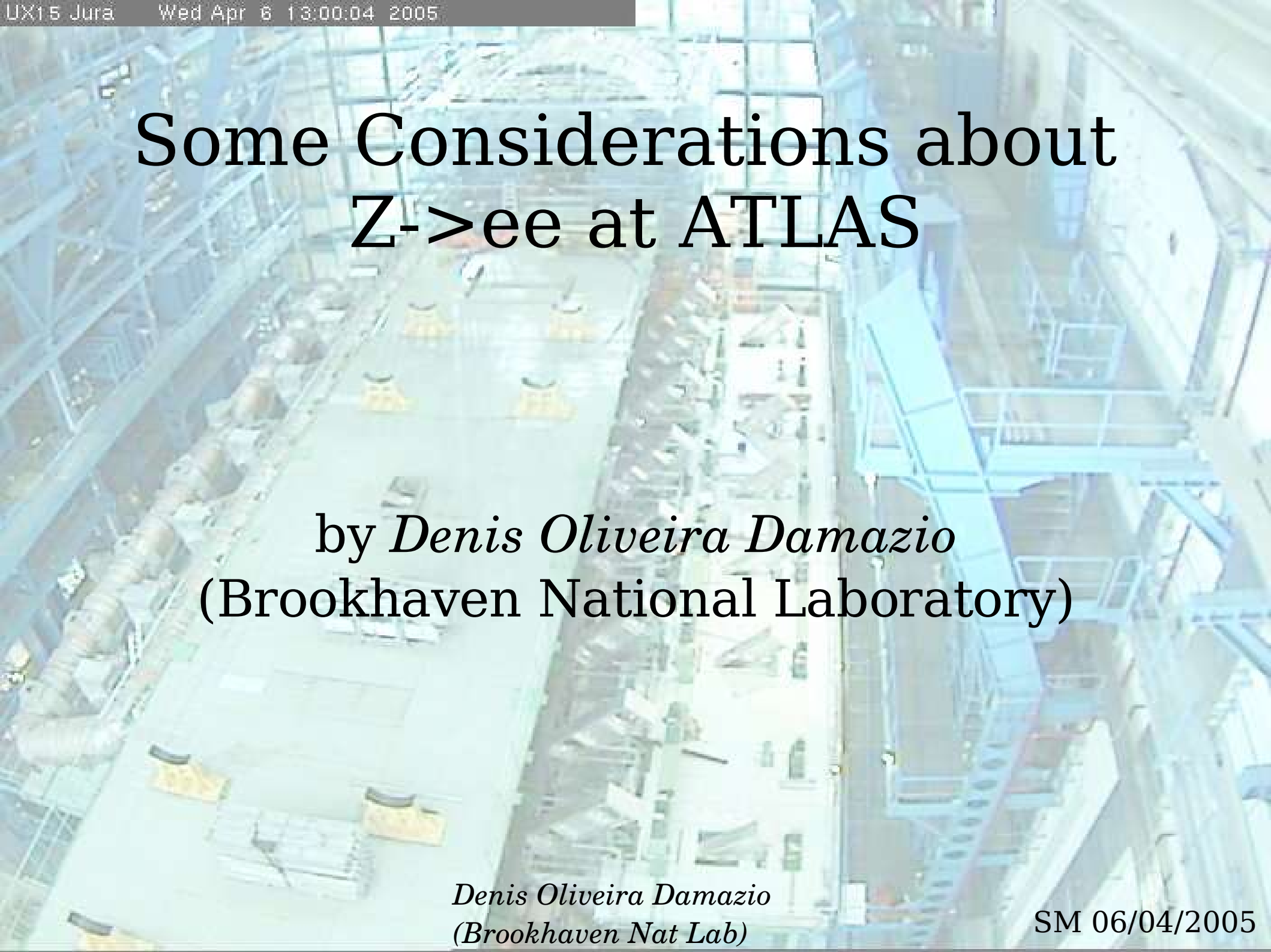


Some Considerations about Z->ee at ATLAS

by *Denis Oliveira Damazio*
(Brookhaven National Laboratory)

