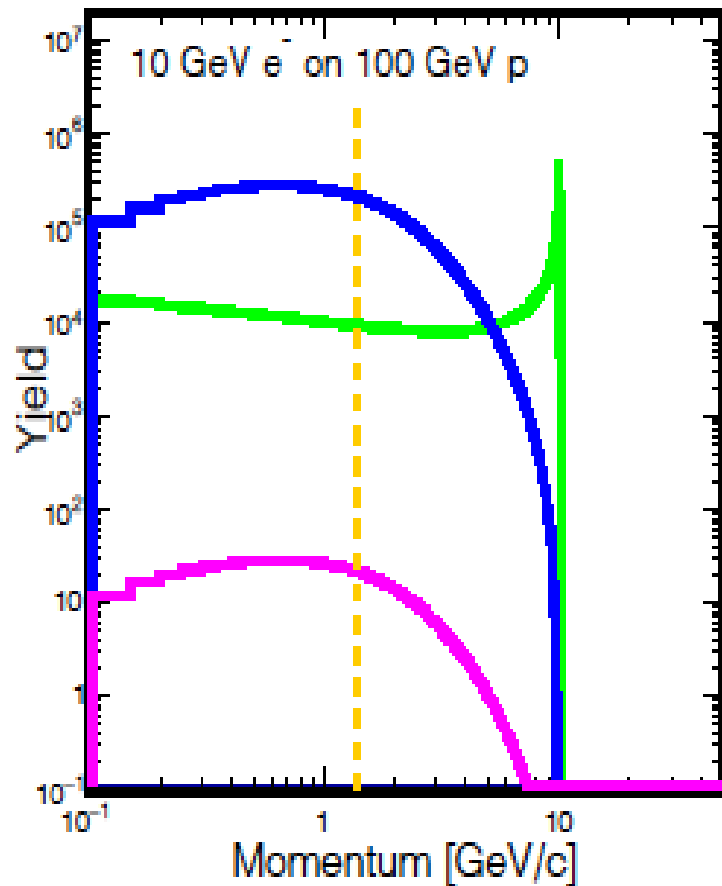
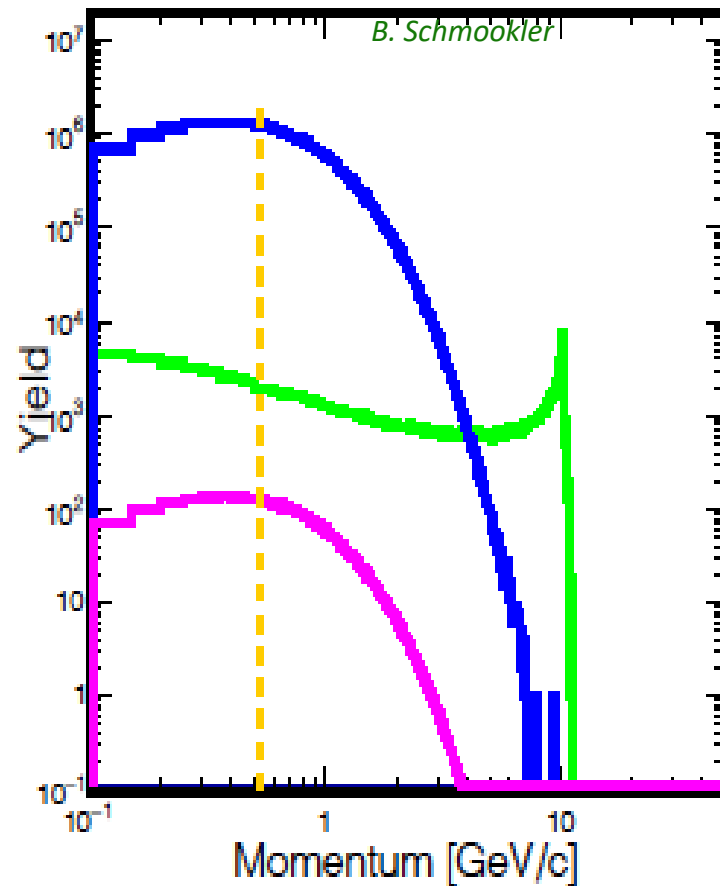


