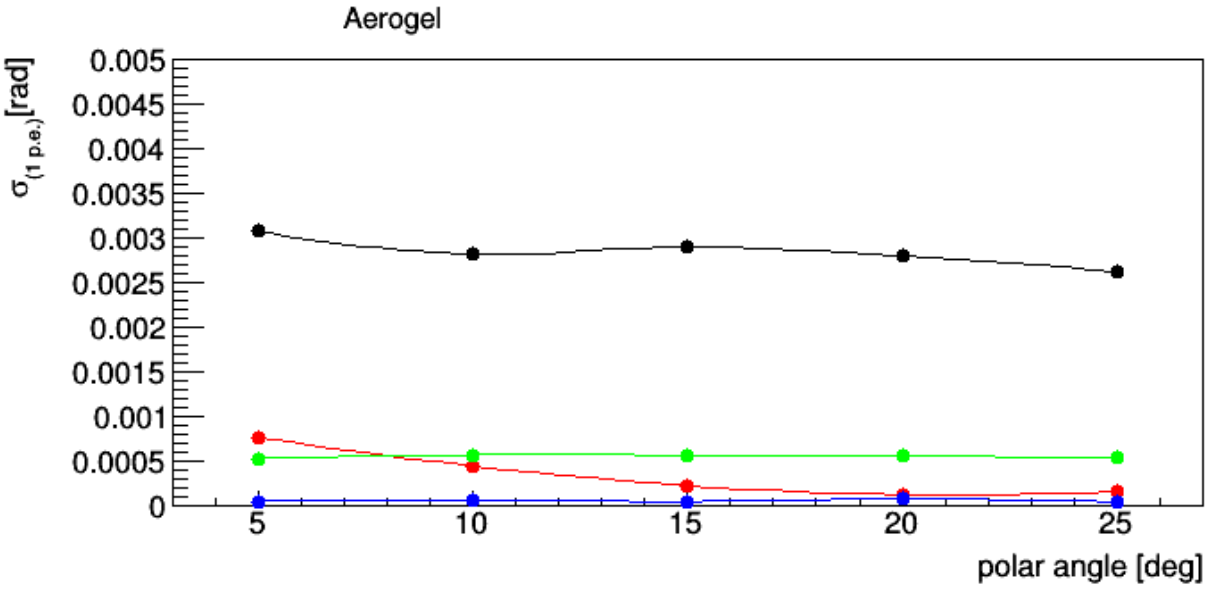
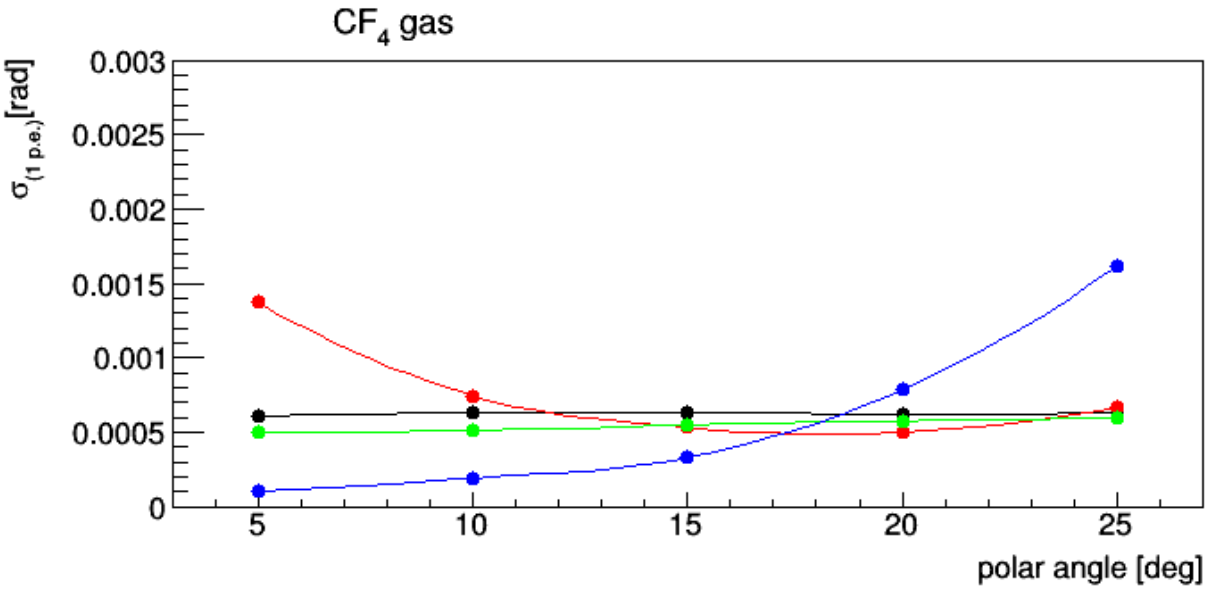
Dual-RICH update 4-18-2016
Alessio Del Dotto

