First look at reconstruction results using TPCResCor

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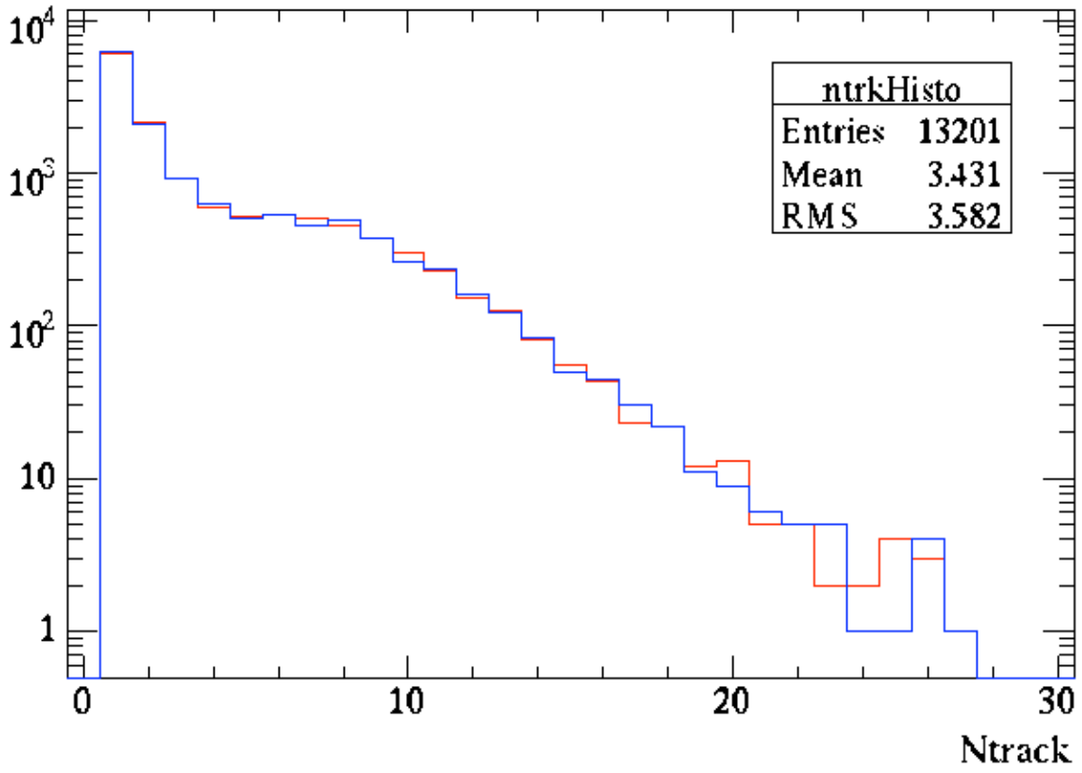
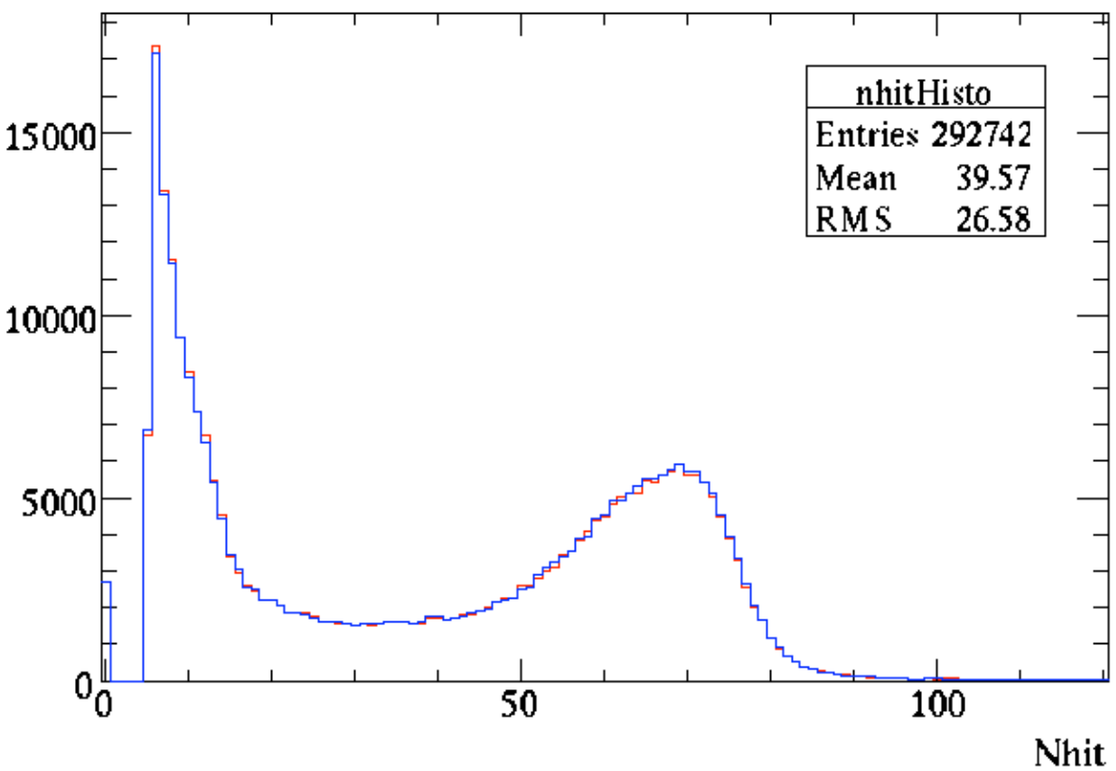
Summary

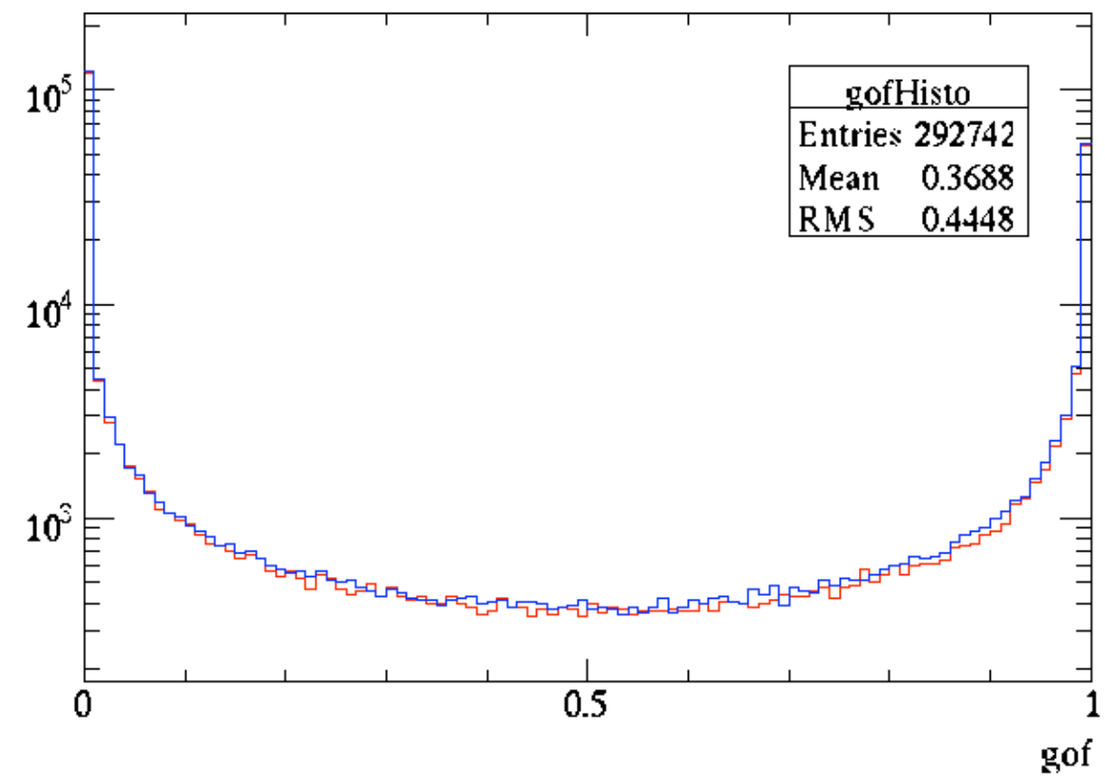
- With Holger's help, the processing for producing the TPCResCor maps is complete
- As a first look at how results are affected I ran the reconstruction on a run chosen more-or-less at random from the first map period: run 12587, -60 GeV on Be. Will need to check some runs from later periods
- I've looked at over all event distributions and track-by-track. Overall differences are very small:
  - All event-level distributions are only slightly affected, except:
    - Target position comes out consistent with survey with ResCor applied
    - Beam momentum is shifted slightly lower
    - Beam momentum distribution is slightly narrower
  - Residual distributions are slightly more symmetric
  - Track-by-track, most tracks have their momenta changed at the <2% level



