

Update from the offline of Ancillary System

Nicola, Luca, Carmelo,...

Current status

- The pipeline version of BeamtestRelease (v4r0909p7) is one week old:
 - 1 week ago we didn't know the geometry of the tagger, nominally: the position of the Si Chambers
 - New releases have been developed. Will go into the pipeline soon (?).
 - Here we present the NEW version of the Ancillary system (new variables available in the svacTupla.root)
 - Need to coordinate efforts to put all the new stuff in place, and REPROCESS data.

BeamTestTupla

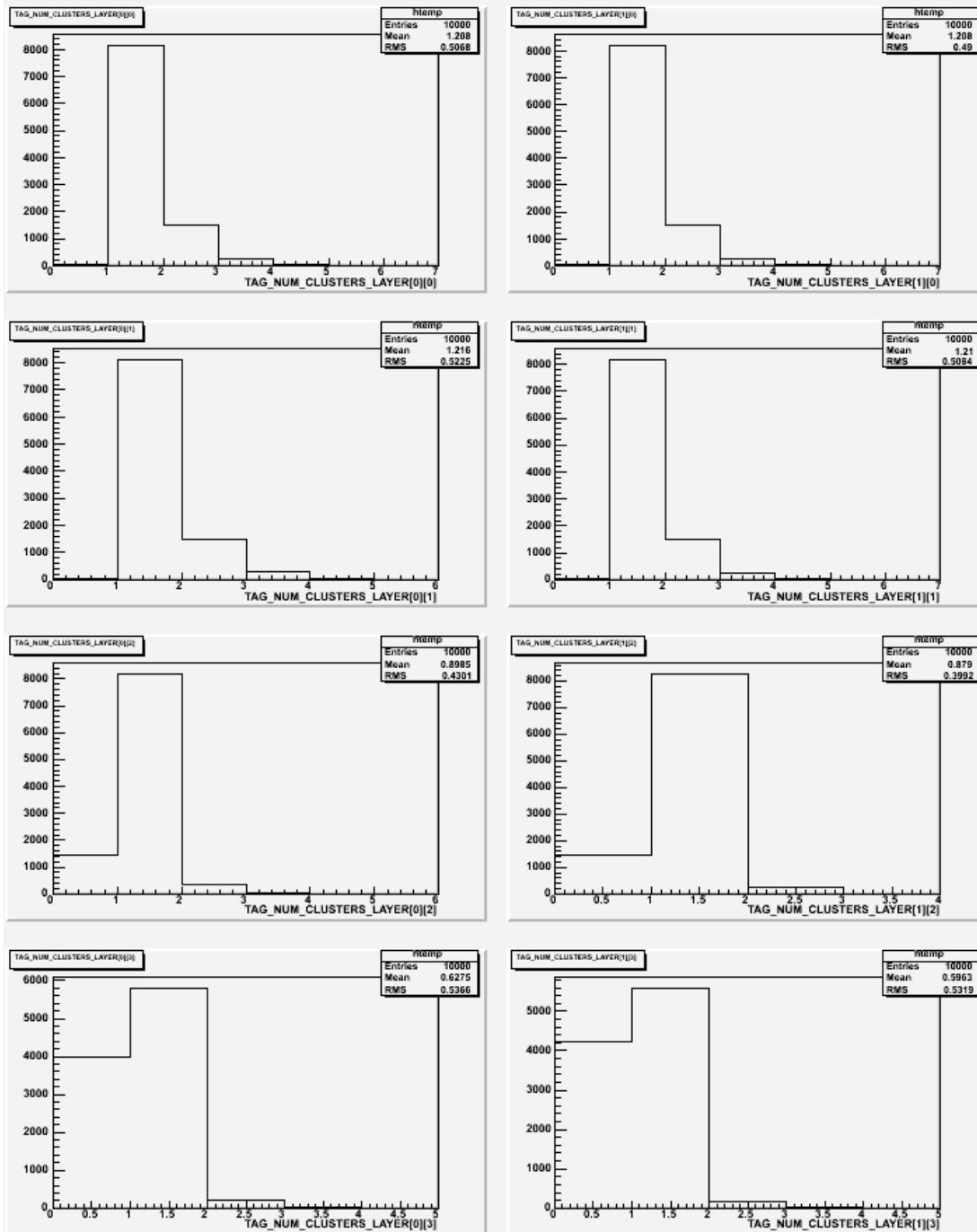
- Some new variable have been added
(Number of clusters per layer)

