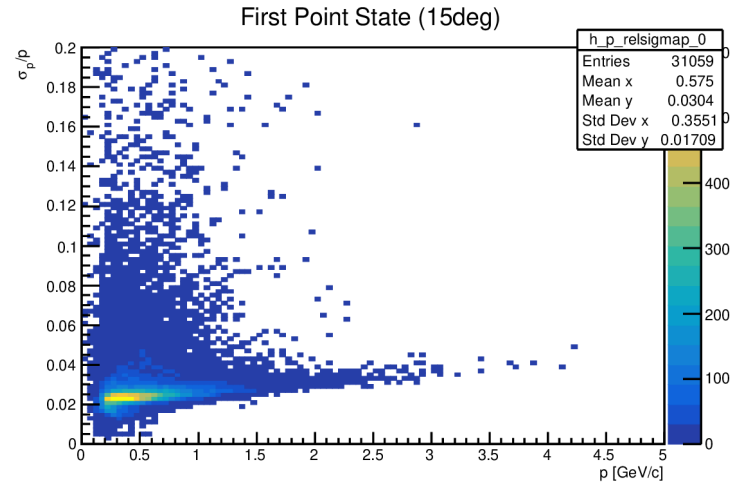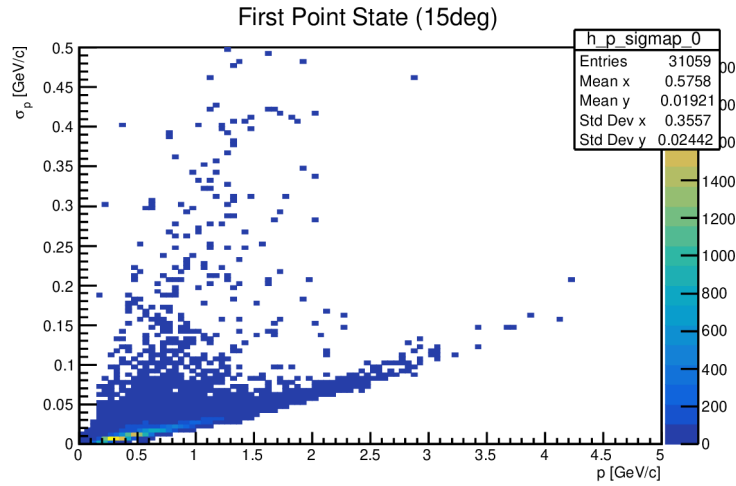# With ITS, only tracks in barrel

No ITS, only tracks in barrel

0deg — job crashes!

No ITS, only tracks in barrel

No ITS, only tracks in barrel

No ITS, only tracks in barrel

No ITS, only tracks in barrel