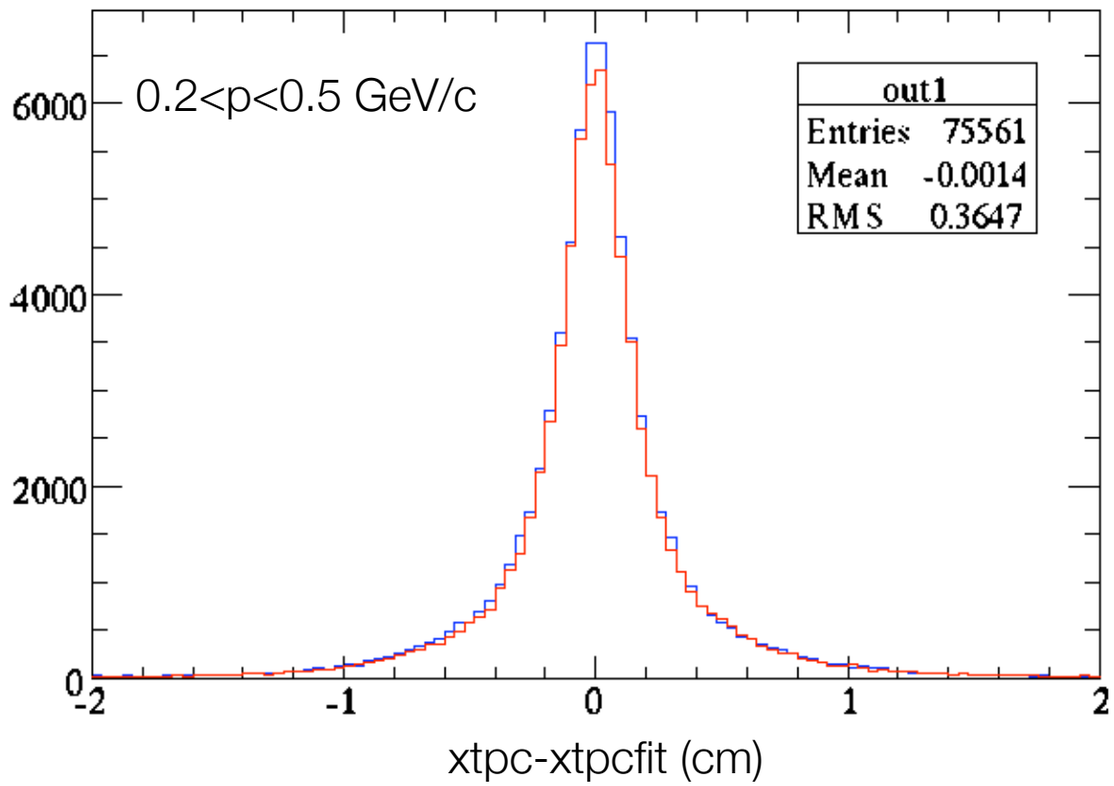
Red: ResCor on
Blue: ResCor off

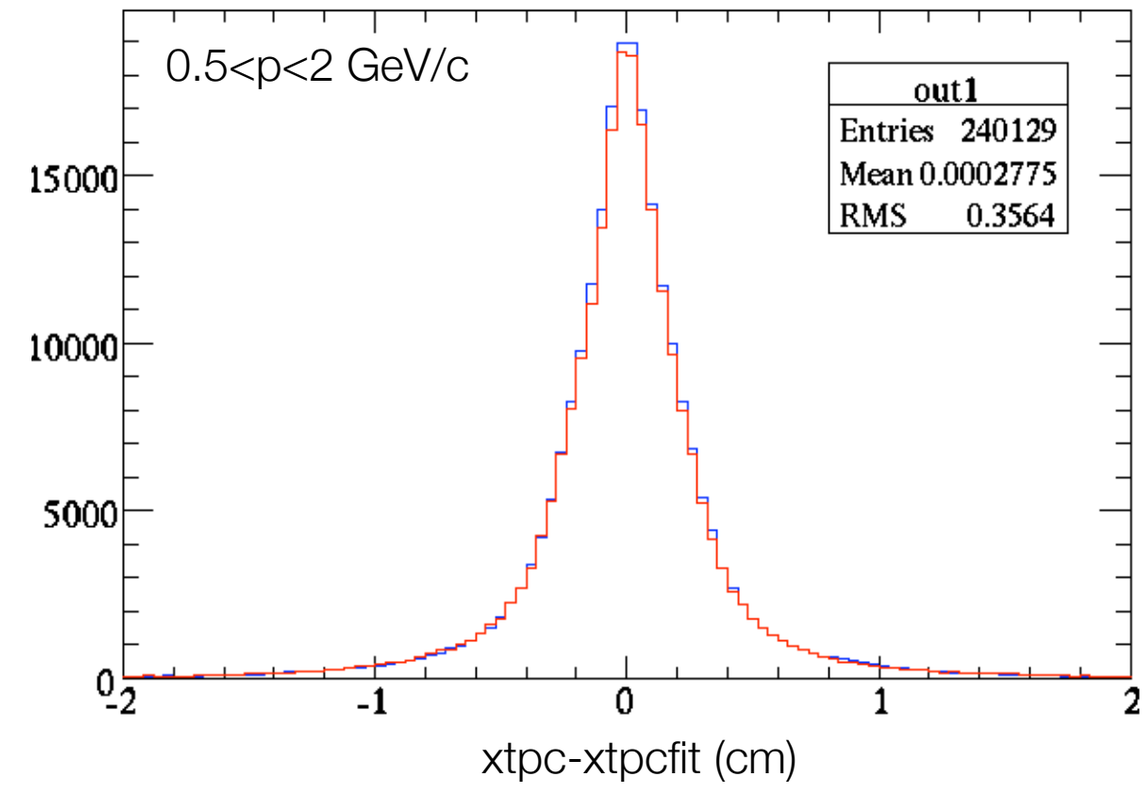
Number of tracks in primary vertex
Number of TPC hits on track
Goodness of fit