Cluster Multiplicity

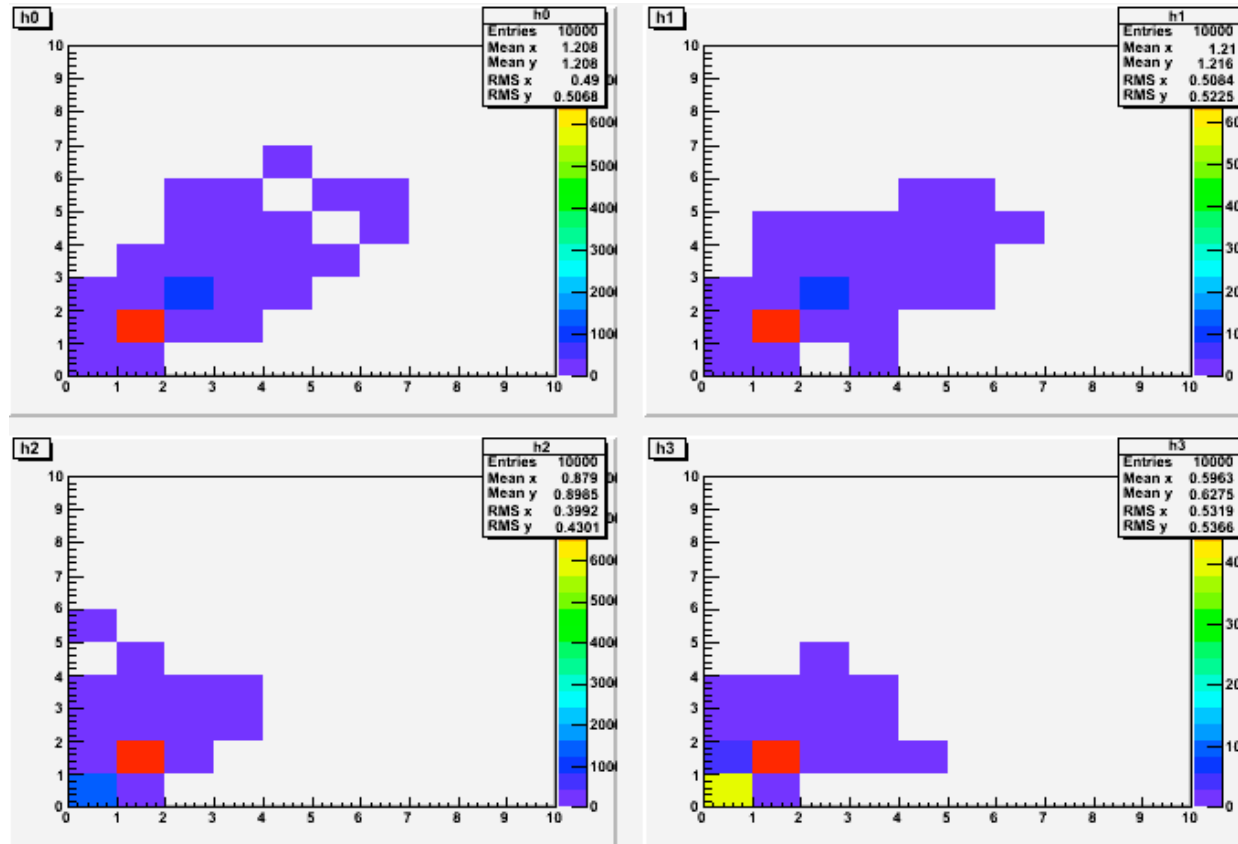
- TAG_CLUSTERS_LAYER[V][M]

(Run 1179)

Important to select the events:
-Requirement: one cluster per Module per view (~37%)
Less stringent: only in the bending plane (~45%)