$$\eta = -\ln(\tan(\theta/2))$$

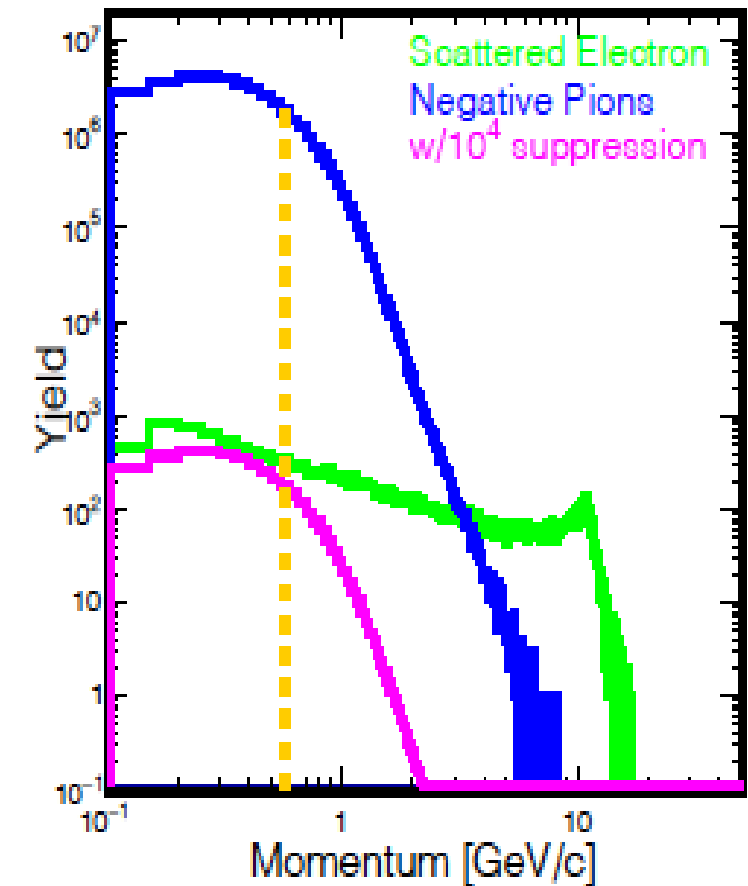
$-3.5 < \eta < -2.0$



$-2.0 < \eta < -1.0$