- general R&D Updates

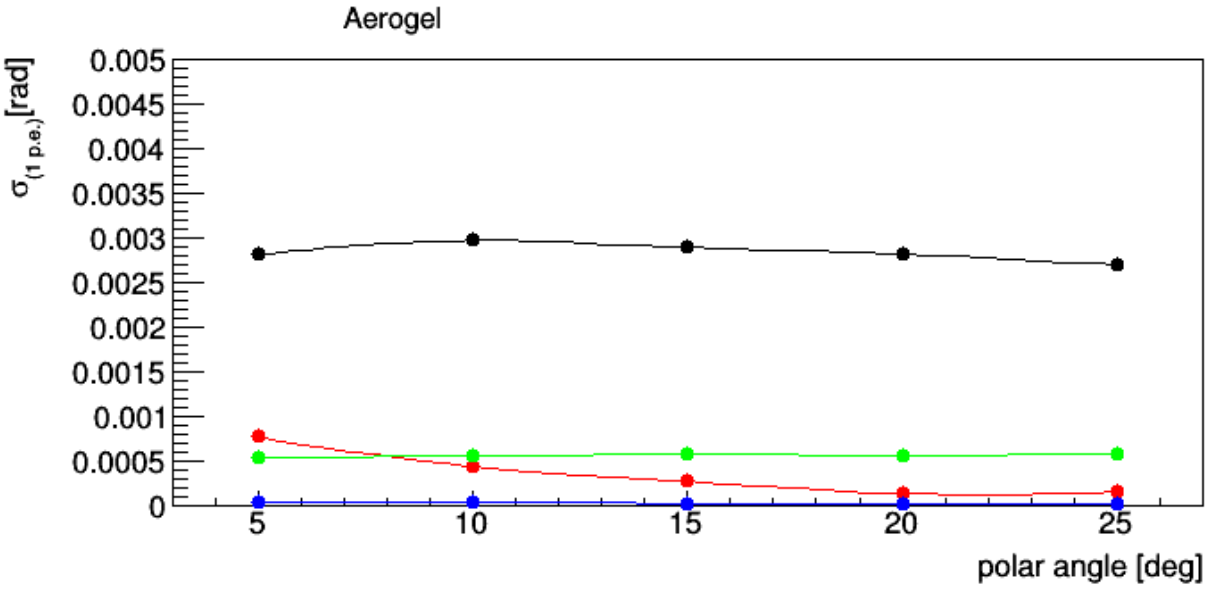
1 p.e. errors comparison (p = 10 GeV/c)