Cluster Multiplicity II

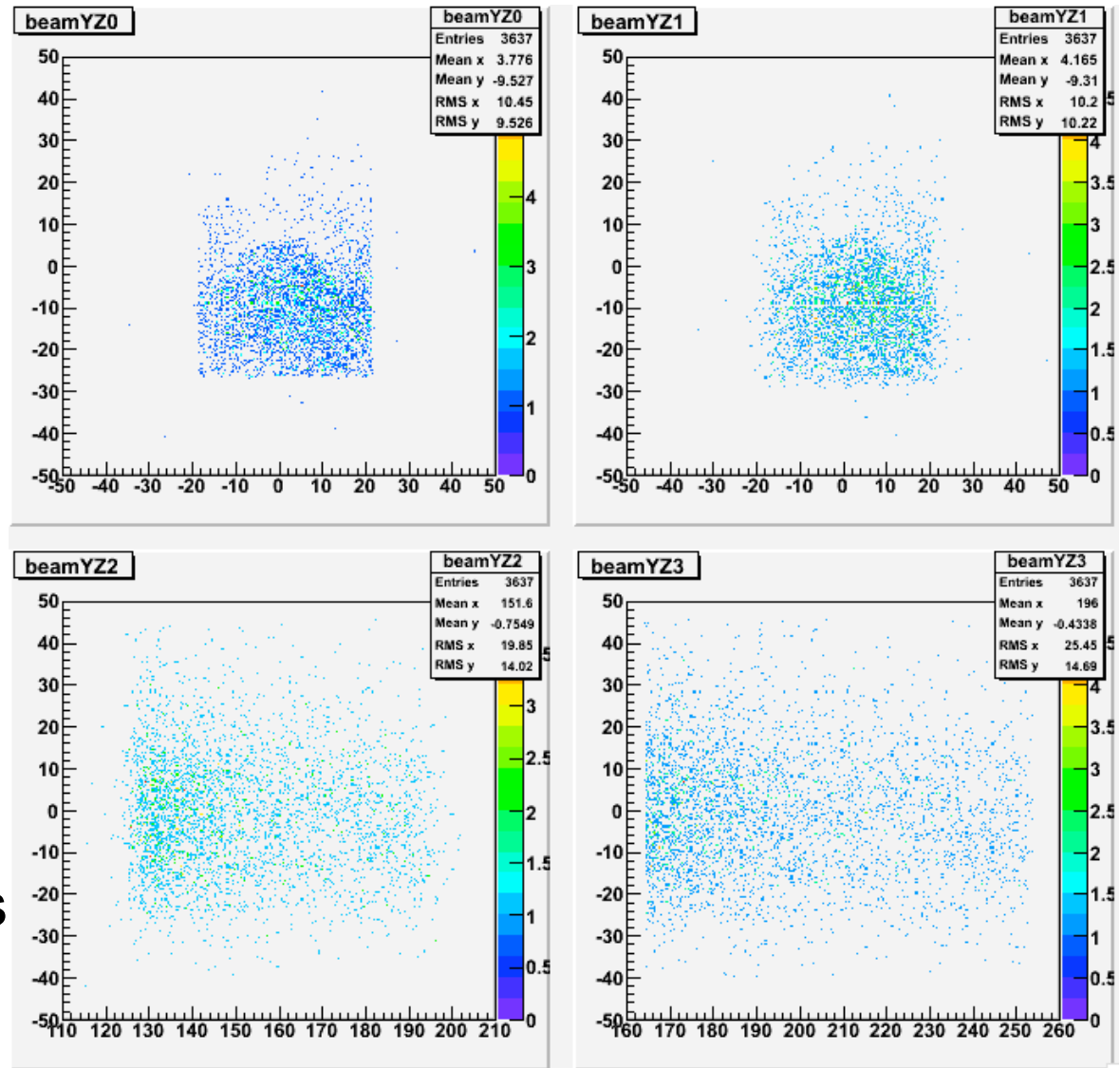


1179

- Already plot online

Beam Spot

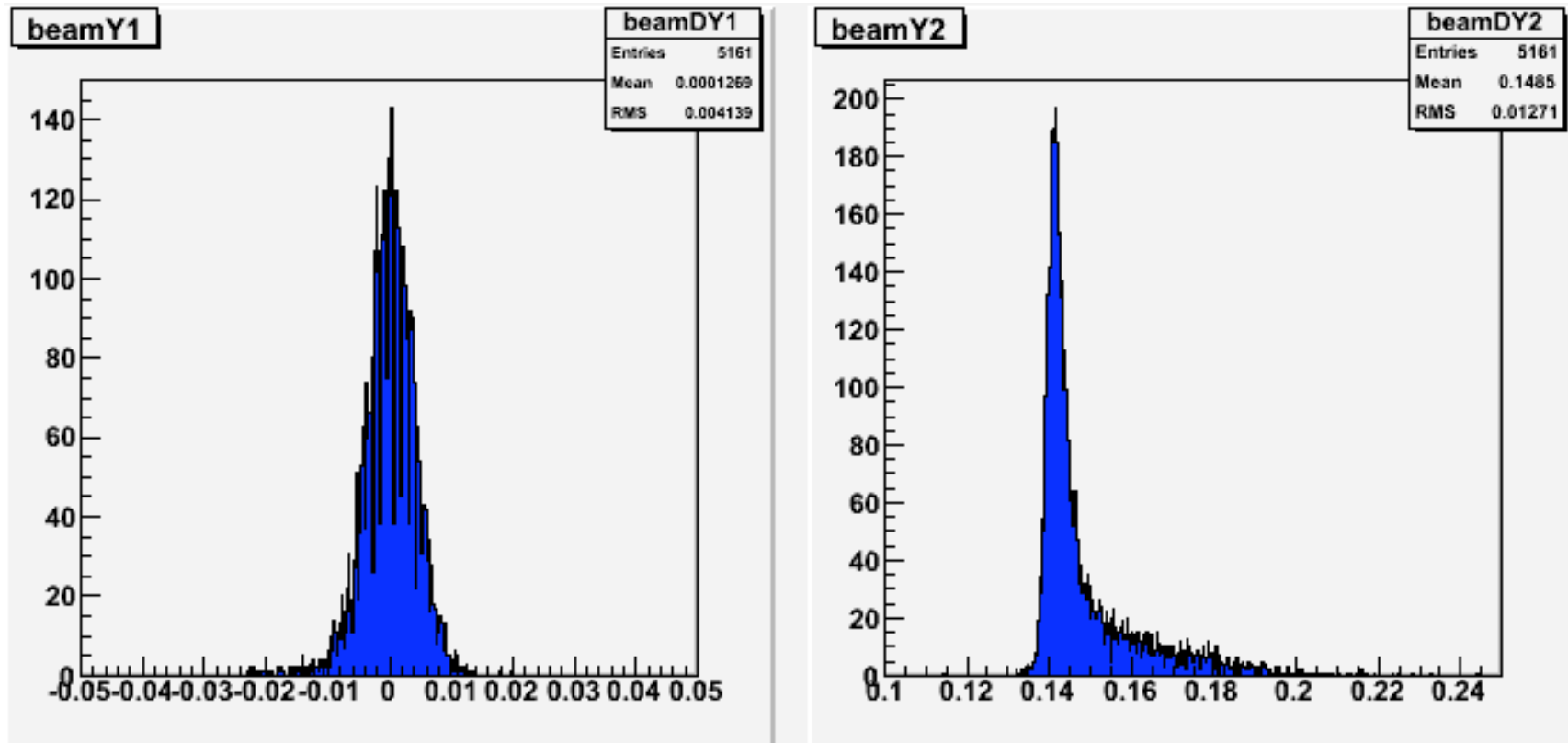
1179



37% of the total events

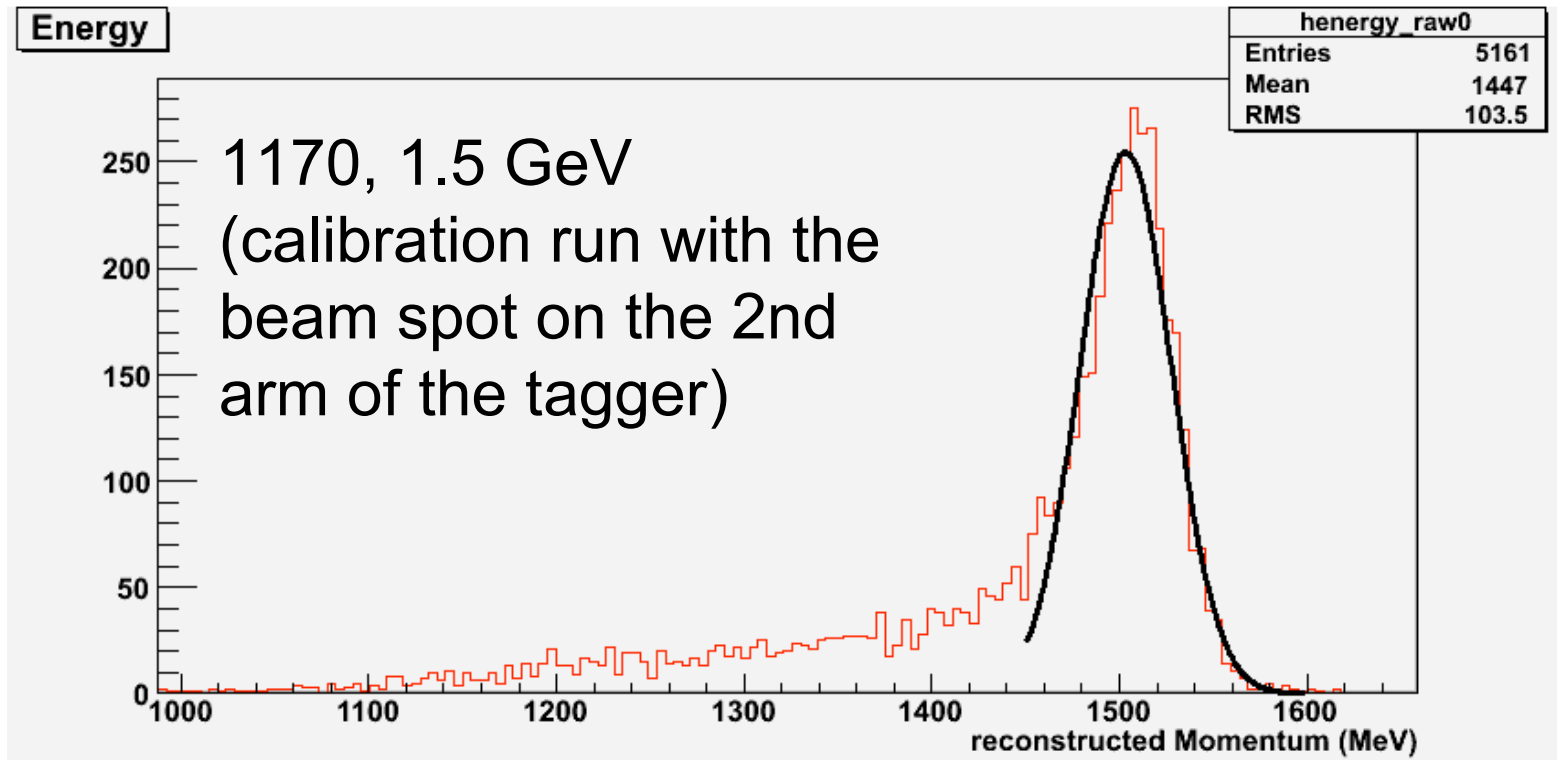
- TCut c0 = ("TAG_NUM_CLUSTERS_LAYER[0][0]==1 && TAG_NUM_CLUSTERS_LAYER[1][0]==1 && TAG_NUM_CLUSTERS_LAYER[0][1]==1 && TAG_NUM_CLUSTERS_LAYER[1][1]==1 && TAG_NUM_CLUSTERS_LAYER[0][2]==1 && TAG_NUM_CLUSTERS_LAYER[1][2]==1 && TAG_NUM_CLUSTERS_LAYER[0][3]==1 && TAG_NUM_CLUSTERS_LAYER[1][3]==1");

Bending



- TAG_PHI_IN (beam divergence) ~ 3 mrad
- TAH_DPHI (bending)

