dRICH resolutions
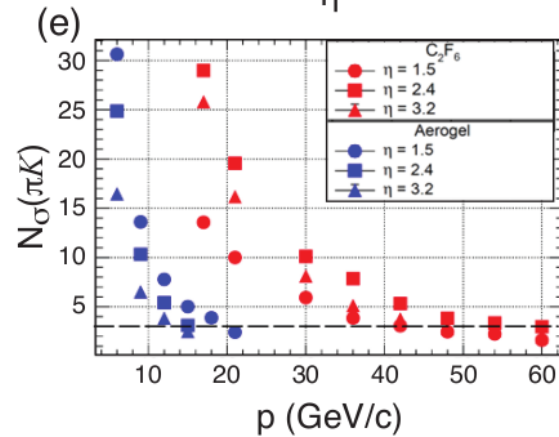
Chandradoy Chatterjee

Reference number
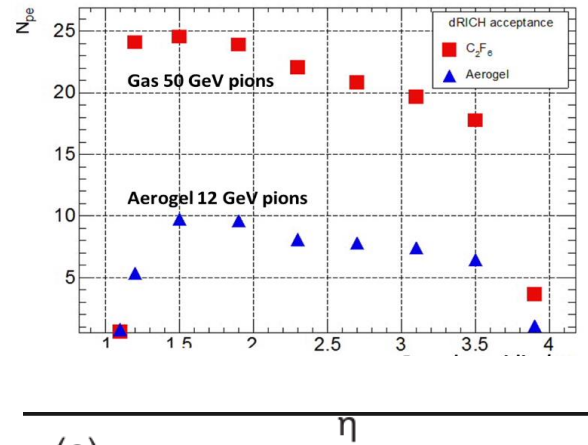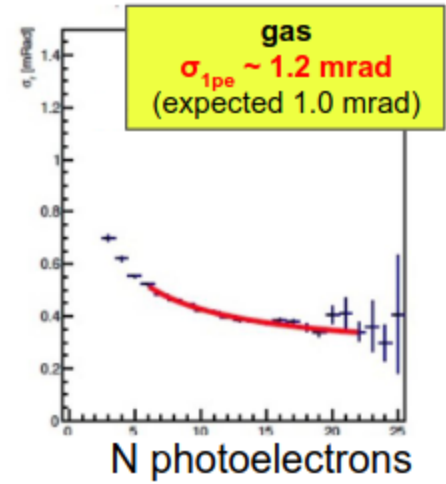
gas
$\sigma_{1pe} \sim 1.2$ mrad
(expected 1.0 mrad)