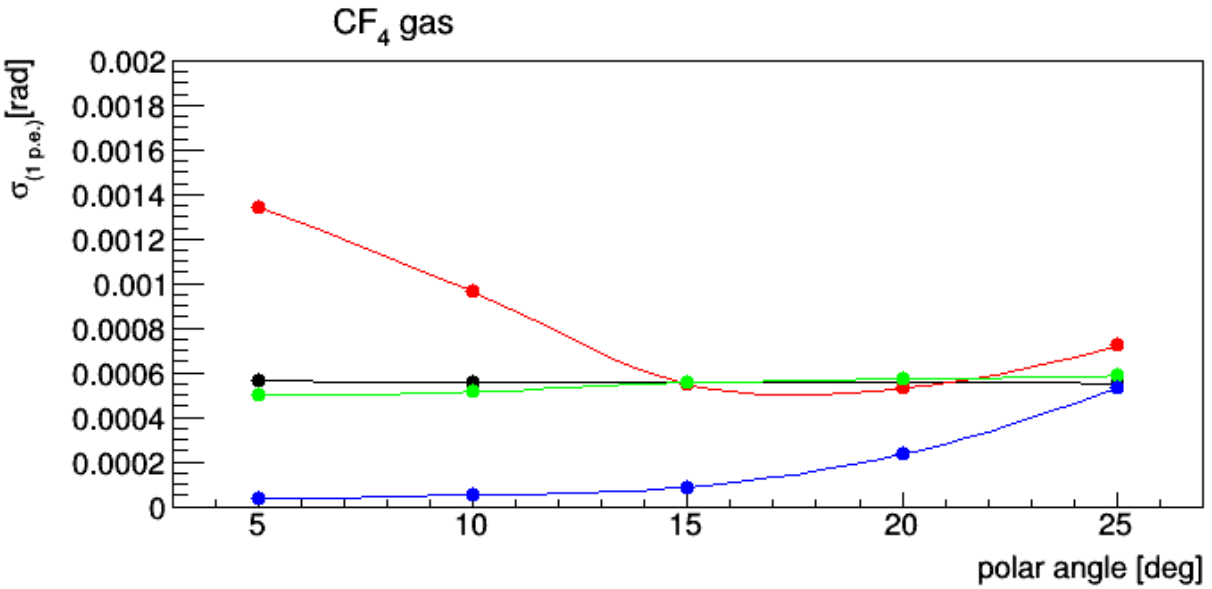




Chromatic
Emission
Pixel 3mm
Field

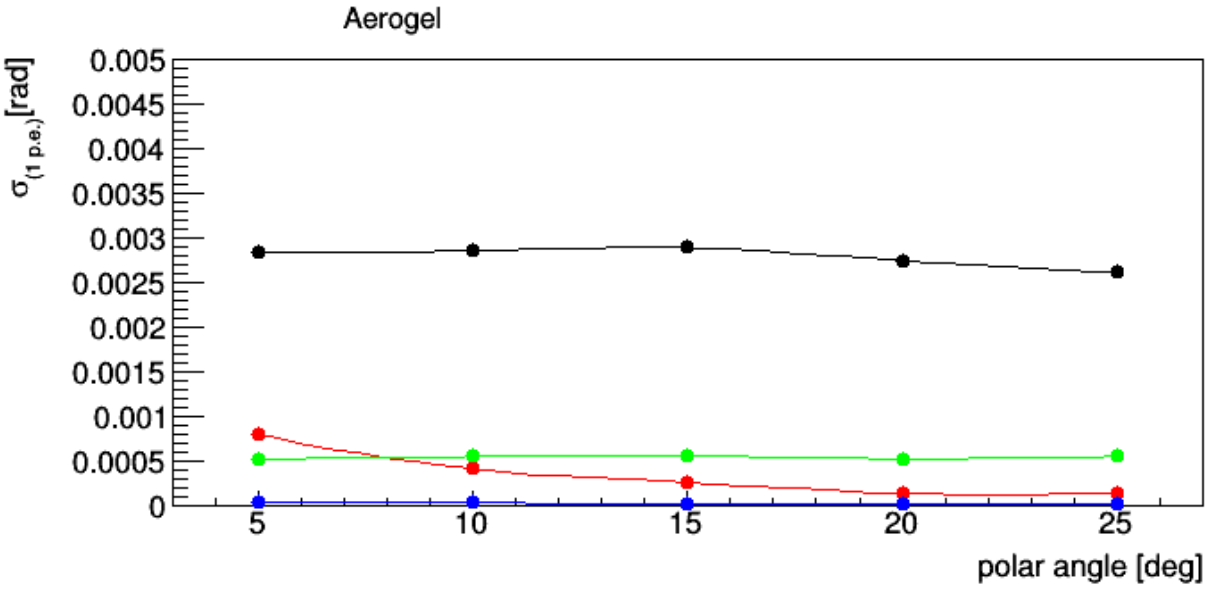
1 p.e. errors comparison (p = 30 GeV/c)