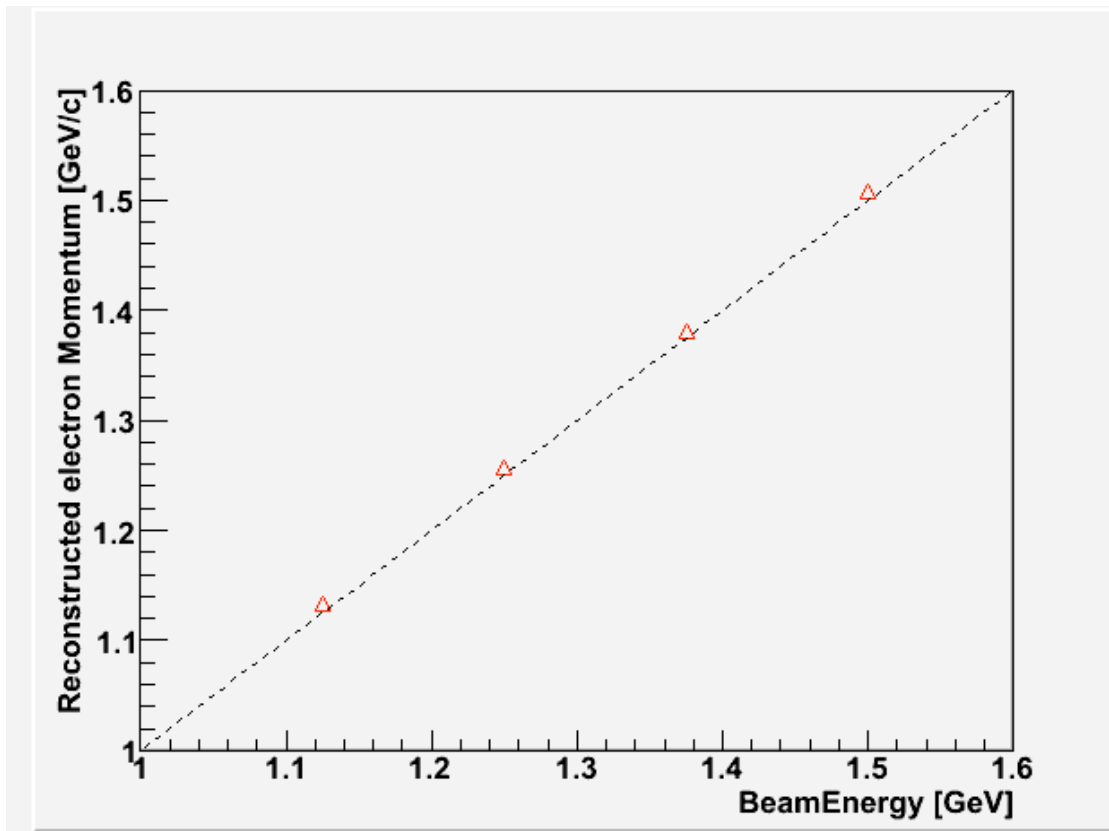
Tagger e⁻ energy resolution



NO.	NAME	VALUE	ERROR	SIZE	DERIVATIVE
1	Constant	2.54721e+02	5.65425e+00	2.40963e-02	9.18626e-07
2	Mean	1.50332e+03	5.12281e-01	2.41594e-03	-1.17009e-05
3	Sigma	2.43257e+01	3.88592e-01	2.01008e-05	-2.41177e-04

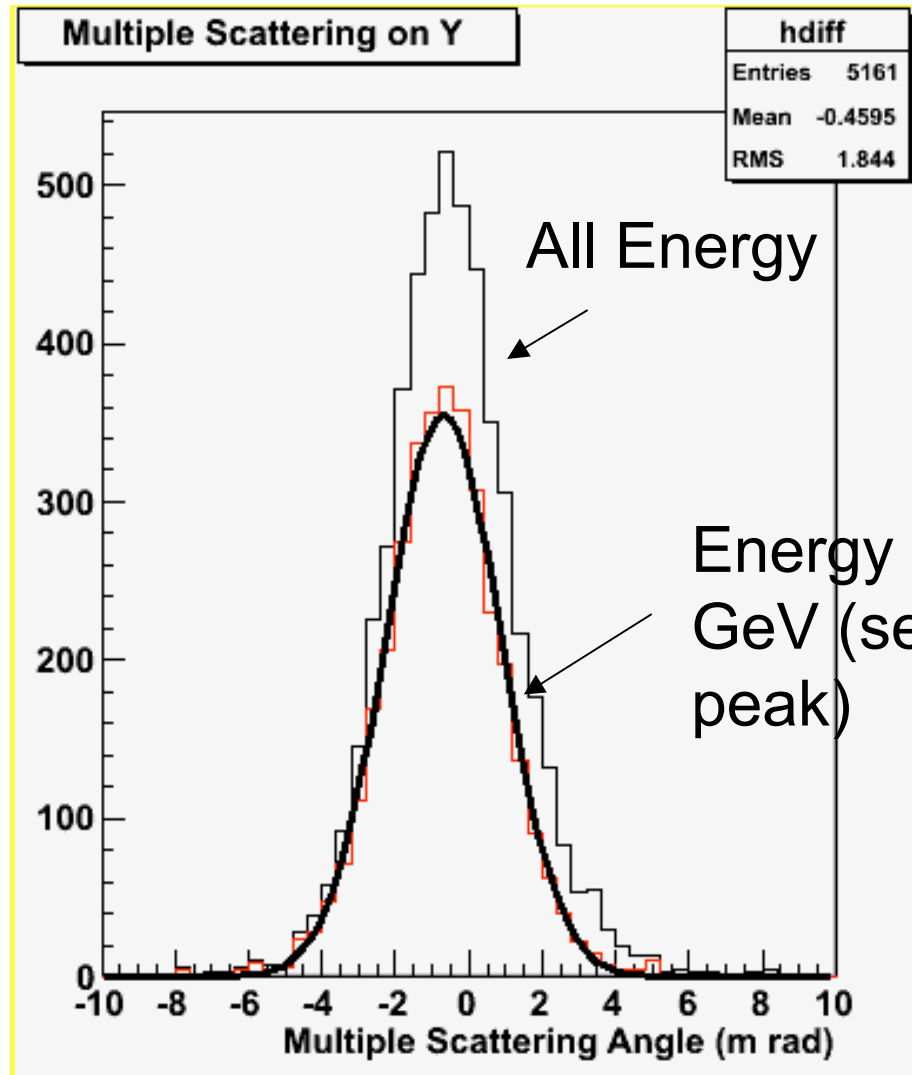
Average value $\sim 0.2\%$ off, $Dp/p \sim 1.45\%$