N photoelectrons

In ePIC (Expected- NPe) = 23*(115/135) ~ 18-19.
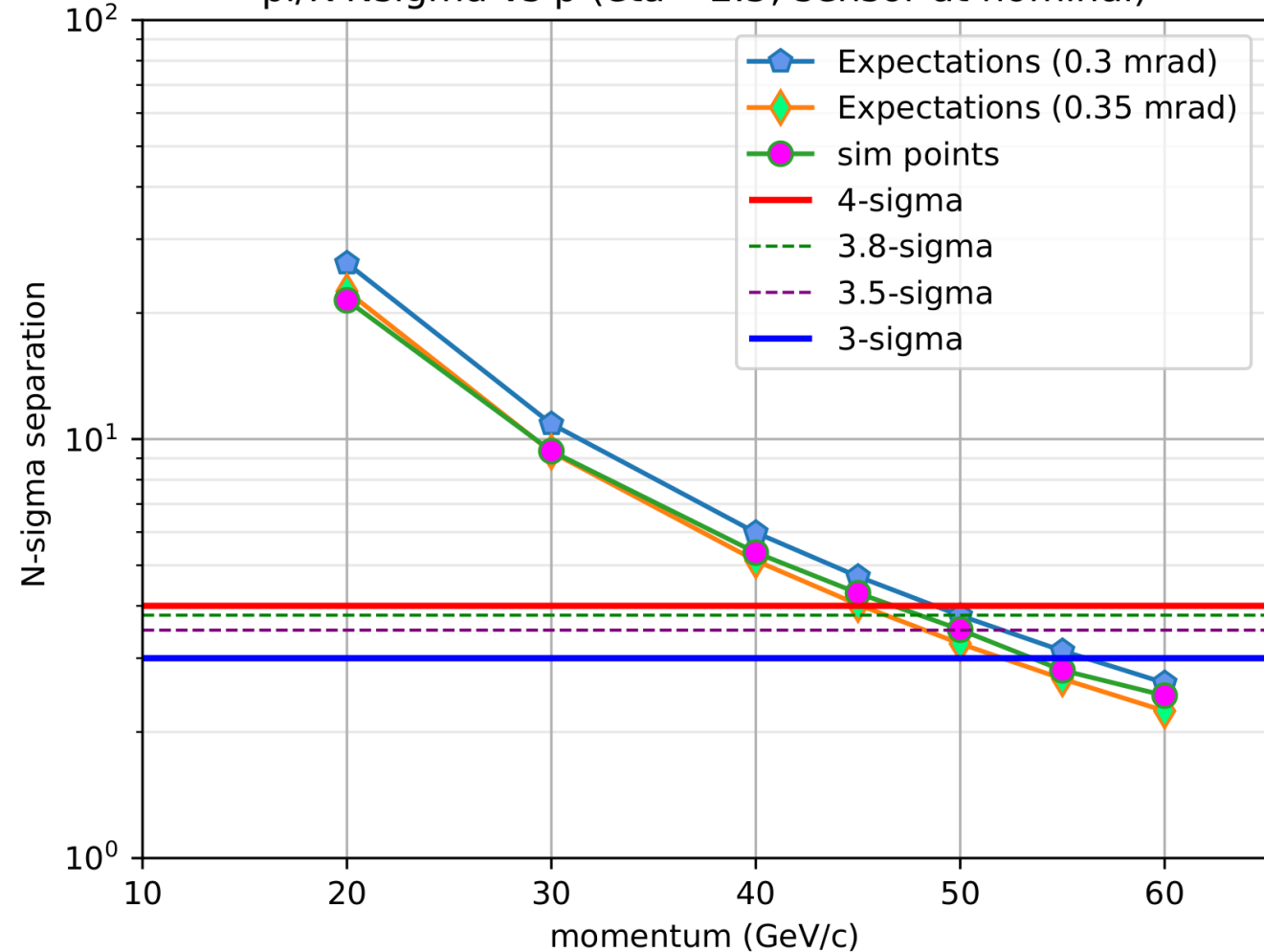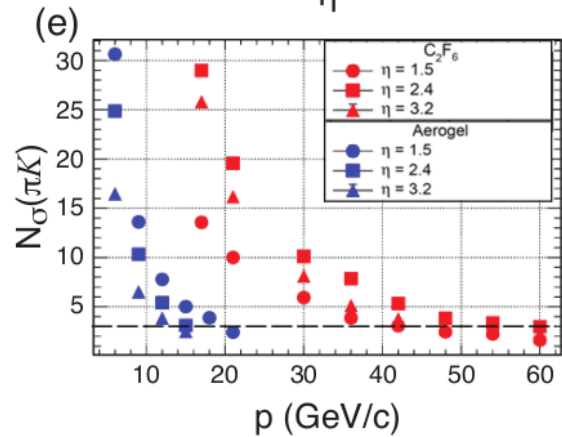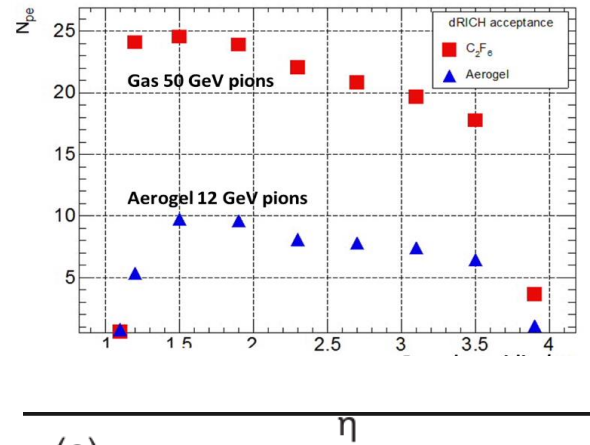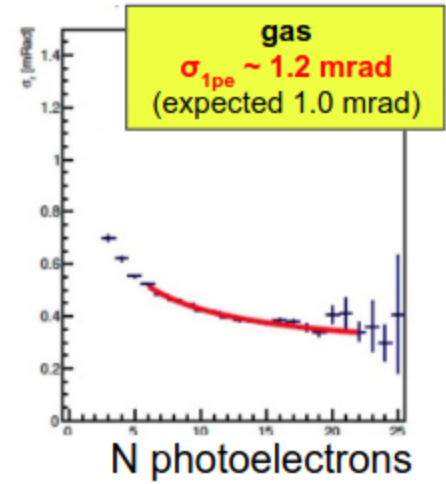
Ring resolution ~ 1.2/sqrt(18) ~0.28 mrad