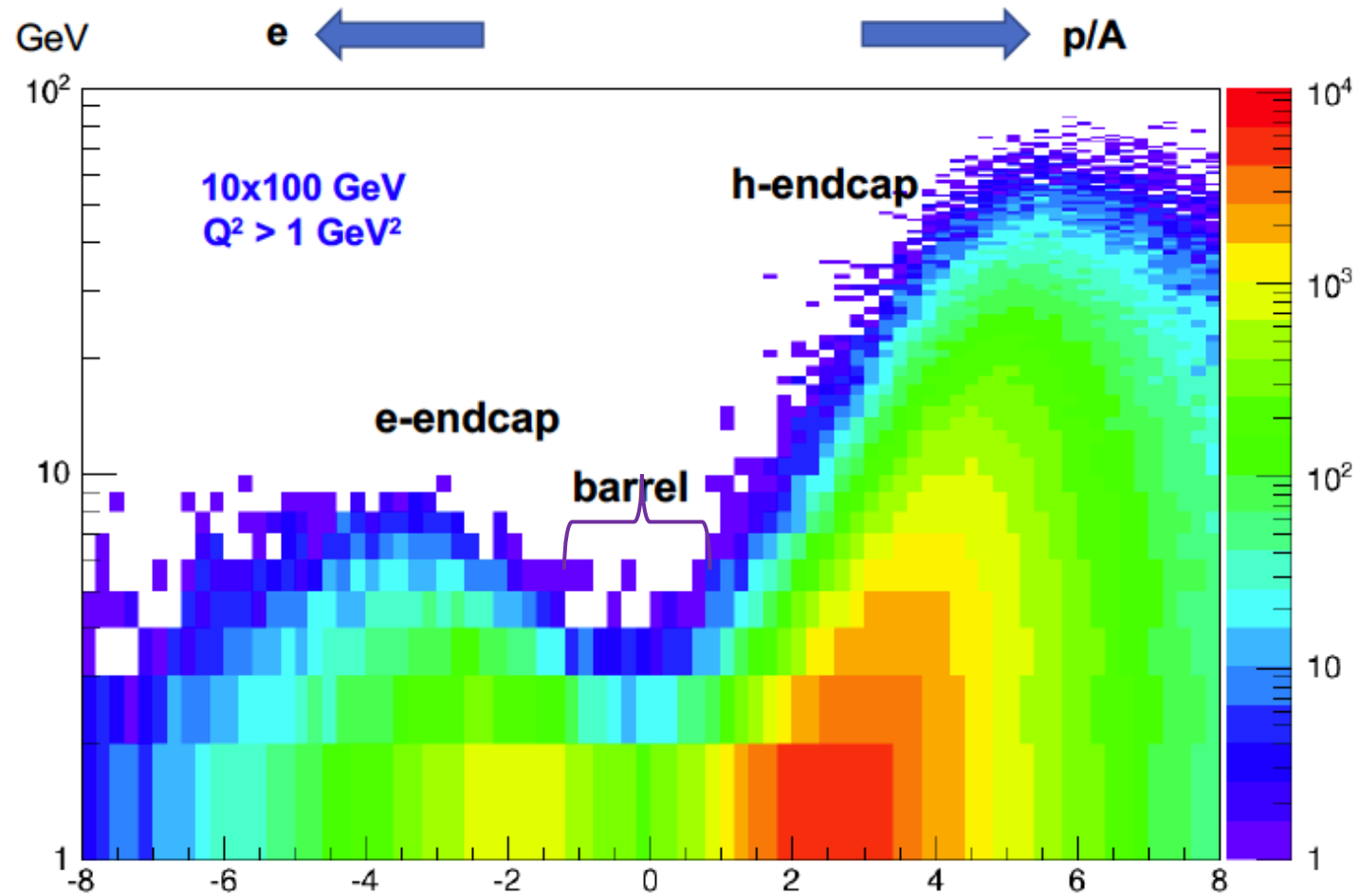


$-1.0 < \eta < 0.0$



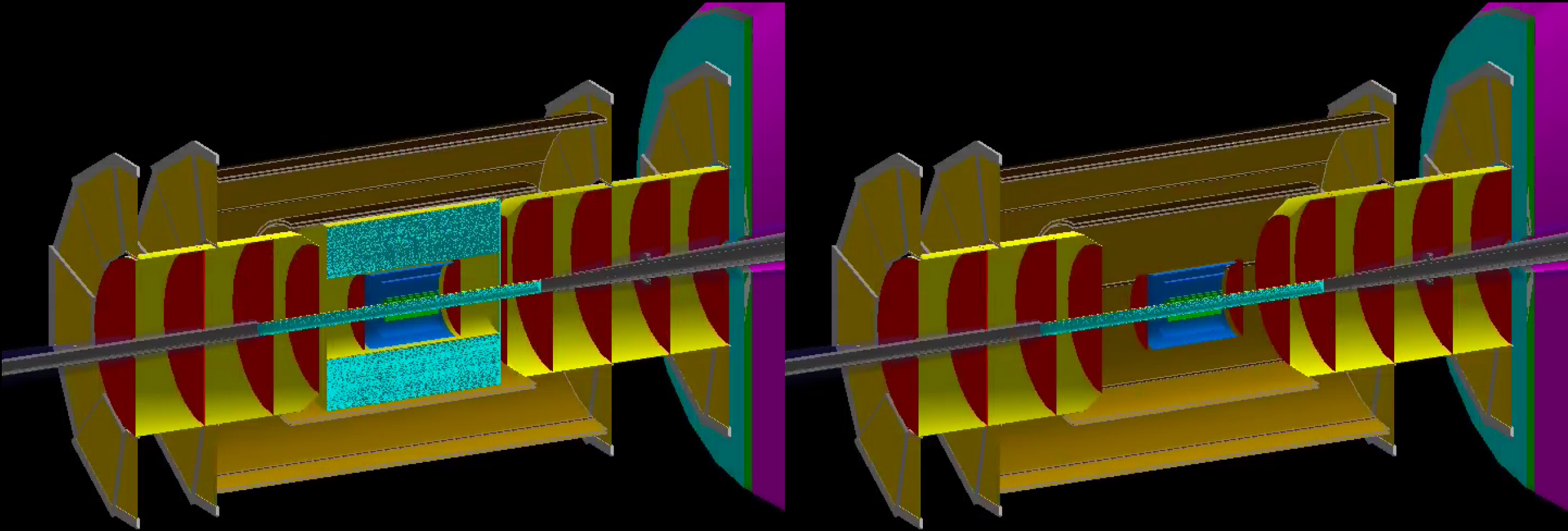
$Q^2 > 1$ &
 $y < 0.95$
to the right of
orange line