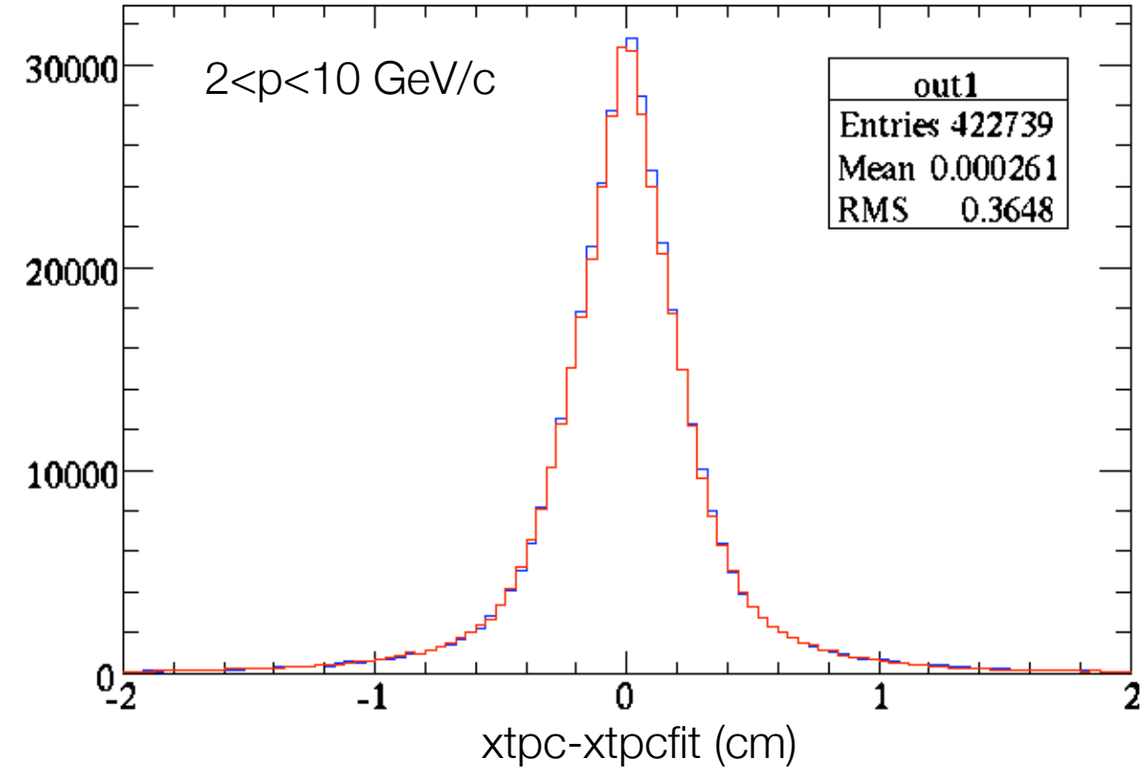




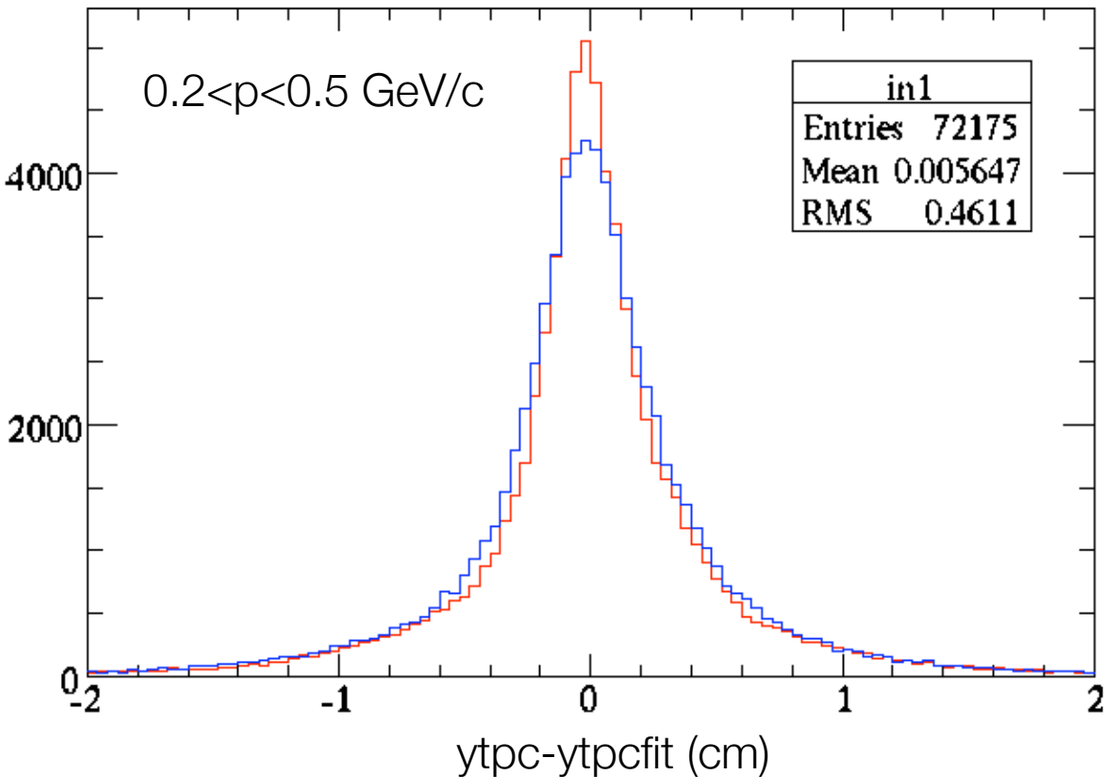
Event and track summaries: No big differences