Simulation outcomes

pi/K Nsigma vs p (eta =2.5; sensor at nominal)

Reference number

gas
$\sigma_{1pe} \sim 1.2$ mrad
(expected 1.0 mrad)

N photoelectrons

In ePIC (Expected- NPe) = 23*(115/135) ~ 18-19.
Ring resolution ~ 1.2/sqrt(18) ~0.28 mrad

Simulation outcomes
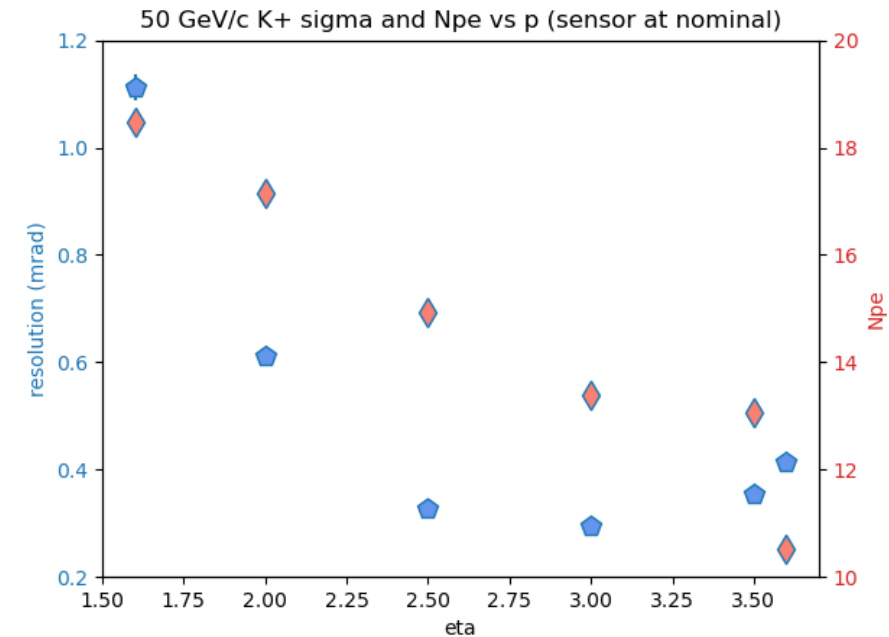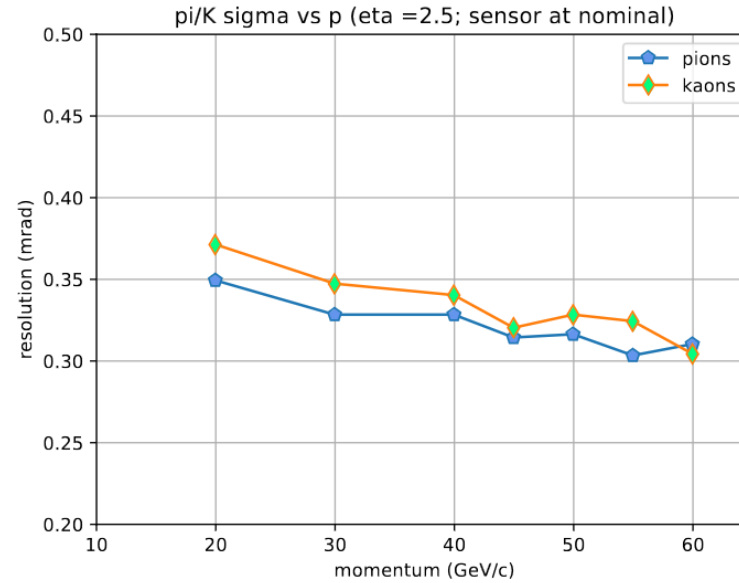
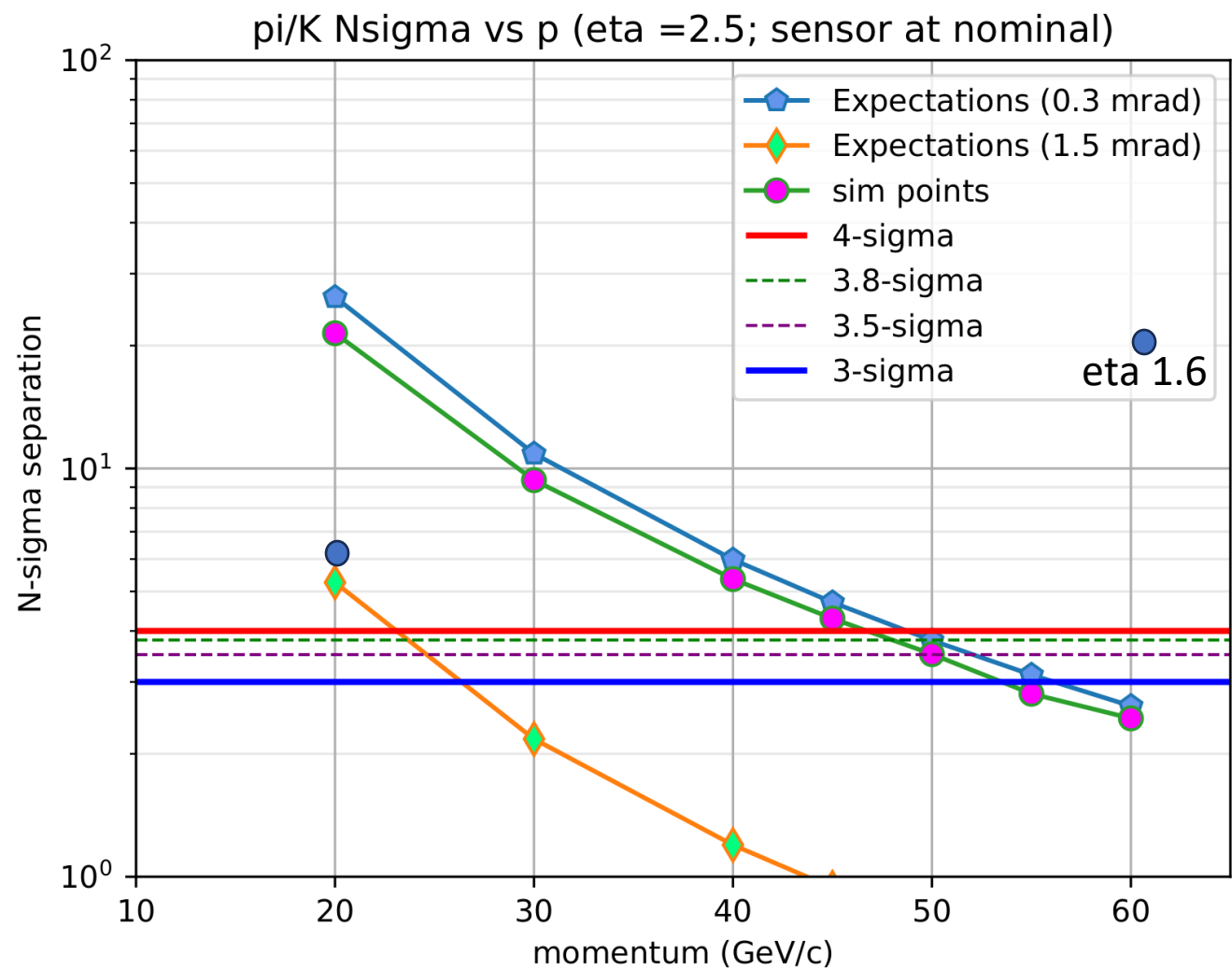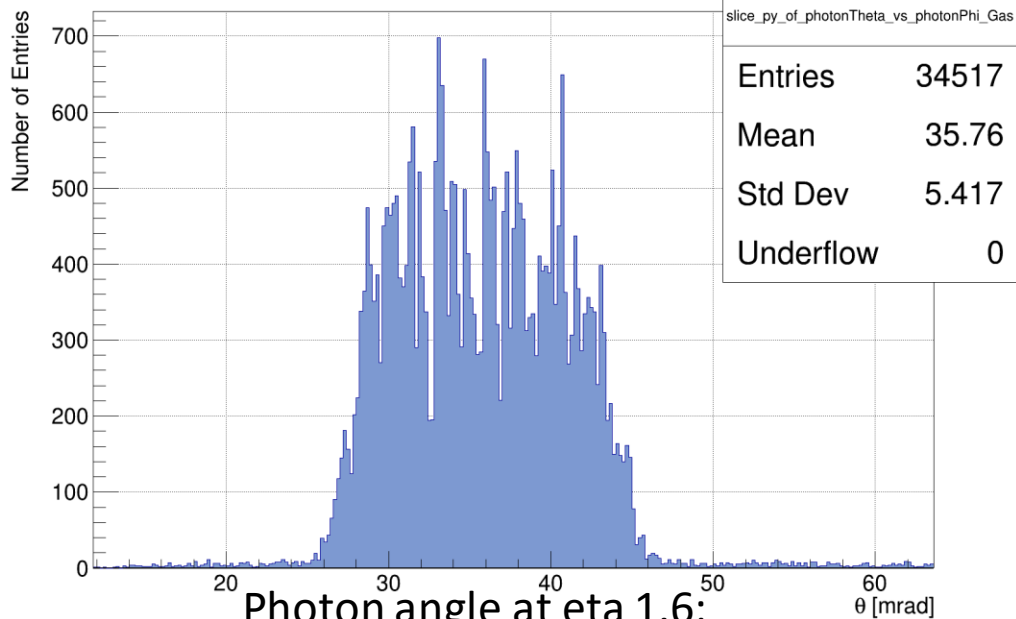# Case for Low eta