Hadron Identification in the barrel and endcaps



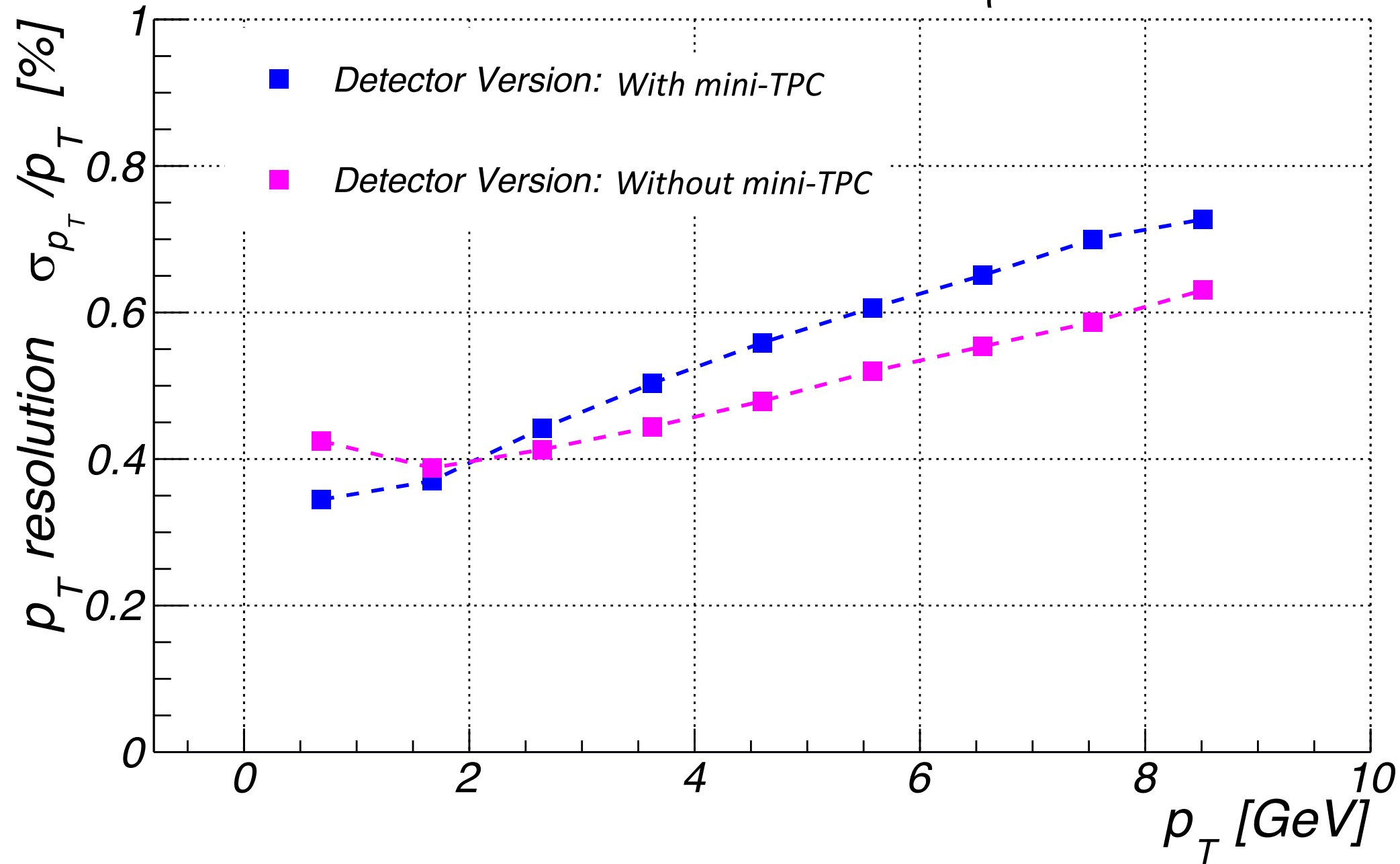
ToF – miniTPC performance comparison (ATHENA)

Parameter	miniTPC with GridPix readout	ToF (Cost ~ factor 10 up)
R position in Barrel Pt, P cut in 3T B-field	20 – 45 cm, dz = +/-45 cm 0.10, 0.15 GeV/c	52 cm 0.23, 0.36 GeV/c
PID	0.12 -- 0.6 GeV/c , dN/dX	0.25 -- 2. GeV/c, if track finding will be done, and ~20 ps will be reality
Tracking	Best track finding including secondaries (K0, Δ). A lot of hits with ~65-105 μm precision	20 μm hits in Rphi, and (strip size)/sqrt(12) in z for perpendicular to surface track
R&D	Does not need "generic" R&D. All components were tested. Needs "specifics" R&D (X0, cooling, gas mixture)	R&D to check performance of multi sensors without T0 signal, and for different particle angles Test / calibration options.