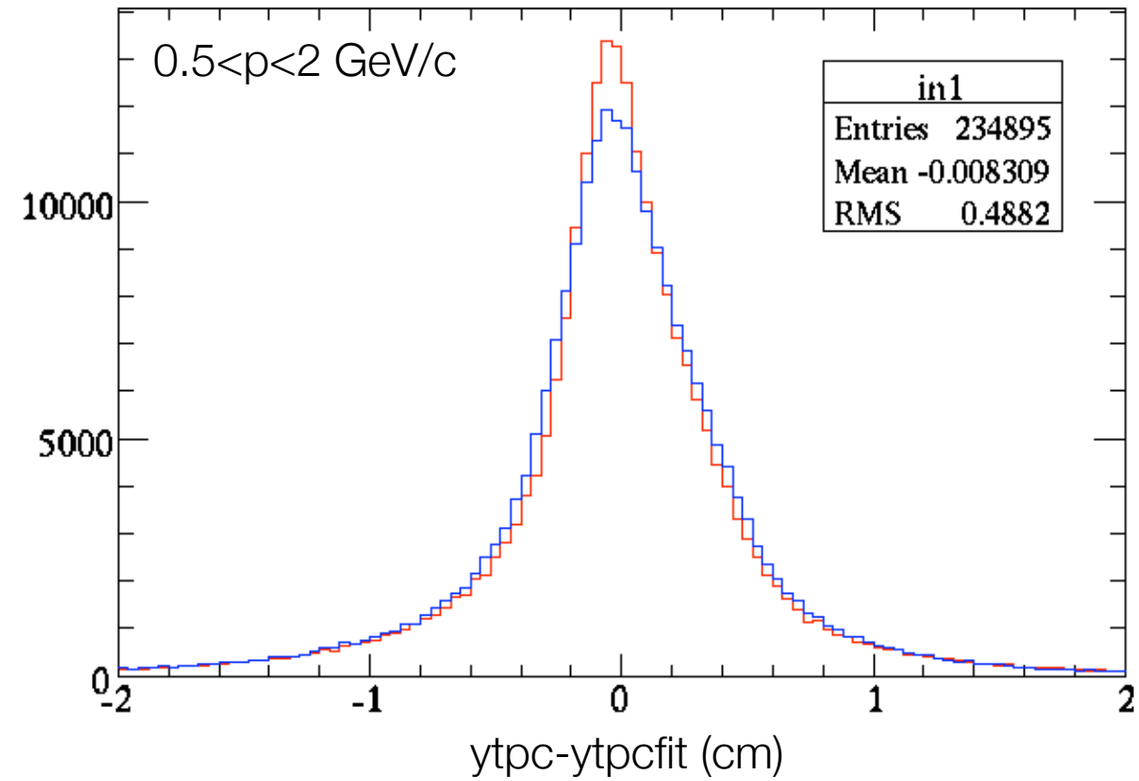


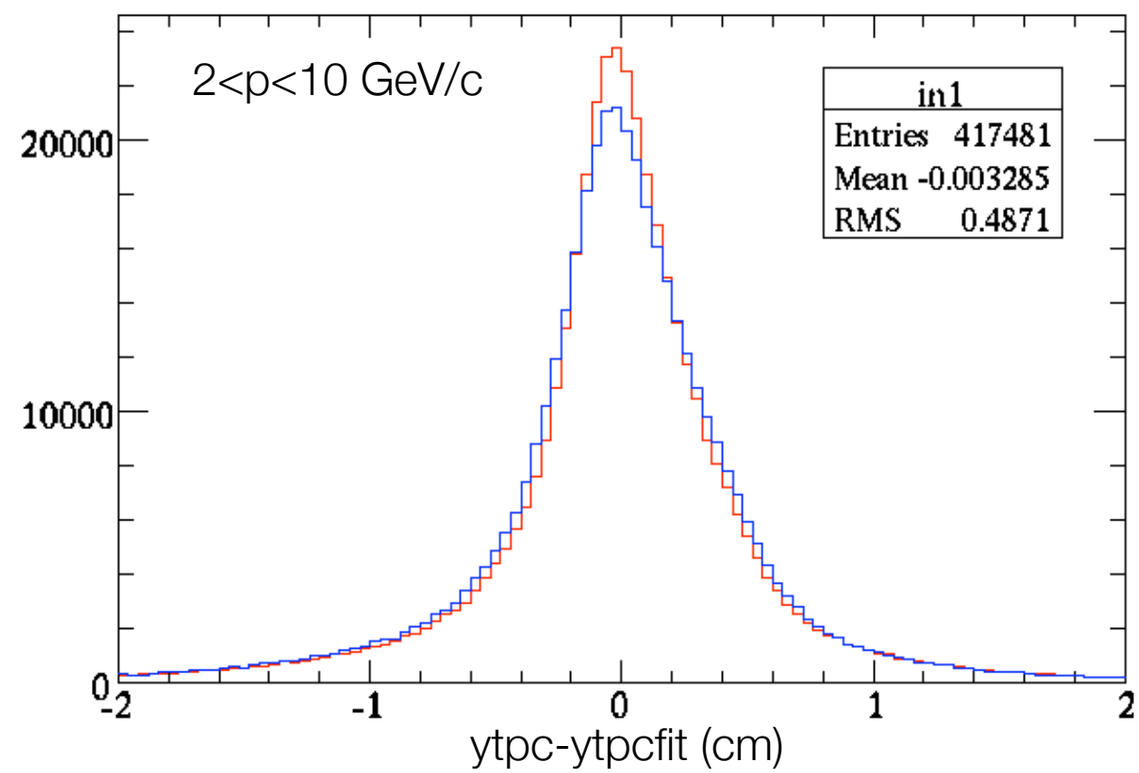




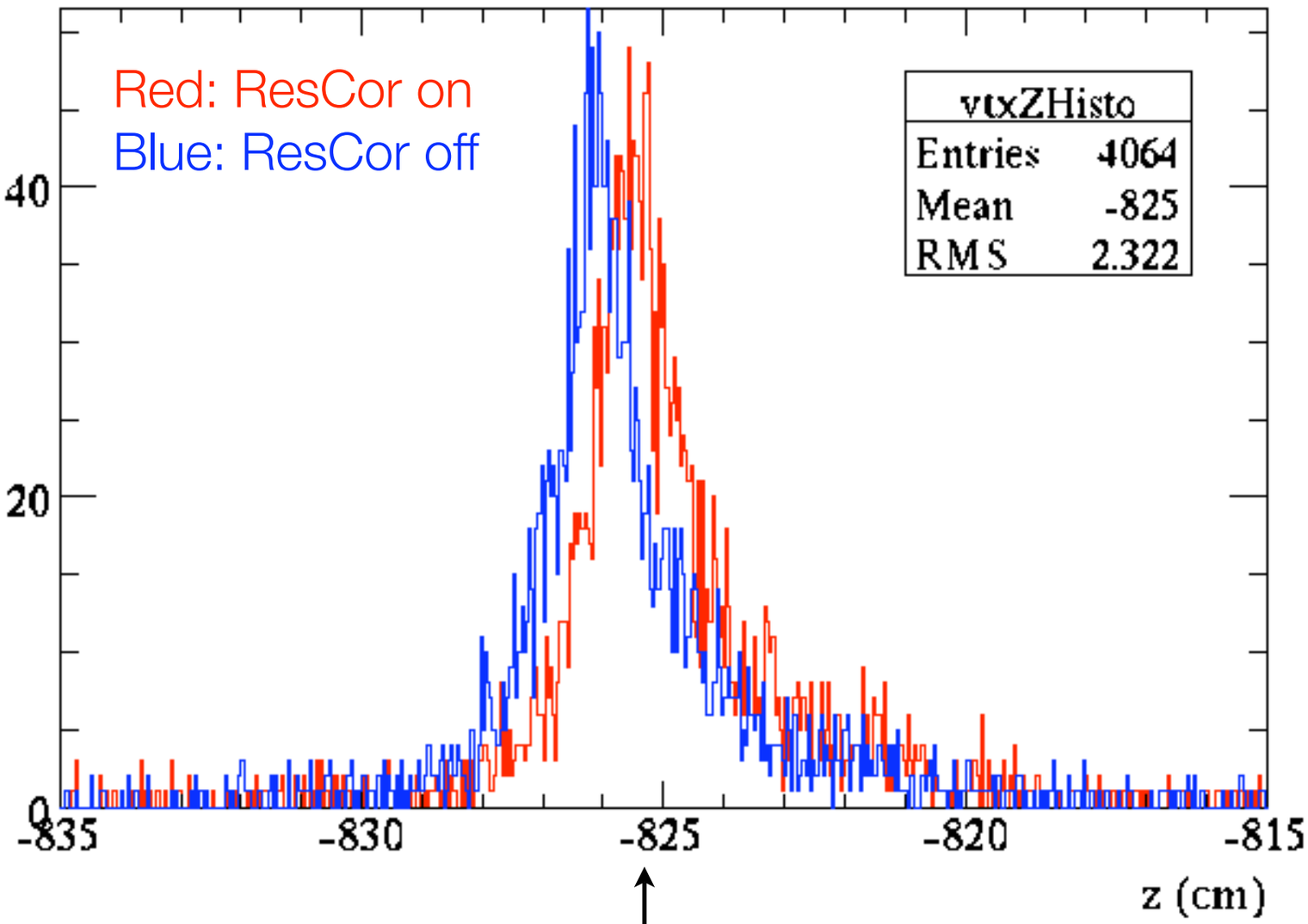
X track residuals



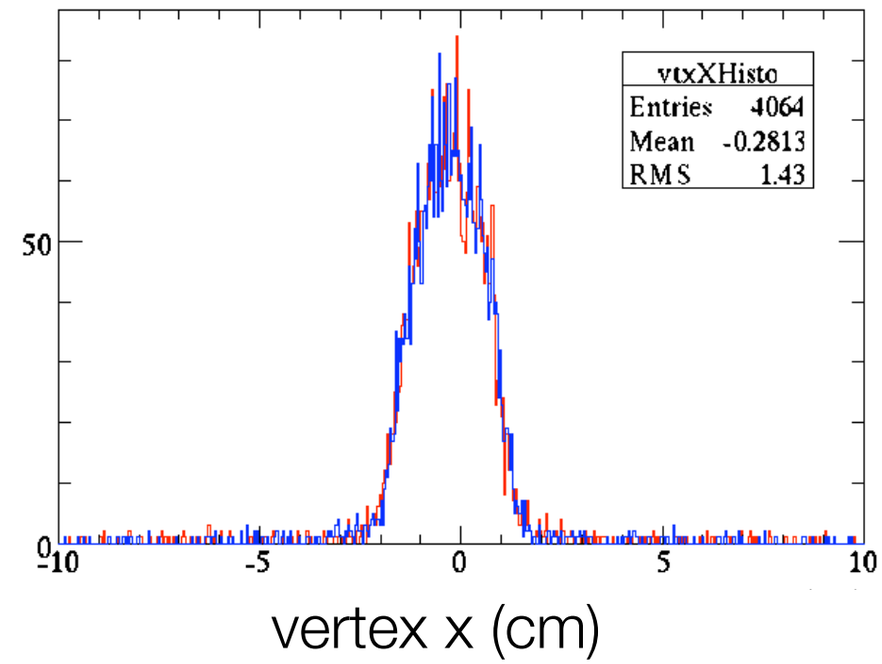




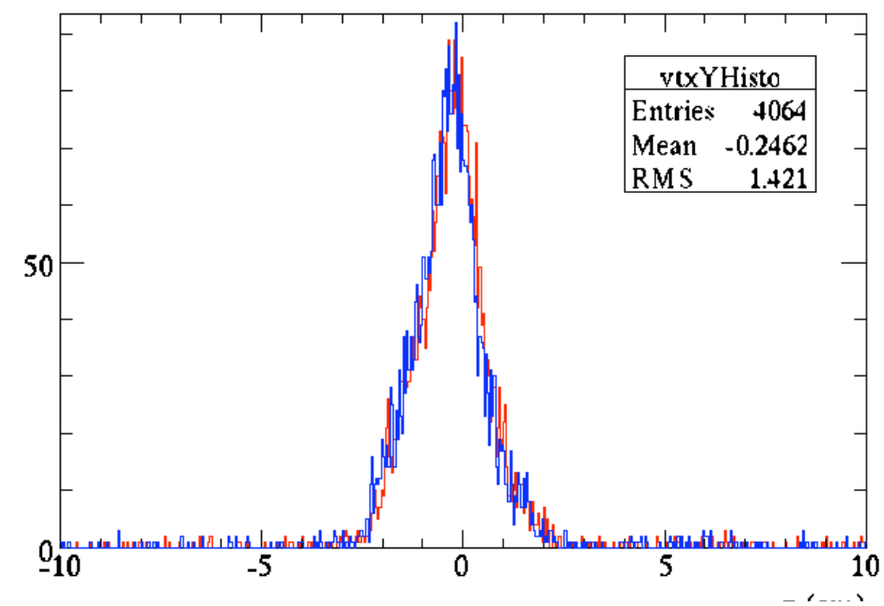