- 20 GeV pi/K at eta 1.6
  - Pi angle(sigma) 36.2 mrad (1.16); K angle(sigma) 28.5 mrad (1.2 mrad)
    - --> N-sigma ~ 6 (with nominal 0.3 we expected 20 sigma sep.

      In aerogel-->
      pi 193.6 (0.417 mrad) and K 192.1 (0.426) --> 3.5 sigma sep.
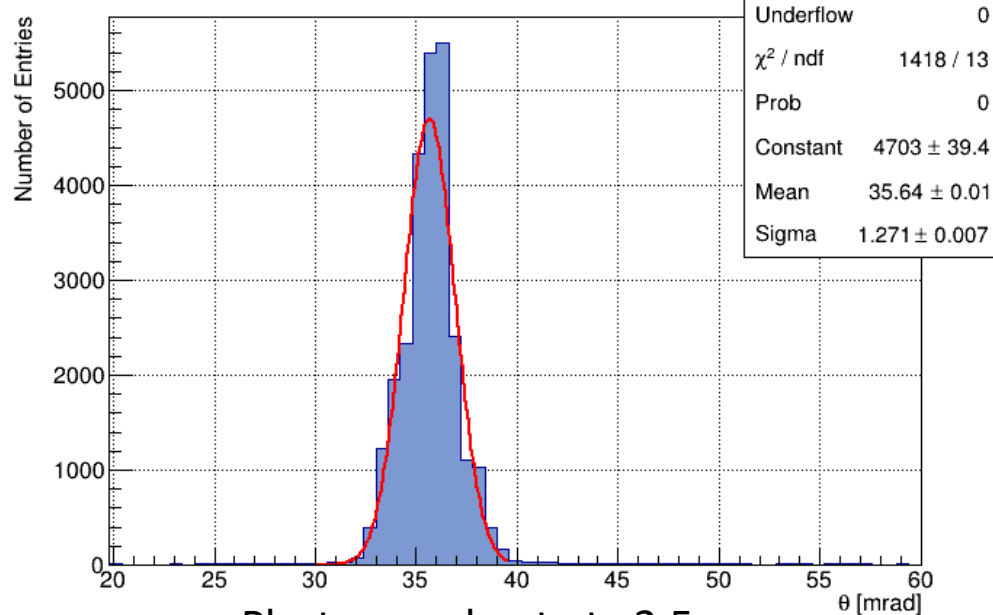   (Caveats: SPE/Ring resolution mismatch with TB and only 6 photons!!)

pi/K Nsigma vs p (eta =2.5; sensor at nominal)

ProjectionY of binx=[3,100] [x=-3.02..3.14]

slice_py_of_photonTheta_vs_photonPhi_Gas	
Entries	34517
Mean	35.76
Std Dev	5.417
Underflow	0

Photon angle at eta 1.6;
SPE sigma ~ 5 mrad

ProjectionY of binx=[5,50] [x=-2.64..3.14]

Underflow	0
χ^2 / ndf	1418 / 13
Prob	0
Constant	4703 ± 39.4
Mean	35.64 ± 0.01
Sigma	1.271 ± 0.007