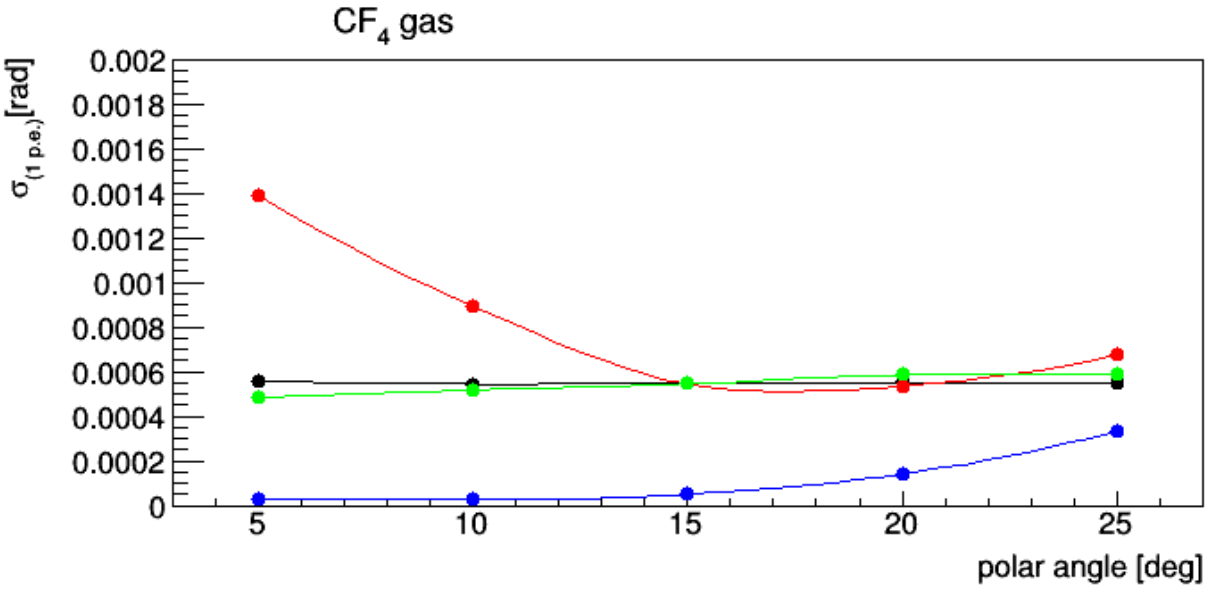




Chromatic
Emission
Pixel 3mm
Field

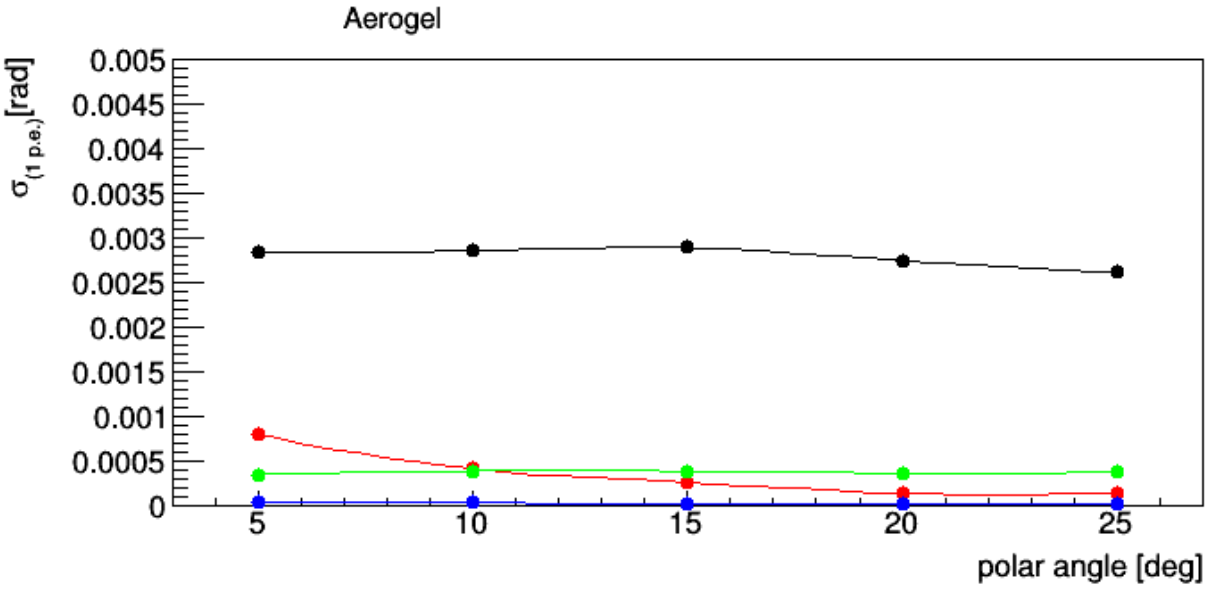
1 p.e. errors comparison (p = 50 GeV/c)