Y track residuals



survey target position



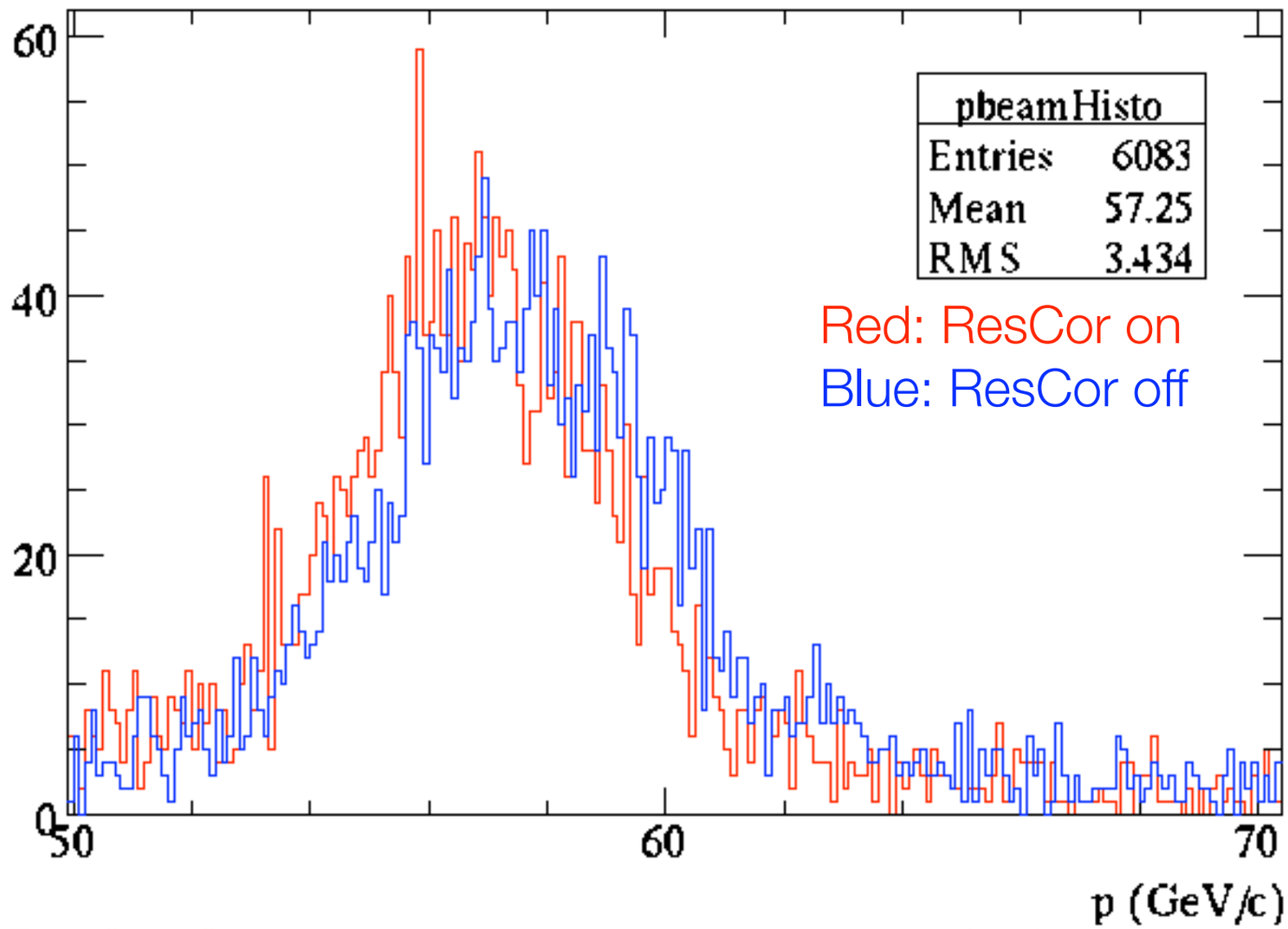
vertex x (cm)



vertex y (cm)

- x and y positions unaffected
- z position shifted forward ~1 cm. Consistent with survey position.