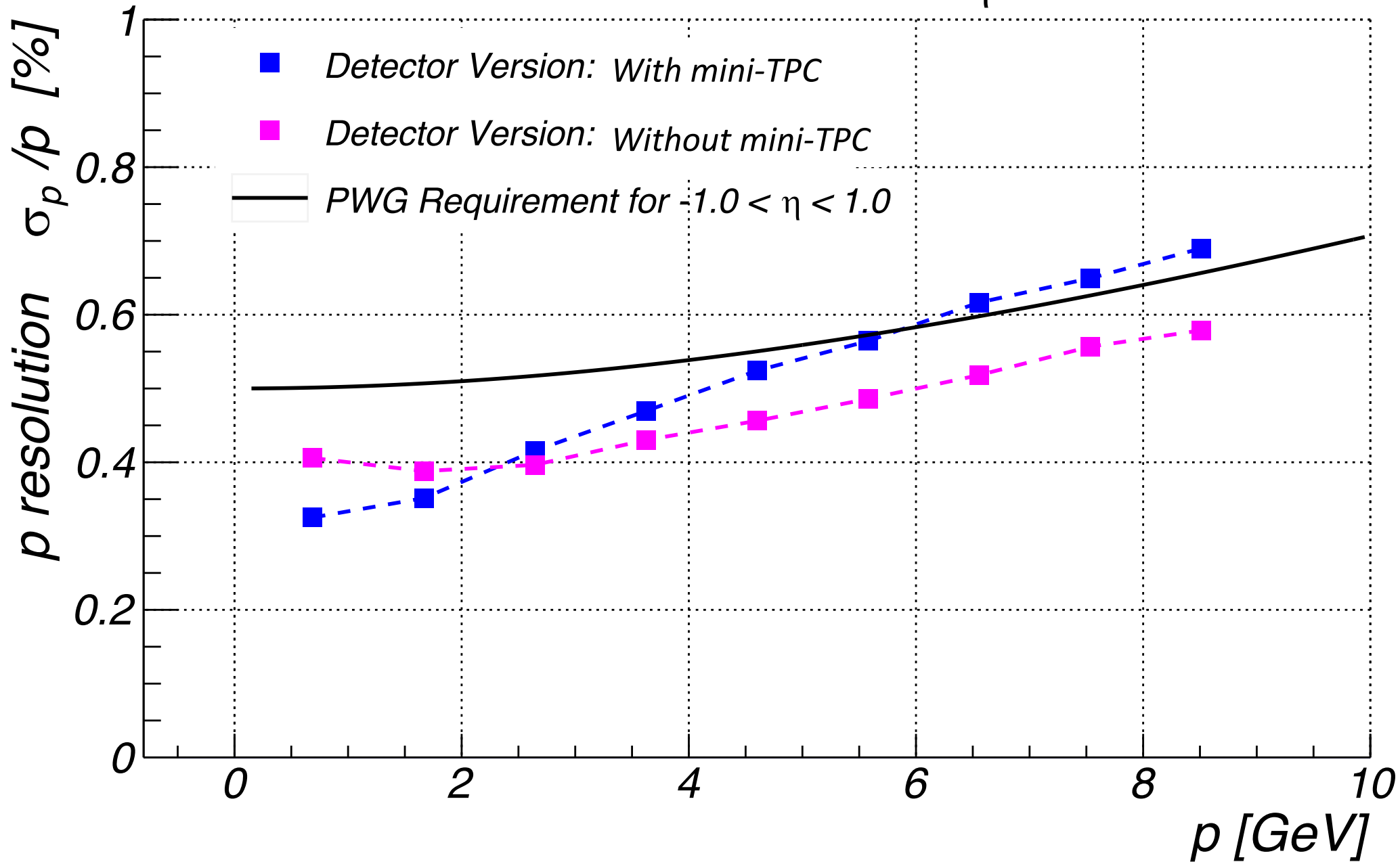


Configurations used in the studies

Resolution for tracks with $-1.00 < \eta < 1.00$



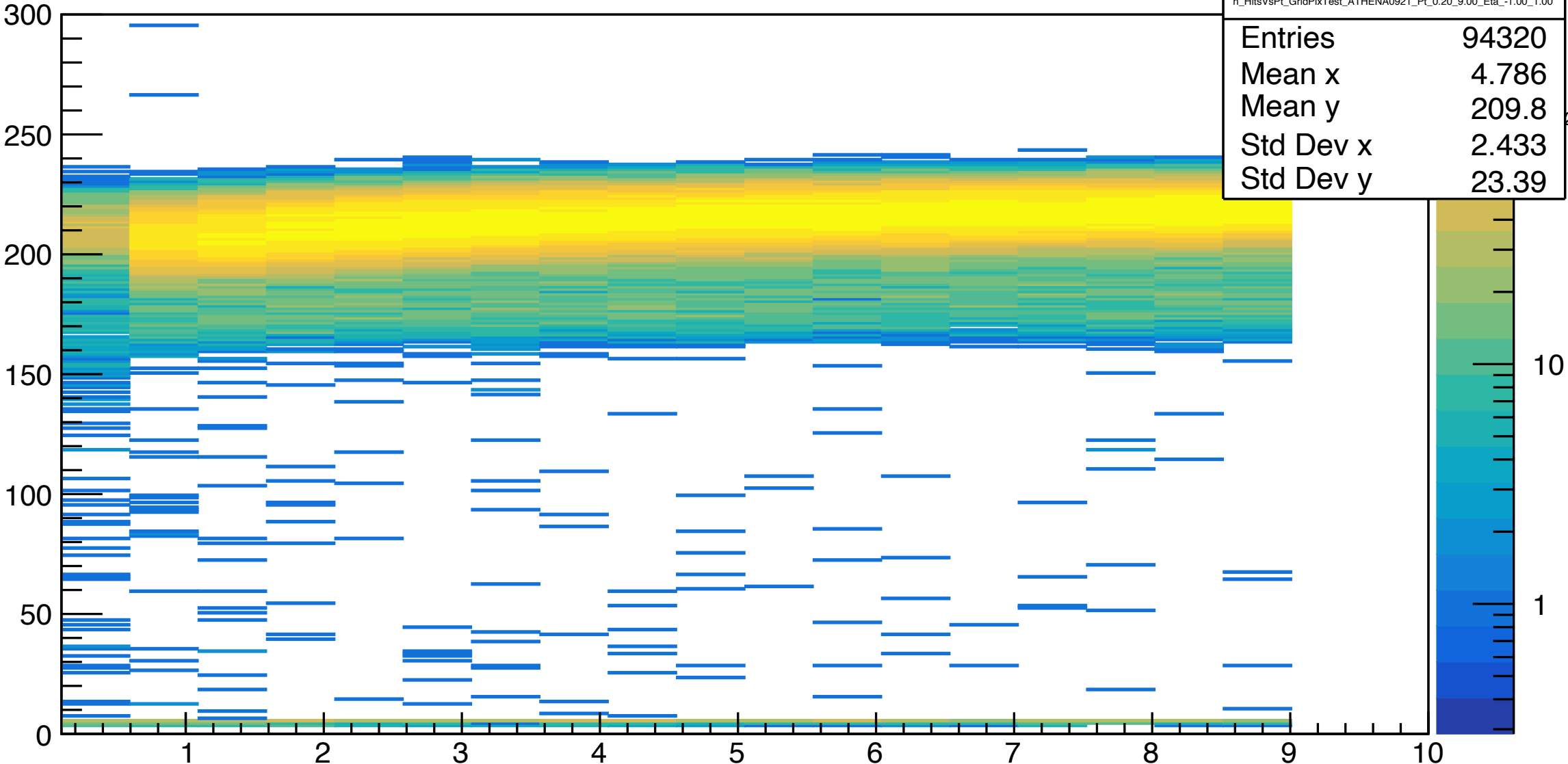
Resolution for tracks with $-1.00 < \eta < 1.00$



With mini-TPC

h_HitsVsPt_GridPixTest_ATHENA0921_Pt_0.20_9.00_Eta_-1.00_1.00

Entries	94320
Mean x	4.786
Mean y	209.8
Std Dev x	2.433
Std Dev y	23.39



Without mini-TPC

h_HitsVsPt_NoGridPixTest_ATHENA0921_Pt_0.20_9.00_Eta_-1.00_1.00

Entries	94693
Mean x	4.808
Mean y	9.186
Std Dev x	2.422
Std Dev y	0.7348