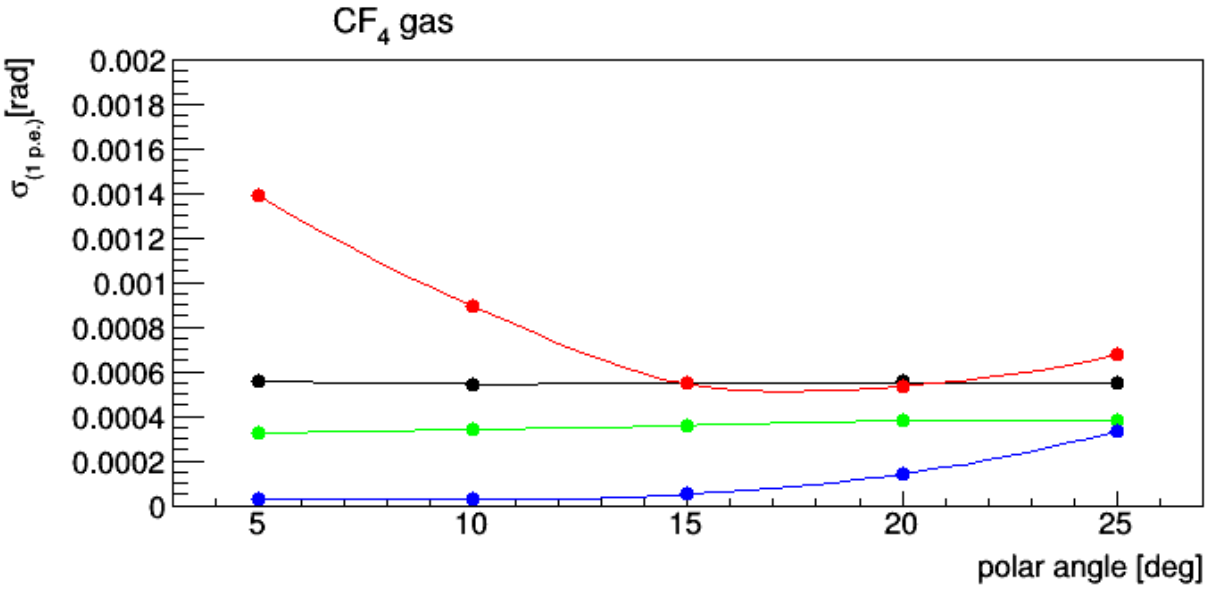




Chromatic
Emission
Pixel 3mm
Field

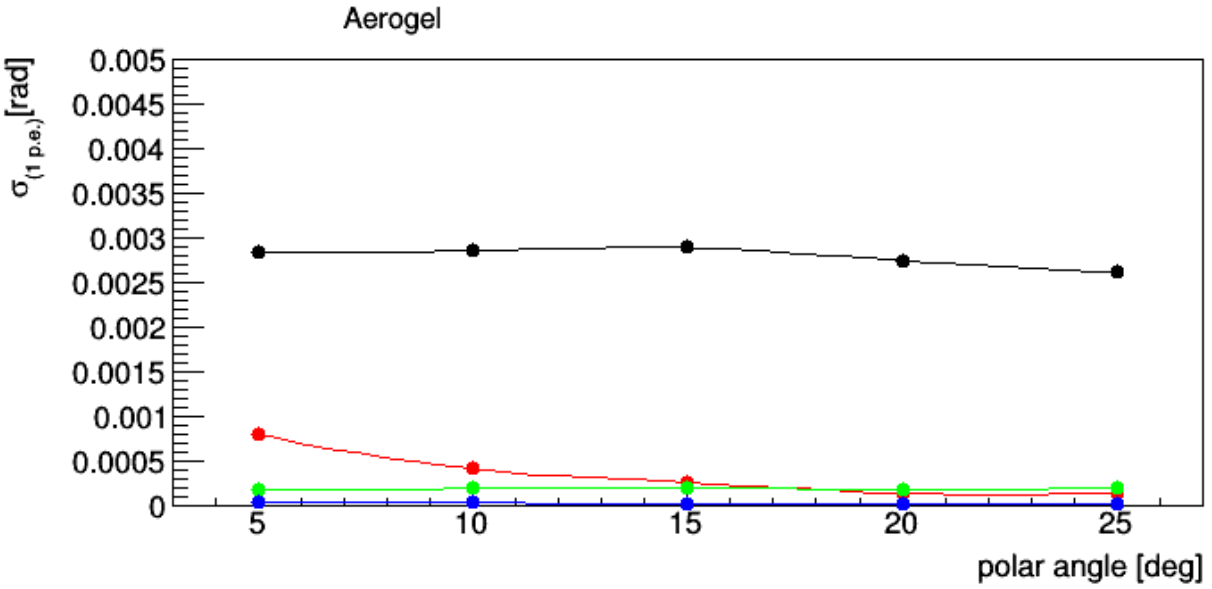
1 p.e. errors comparison (p = 50 GeV/c)