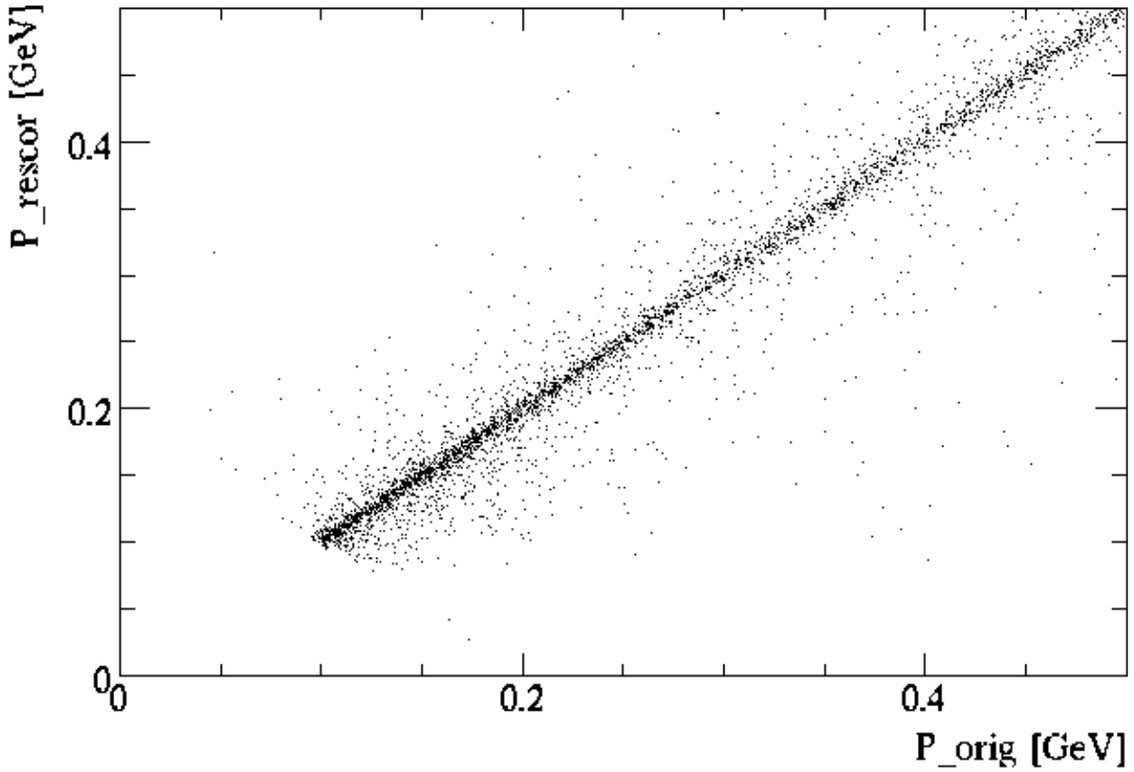
Vertex position (>3 tracks required)

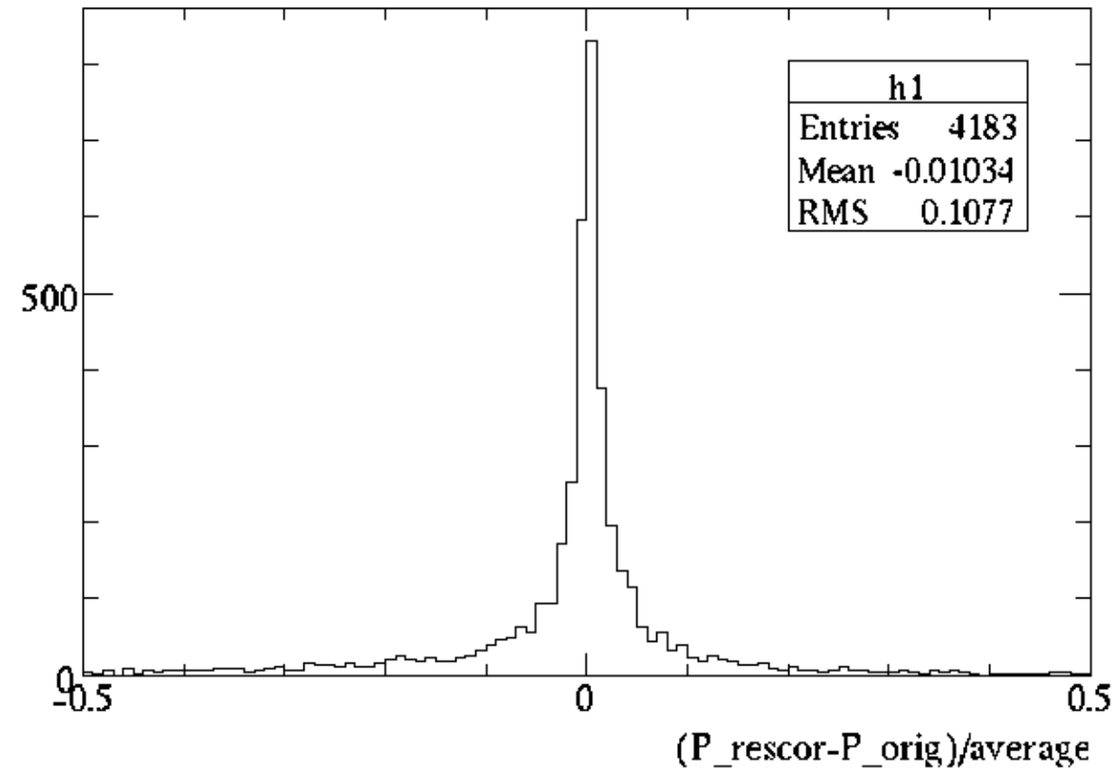


ResCor On: mean = 56.87 rms=2.17 (3.8% of mean)
ResCor Off: mean = 57.44 rms=2.36 (4.1% of mean)
(mean shifted 1% lower)