Energy scale calibrations



- Runs 1170...1174 (calibration at different energies)
- Excellent linearity
- Offset less than 0.5 %

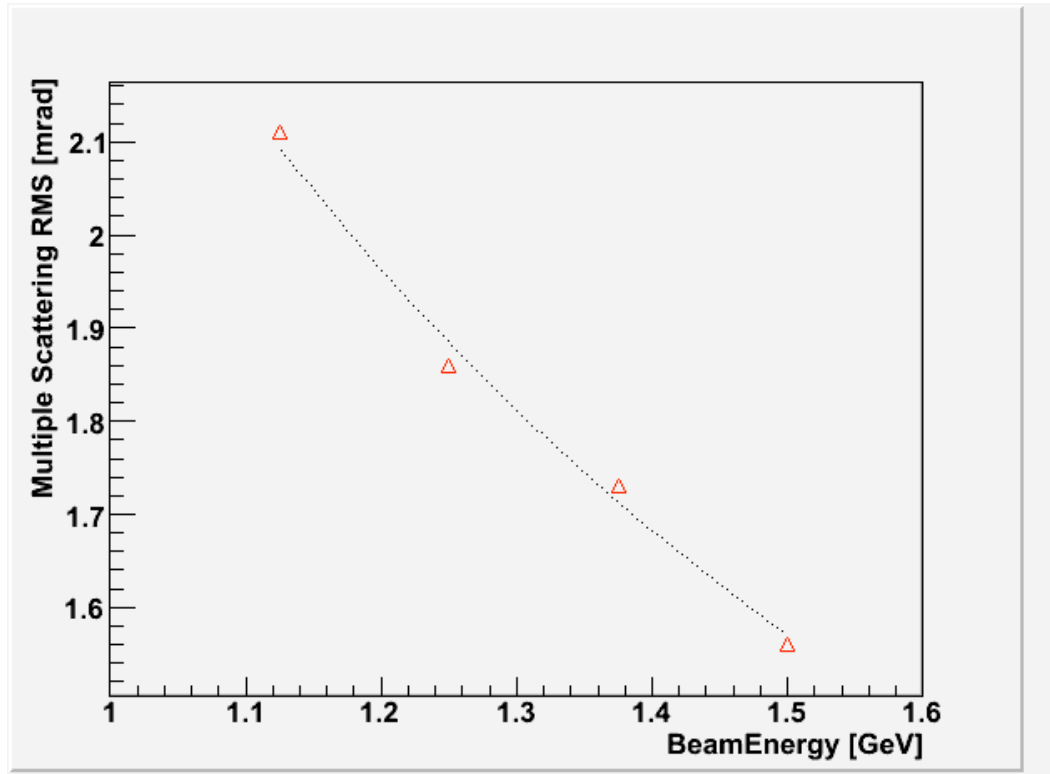
Multiple scattering



Studied on the unbent view
(vertical)