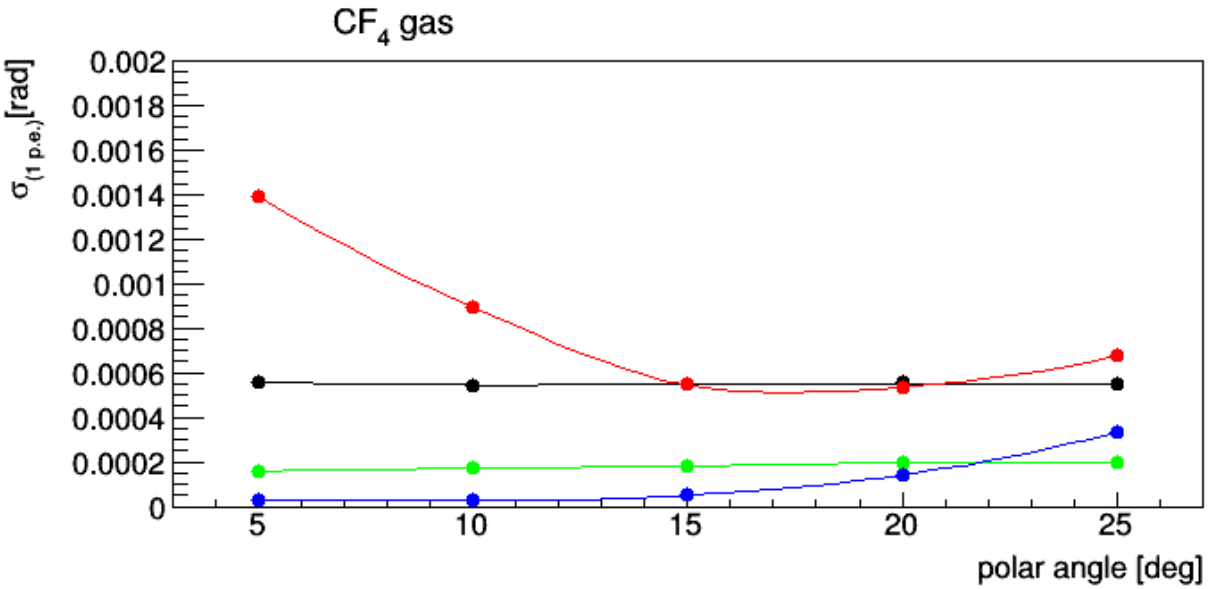




Chromatic
Emission
Pixel 2mm
Field

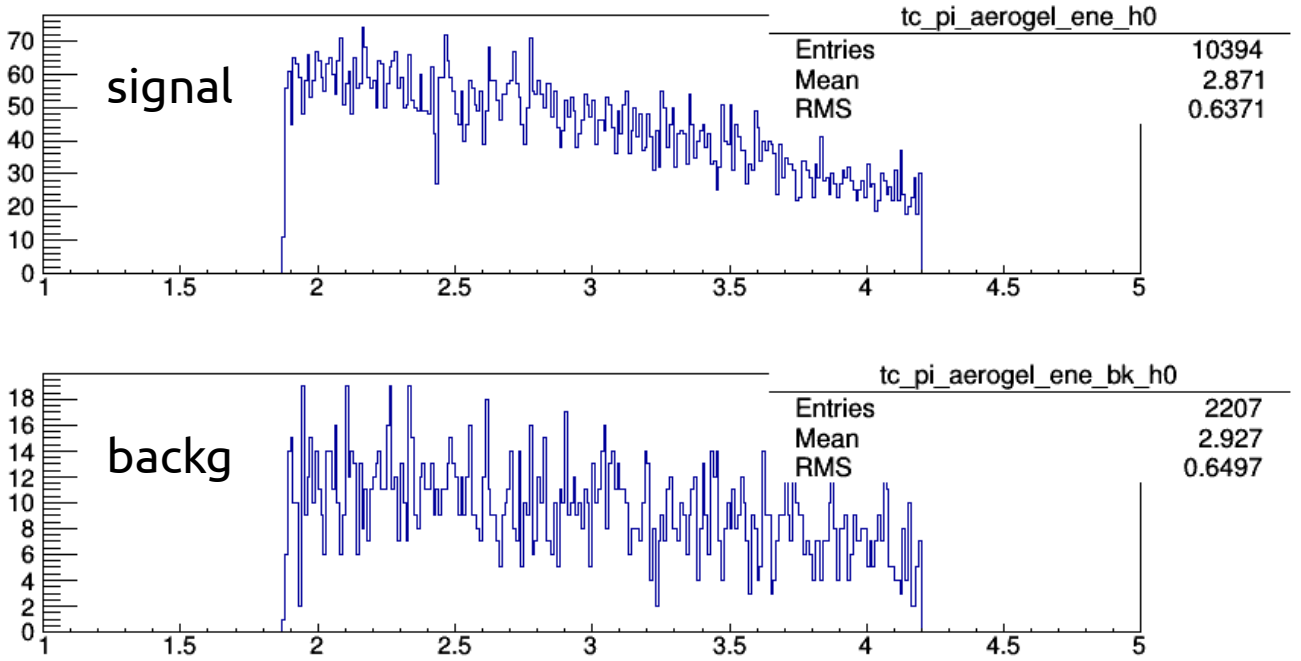
1 p.e. errors comparison (p = 50 GeV/c)





Chromatic
Emission
Pixel 1mm
Field

Signal vs background (preliminary)