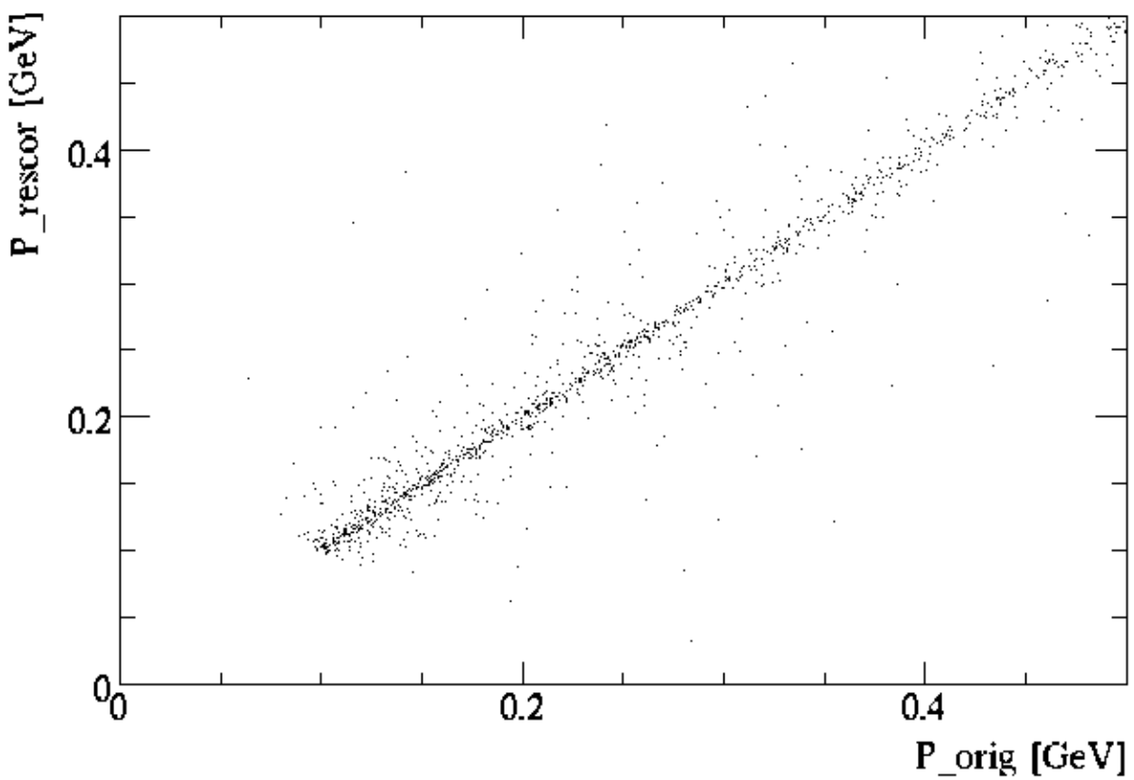
Beam momentum reconstruction

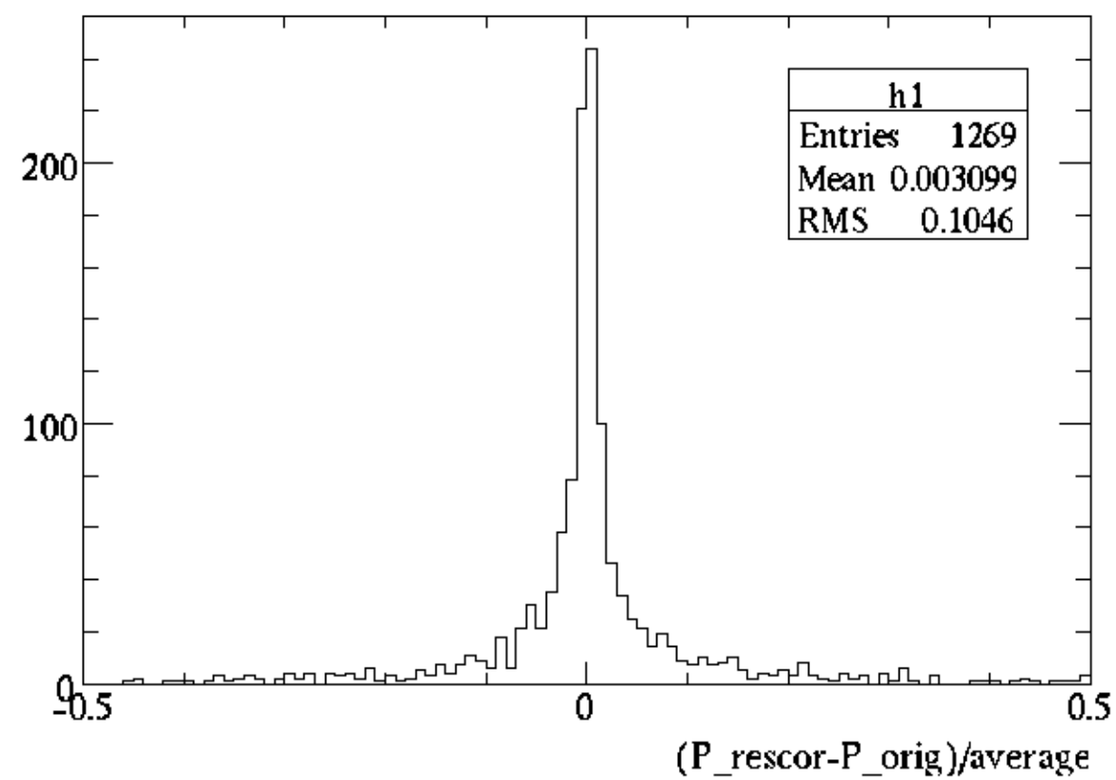
Positive tracks





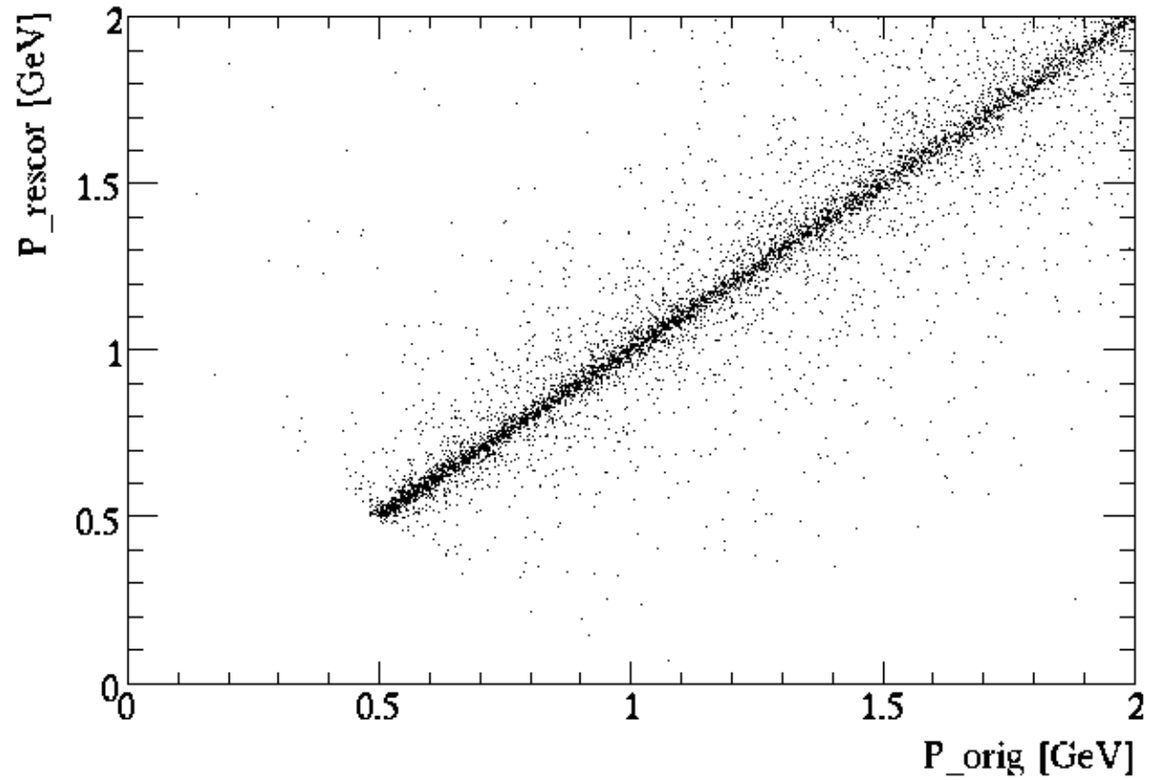
Negative tracks

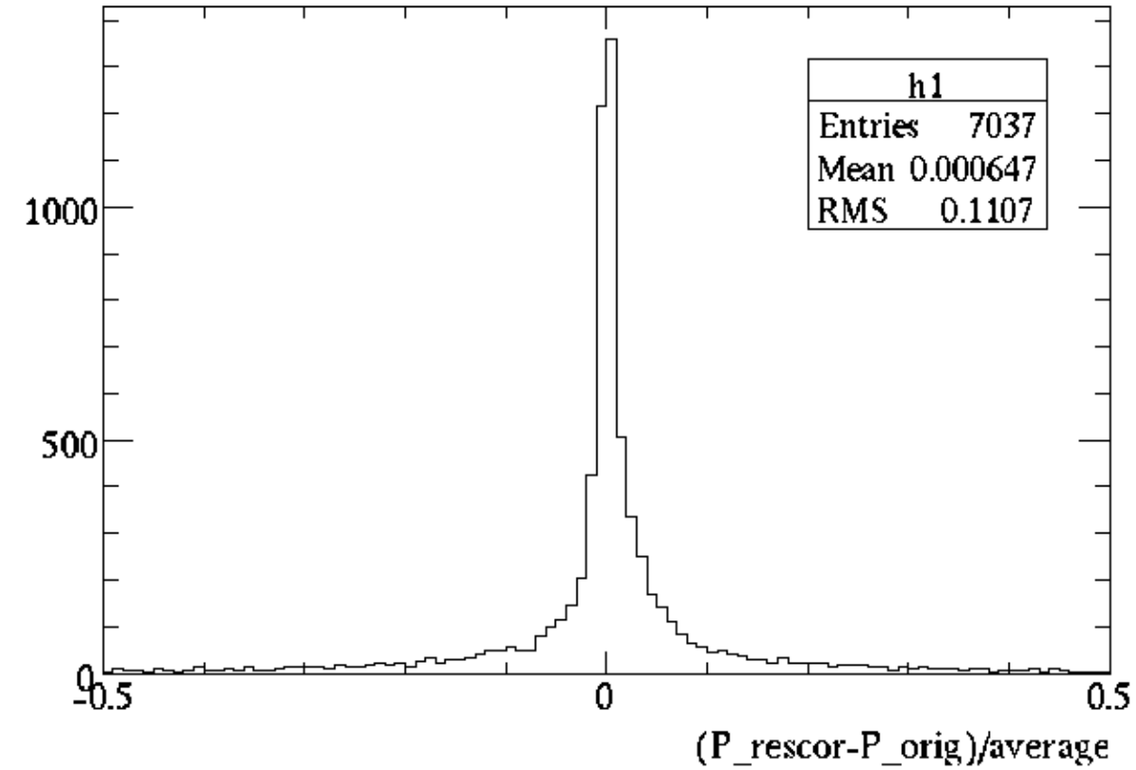




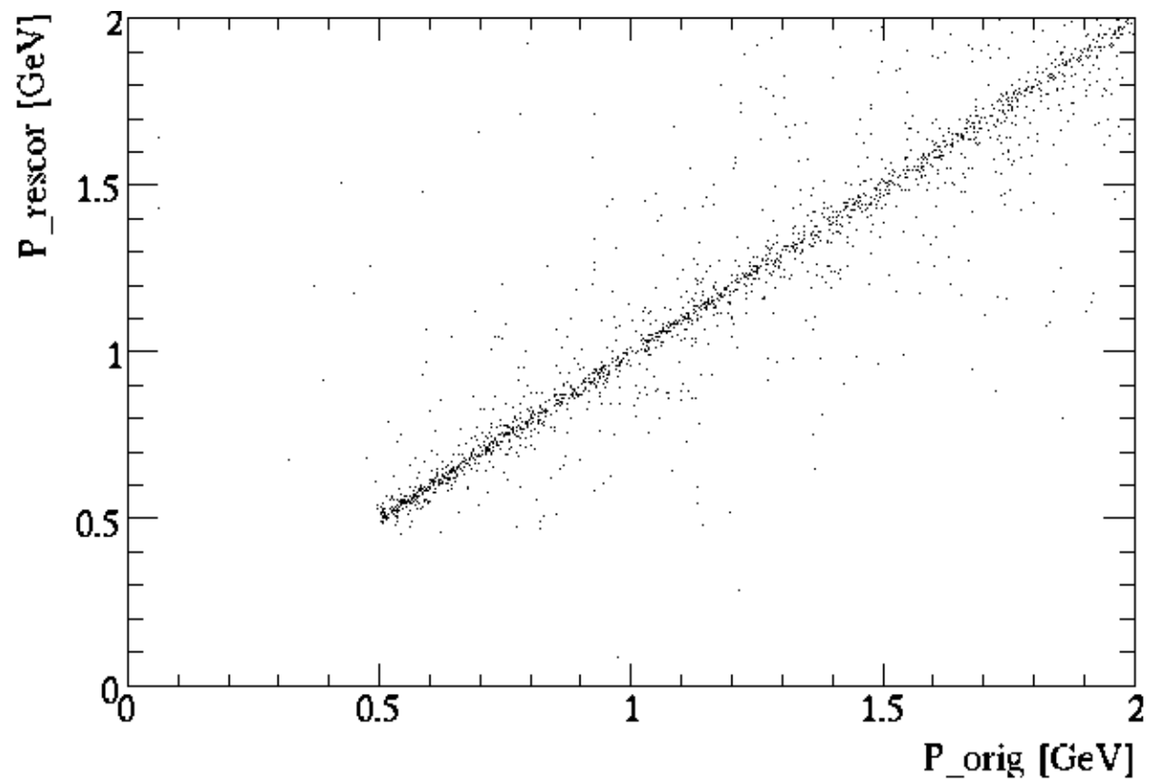
Track-by-track momentum differences: 0.1<p<0.5 GeV/c