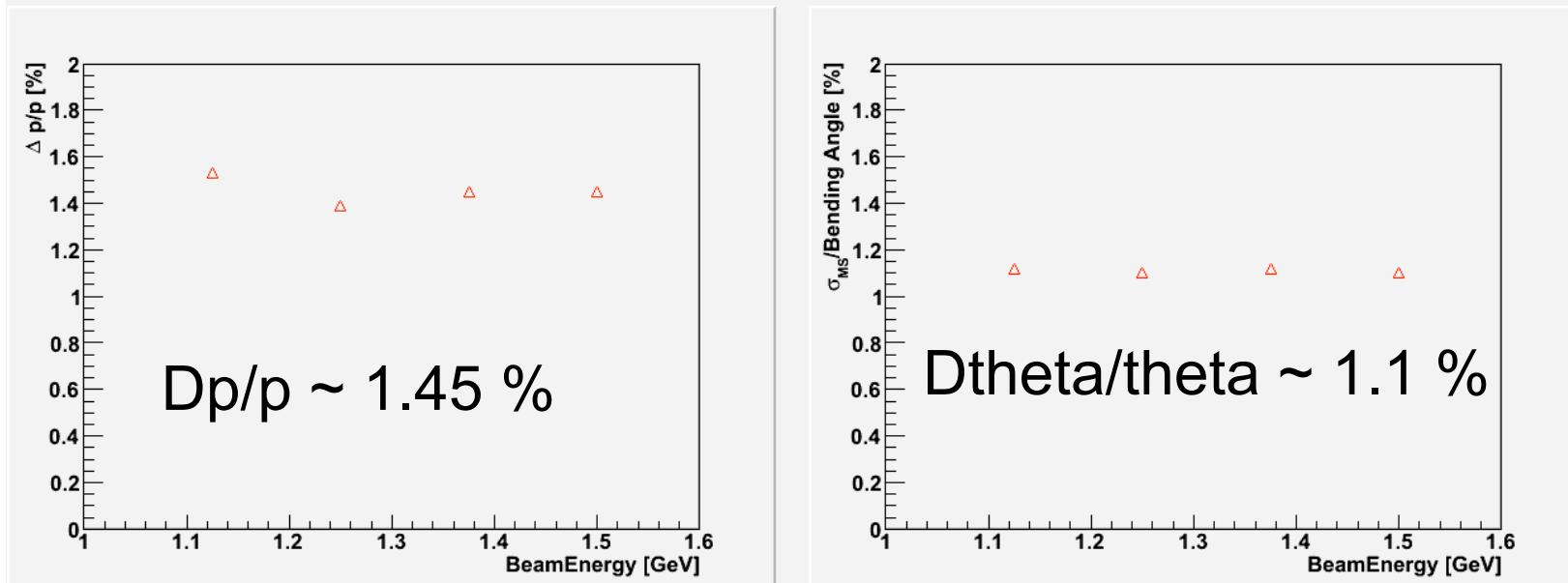
1	Constant	3.55011e+02	7.76350e+00
2	Mean	-6.90704e-01	2.65083e-02
3	Sigma	1.56162e+00	2.15522e-02

...as a function of the energy



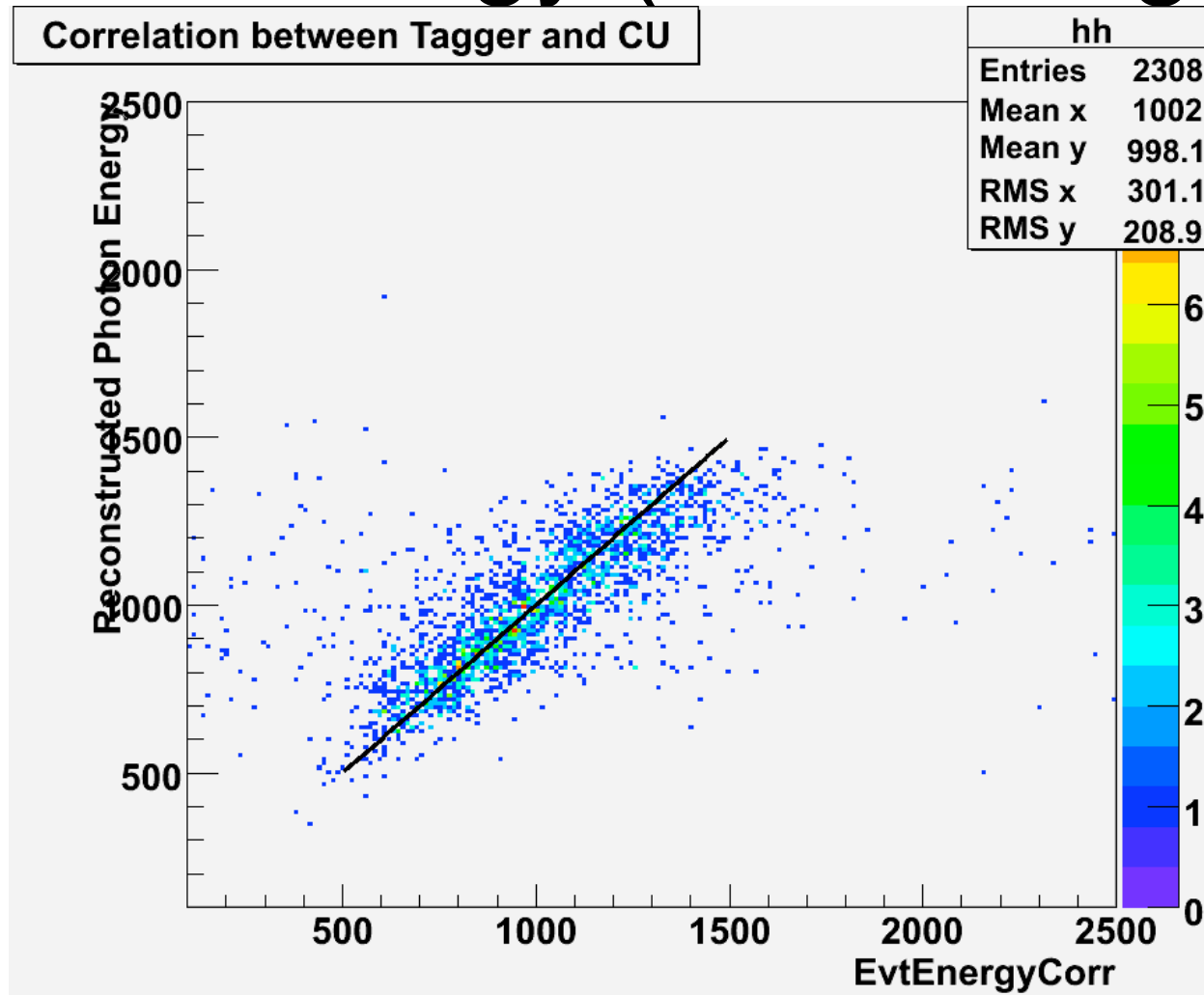
- Multiple scattering correctly scales as $1/p$
- Normalization gives 3% radiation length (overall)
- ***1.6 mm Si + 0.2 mm Al + 2 m air ~ 2.6 %***