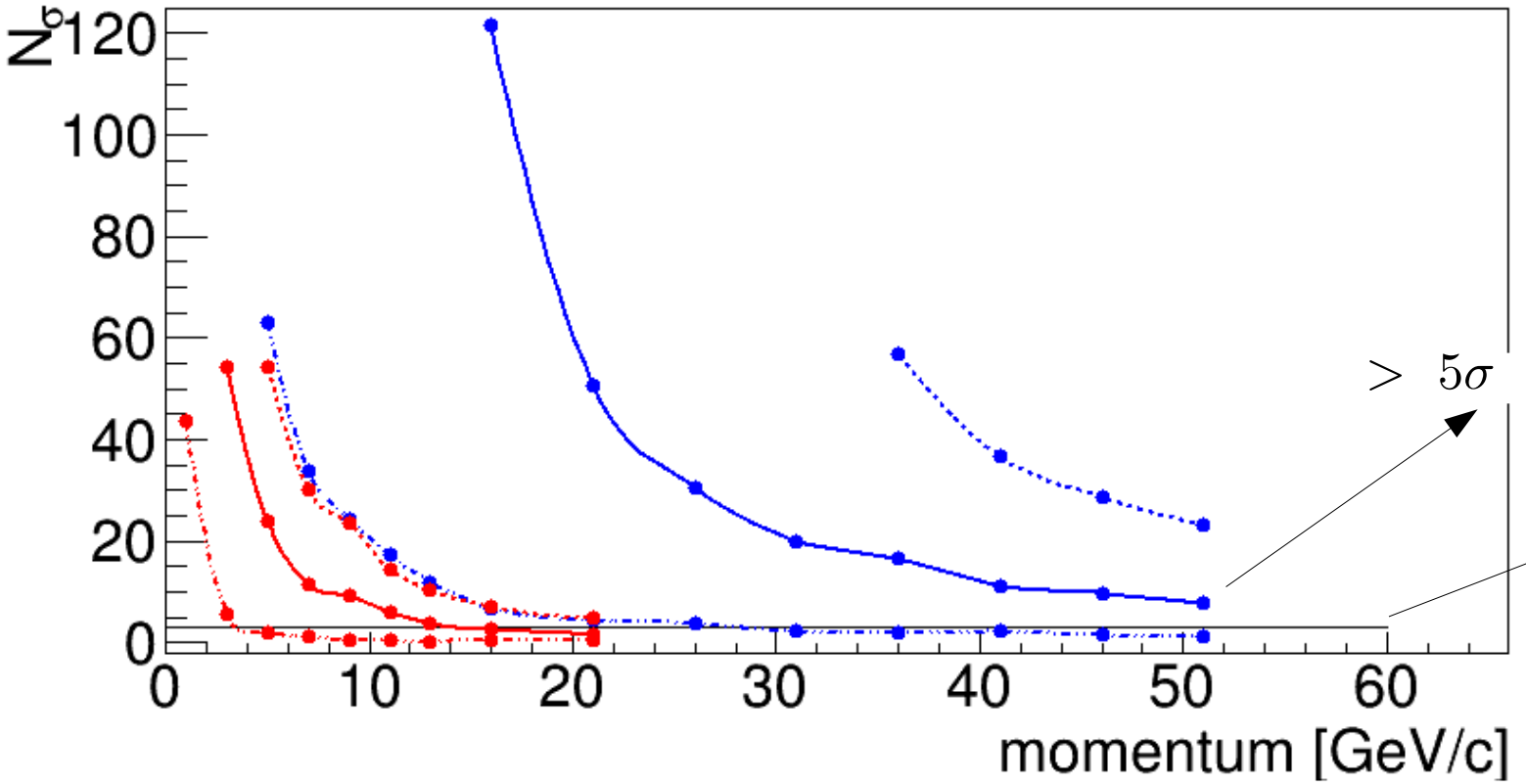


But the background can be recognized by the ray tracing algorithm, if outside a nominal angular range!

Number of sigma from GEMC data

$Aerogerl \mid e_{th}(GeV/c) = 0.002542 \mid \pi_{th}(GeV/c) = 0.67 \mid K_{th}(GeV/c) = 2.46 \mid p_{th}(GeV/c) = 4.89$

$CF_4 \mid e_{th}(GeV/c) = 0.016457 \mid \pi_{th}(GeV/c) = 4.35 \mid K_{th}(GeV/c) = 15.94 \mid p_{th}(GeV/c) = 31.66$



$\theta_{track} = 12.5^o$

$> 5\sigma \quad < N_\gamma > \sim 28$

3σ

$$N_\sigma = \frac{(< \theta_{p2} > - < \theta_{p1} >)\sqrt{N_\gamma}}{\sigma_\theta}$$

Mean angle from reconstructed distribution for a given particle

$N_\gamma = (N_\gamma^{p1} + N_\gamma^{p2})/2$

Tot 1 p.e. angular resolution $(\sigma_\theta^{p1} + \sigma_\theta^{p2})/2$

N sigma – x axis at 3 sigma

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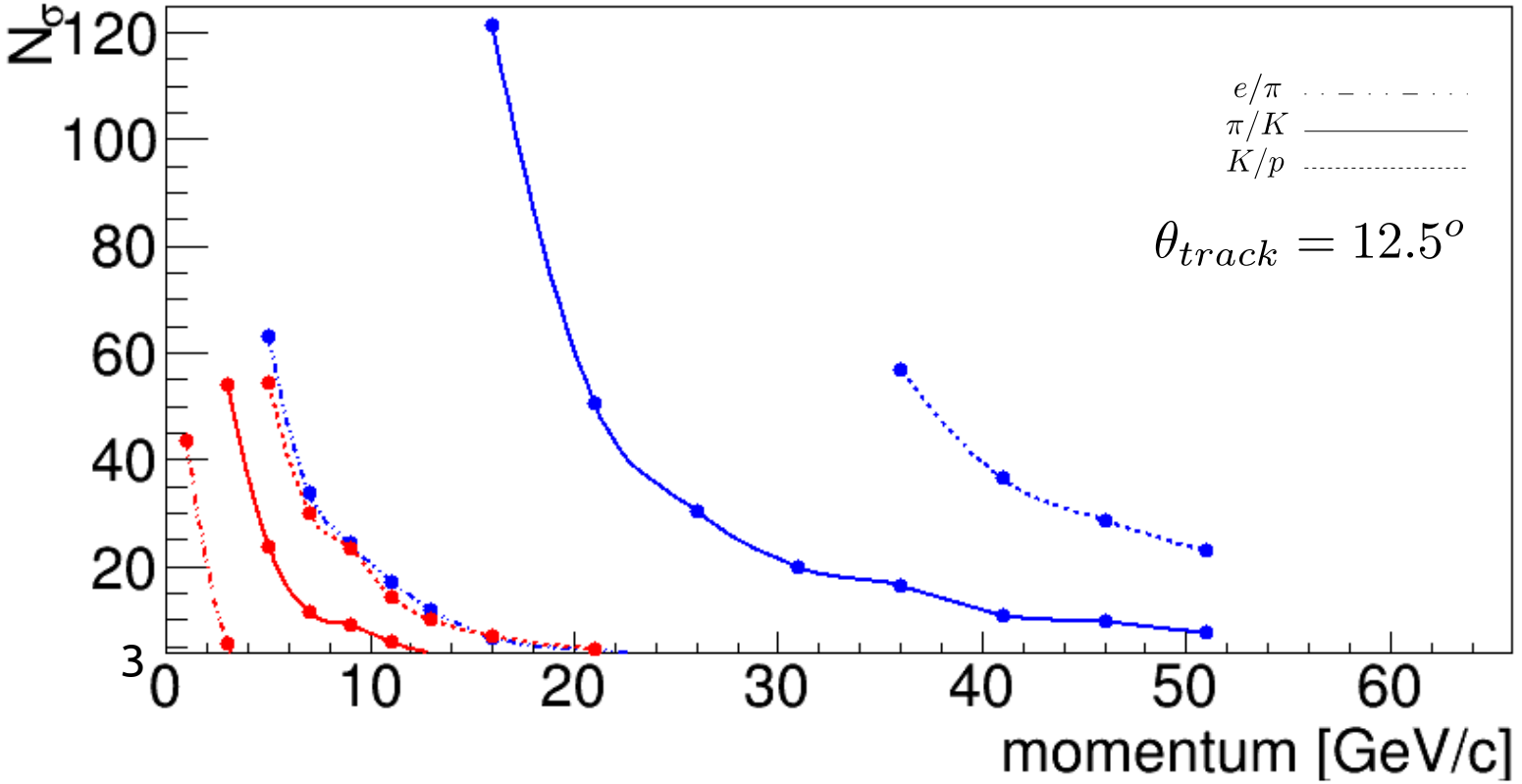