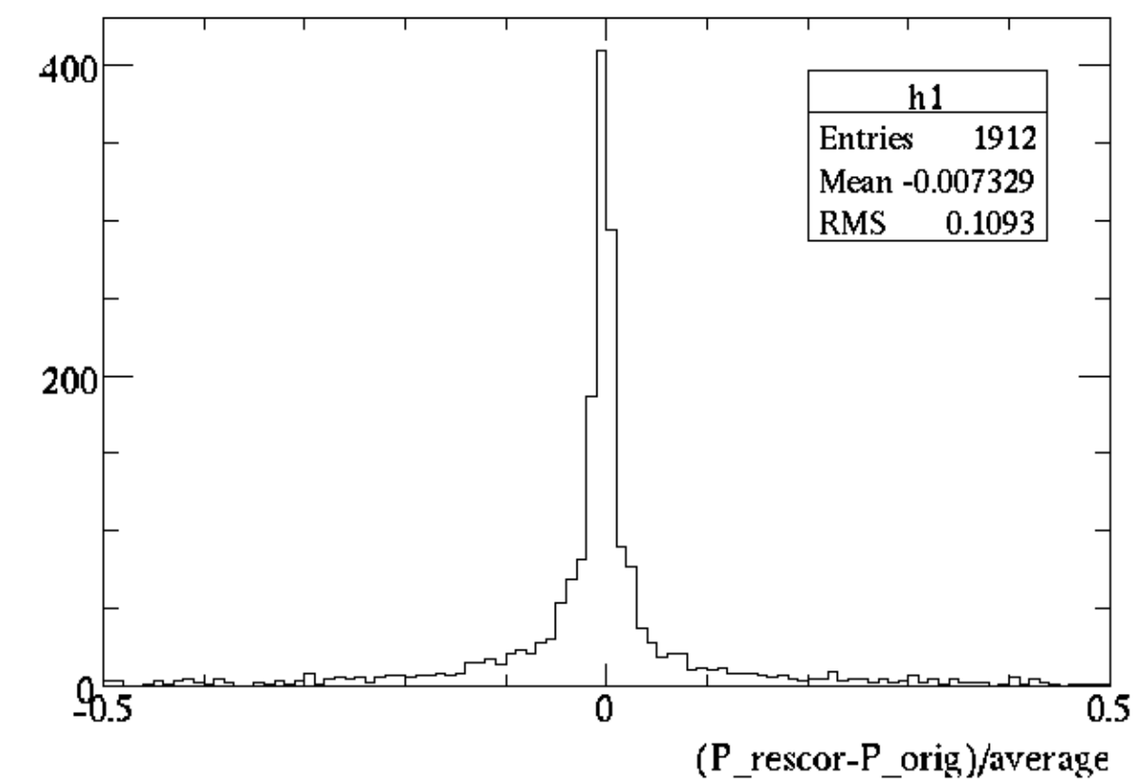
Positive tracks





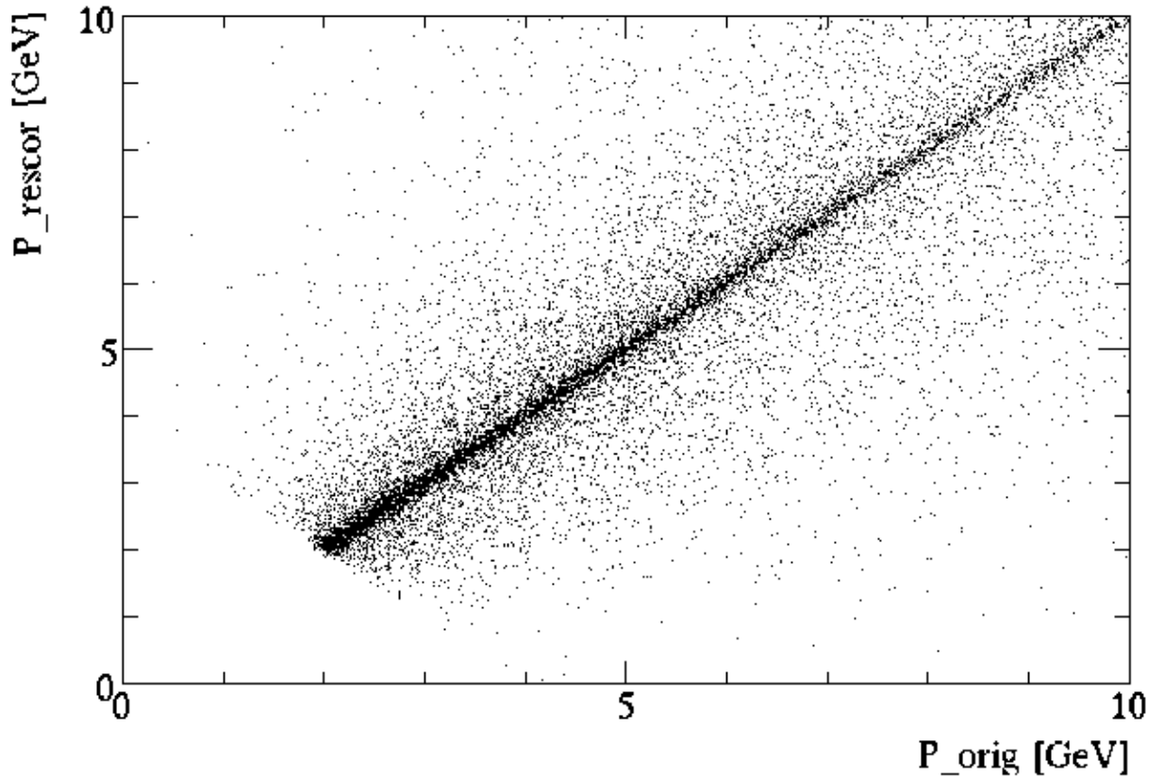
Negative tracks

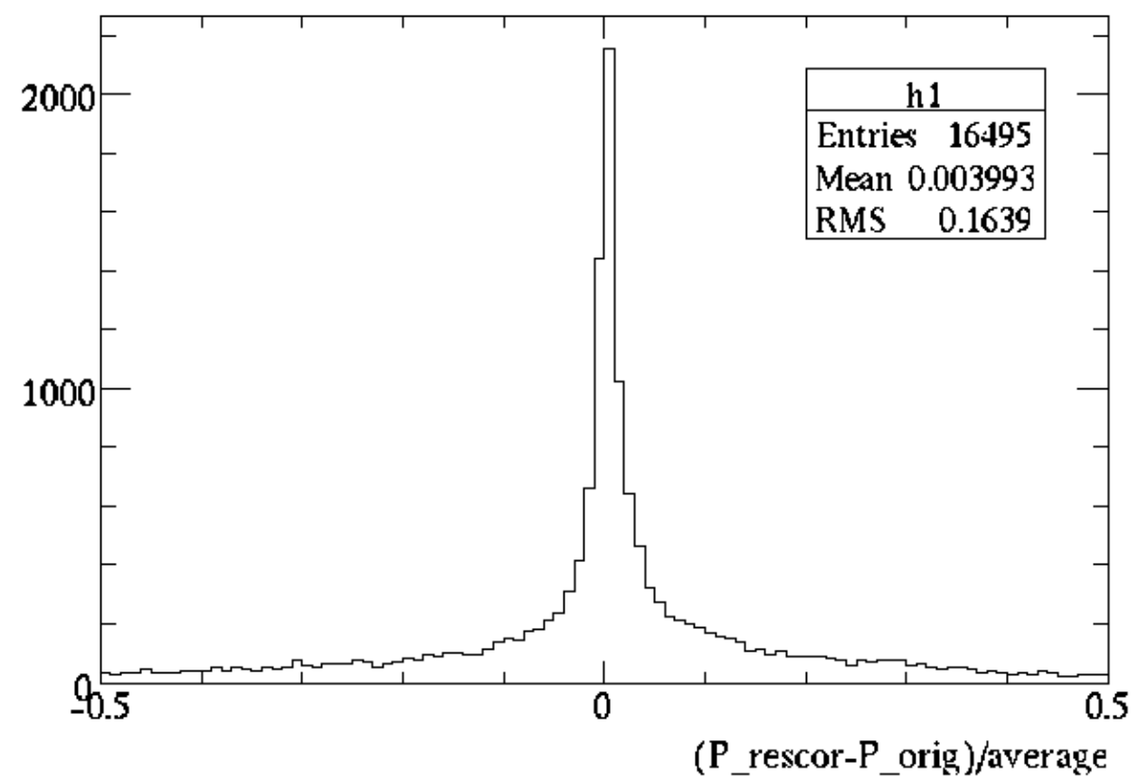




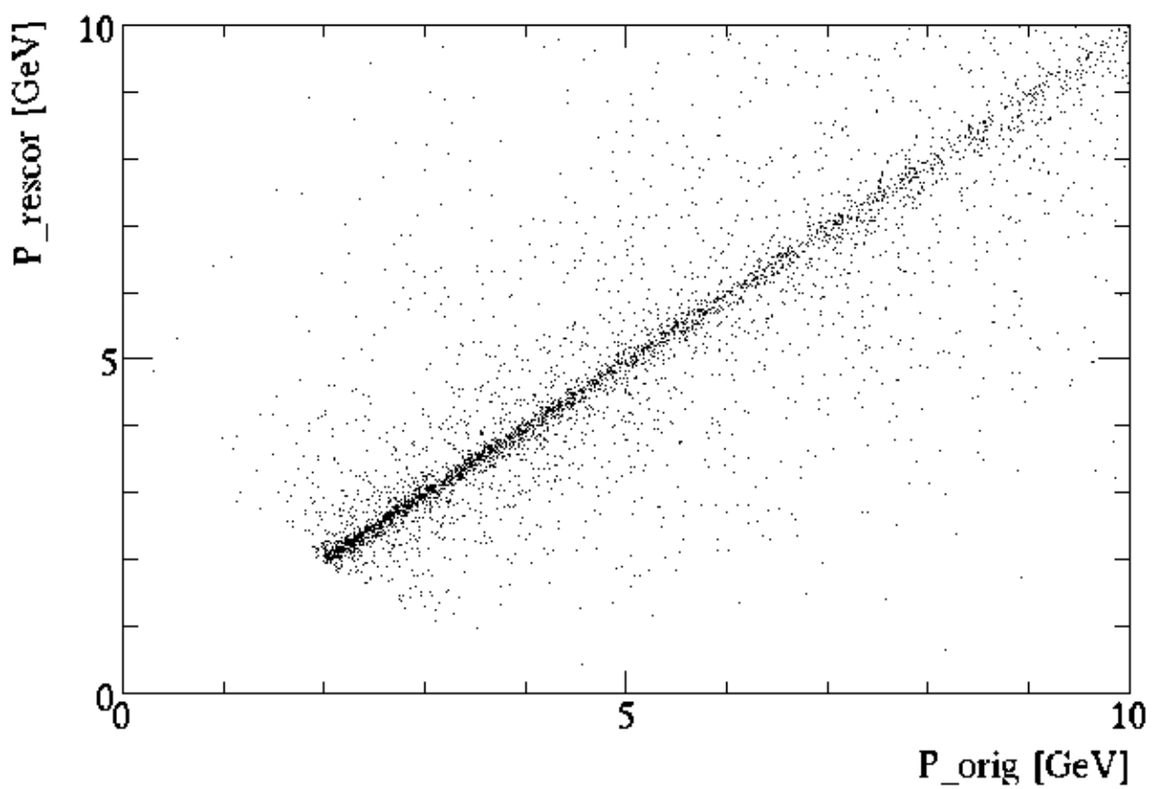
Track-by-track momentum differences: 0.5<p<2 GeV/c

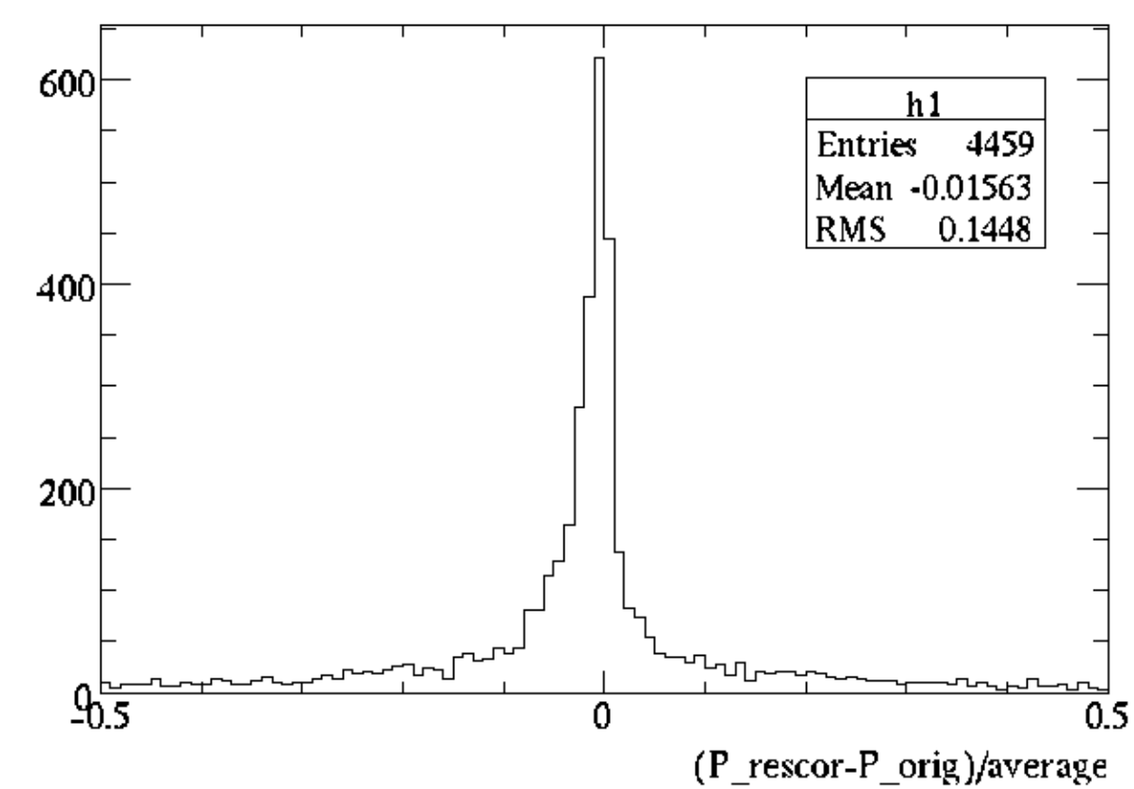
Positive tracks





Negative tracks





Track-by-track momentum differences: 2<p<10 GeV/c