Photon angle at eta 2.5;
SPE sigma ~ 5 mrad

Estimated Photon θ vs φ for Gas

0	5345	0	
0	34626	0	0
0	167	0	

Estimated Photon θ vs φ for Gas

0	839	0
0	28419	0
0	22	0
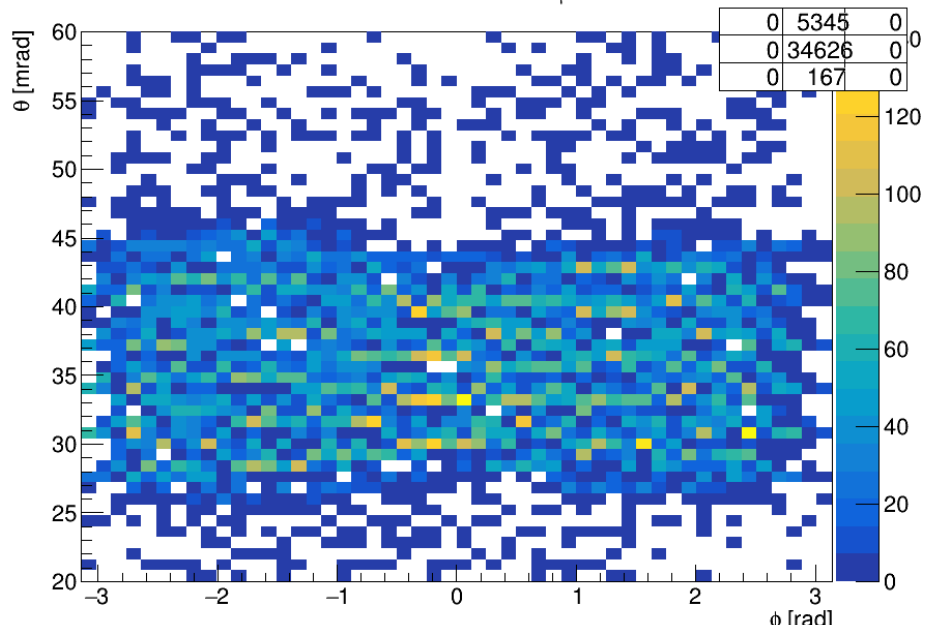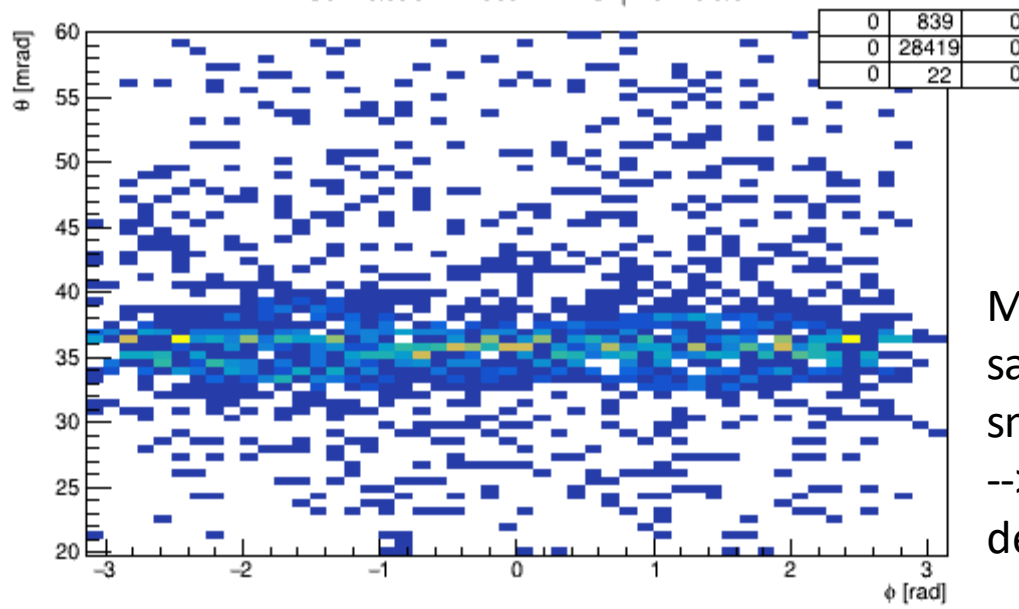
More pronounced
sausage effect at
smaller eta?
--> Study in greater
detail!