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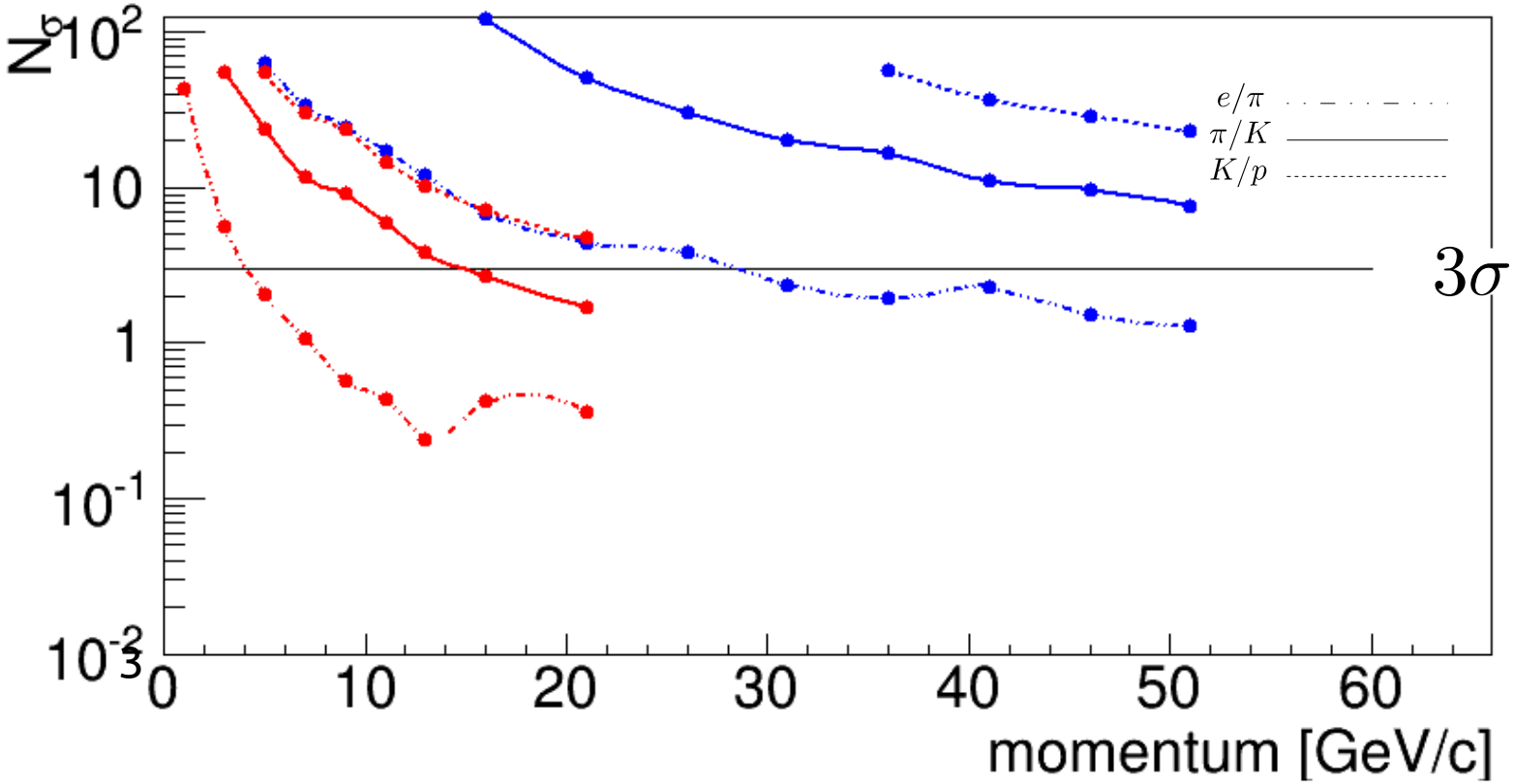

To do Next

- Study of the signal vs bg distribution in the detector plane
- CF4 can be in contact with aerogel?

  C4F10 can not --> degradation of Aerogel clarity