Taqder intrinsic resolution



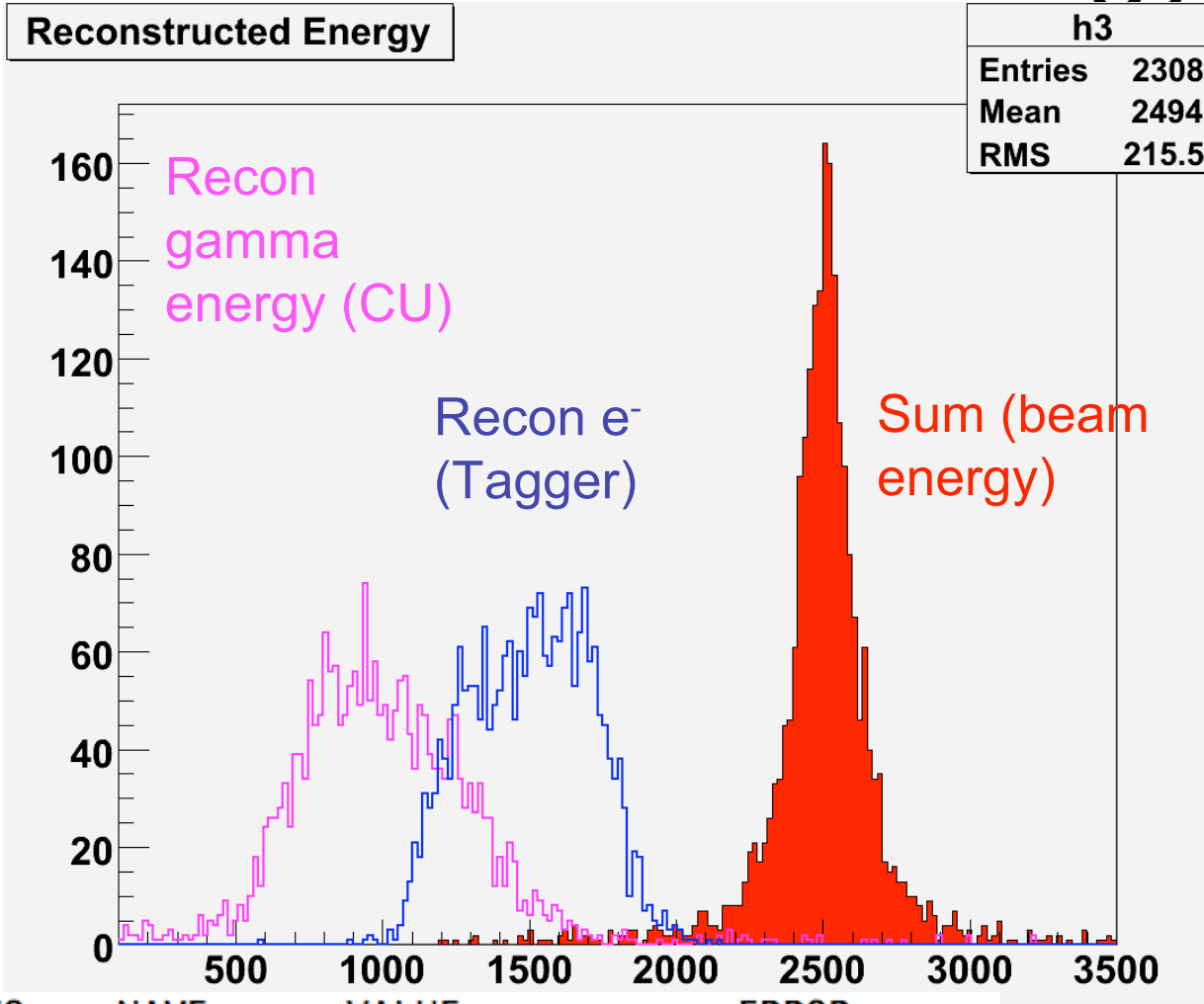
- MS angle (delta theta) $\sim 1/p$
- Bending angle (theta) $\sim 1/p$
- Spectrometer resolution $\sim Dp/p \sim D\theta/\theta \sim \text{const}$

Gamma Energy (CU vs Tagger)



- Only tkrNumTracks > 1 in the CU.
- 1 cluster per layer in the tagger

Recon Energy



(Run 1179)
Tagged photon, 2.5
GeV beam)

NO.	NAME	VALUE	ERROR
1	Constant	1.43728e+02	4.87824e+00
2	Mean	2.50501e+03	2.51641e+00
3	Sigma	8.47683e+01	2.87697e+00

0.2% offset,
3.4 % resolution

Conclusions

- Things are changing fast...
- Everything in place
- You'll get the reprocessed data within 1-2 days (depending on pipeline and release manager)
- Other option: reprocess locally the ancillary data only and “merge” the trees (making “friends”... ;)