Motivation

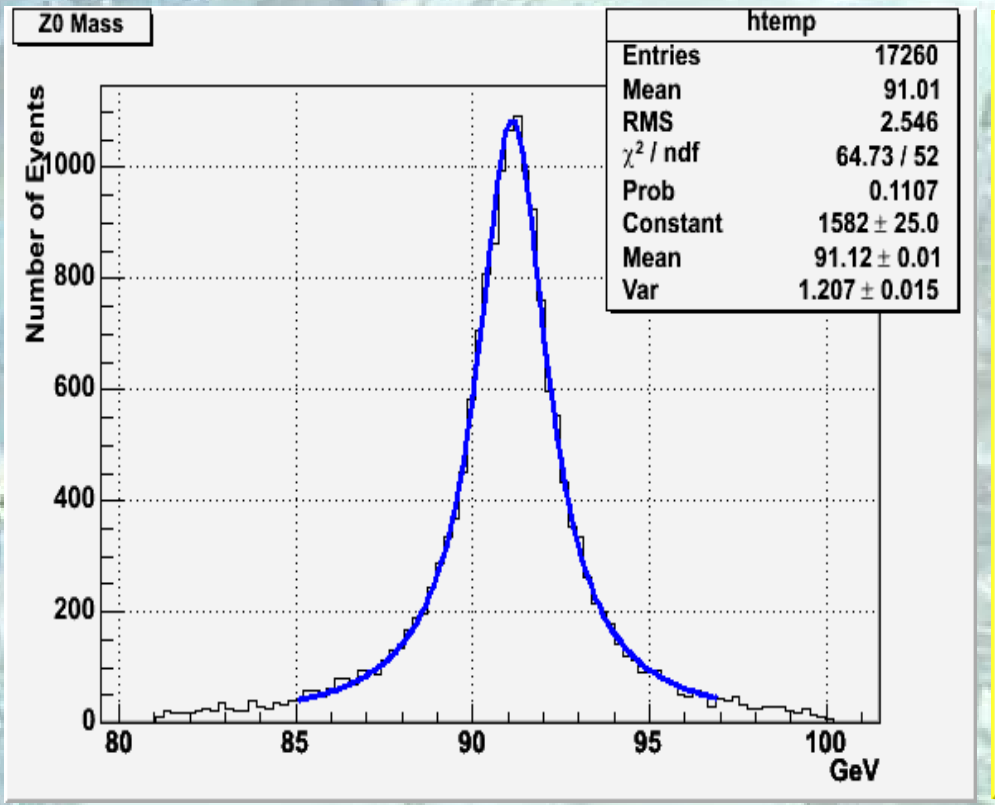
- Z->ee can be used as a monitor for calibration at ATLAS.
- Z->ee has been used as a Software Validation Tool/evaluator.
- Z->ee can also be used to evaluate the Trigger System.
- Z->ee has also been proposed as a parton/parton luminosity measure.

Framework

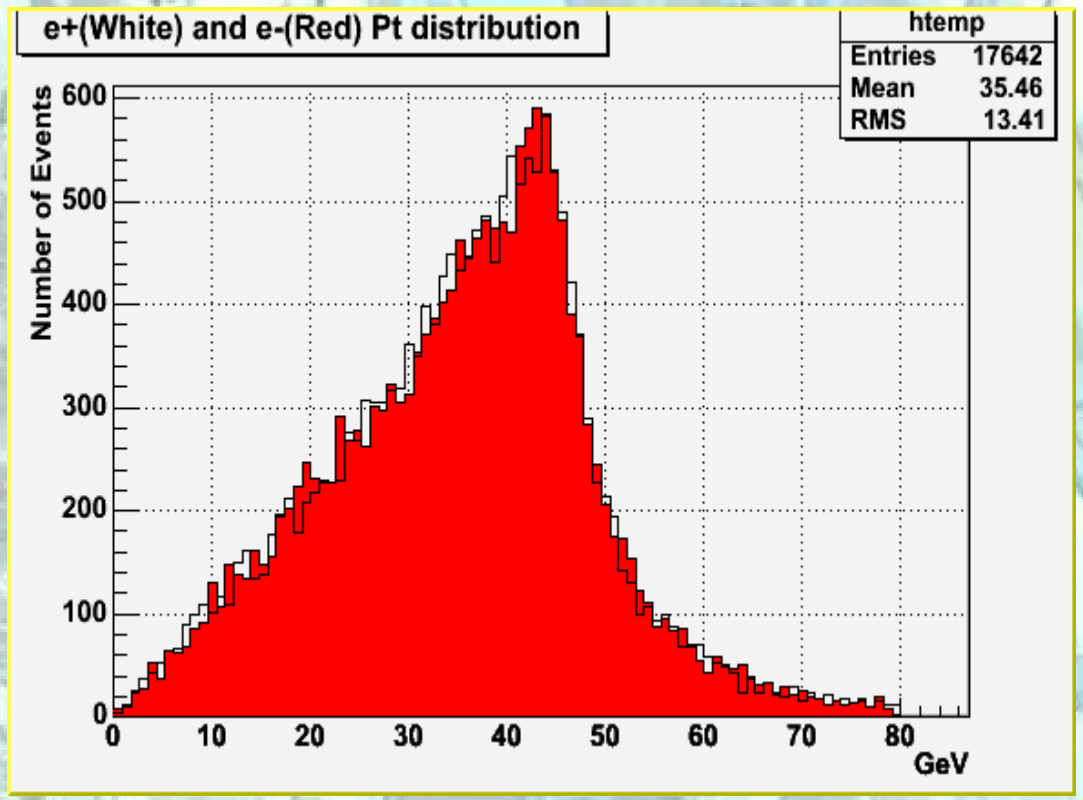
- Using DC2 data (003007) being processed with different offline versions.
- CBNT produced are worked out with ROOT to sort the useful information.
- Calorimeter/Tracks/LVL1/LVL2 systems being investigated.
- Results published in a web site.

Truth Validation

Z0 Mass



Z0 electrons Pt



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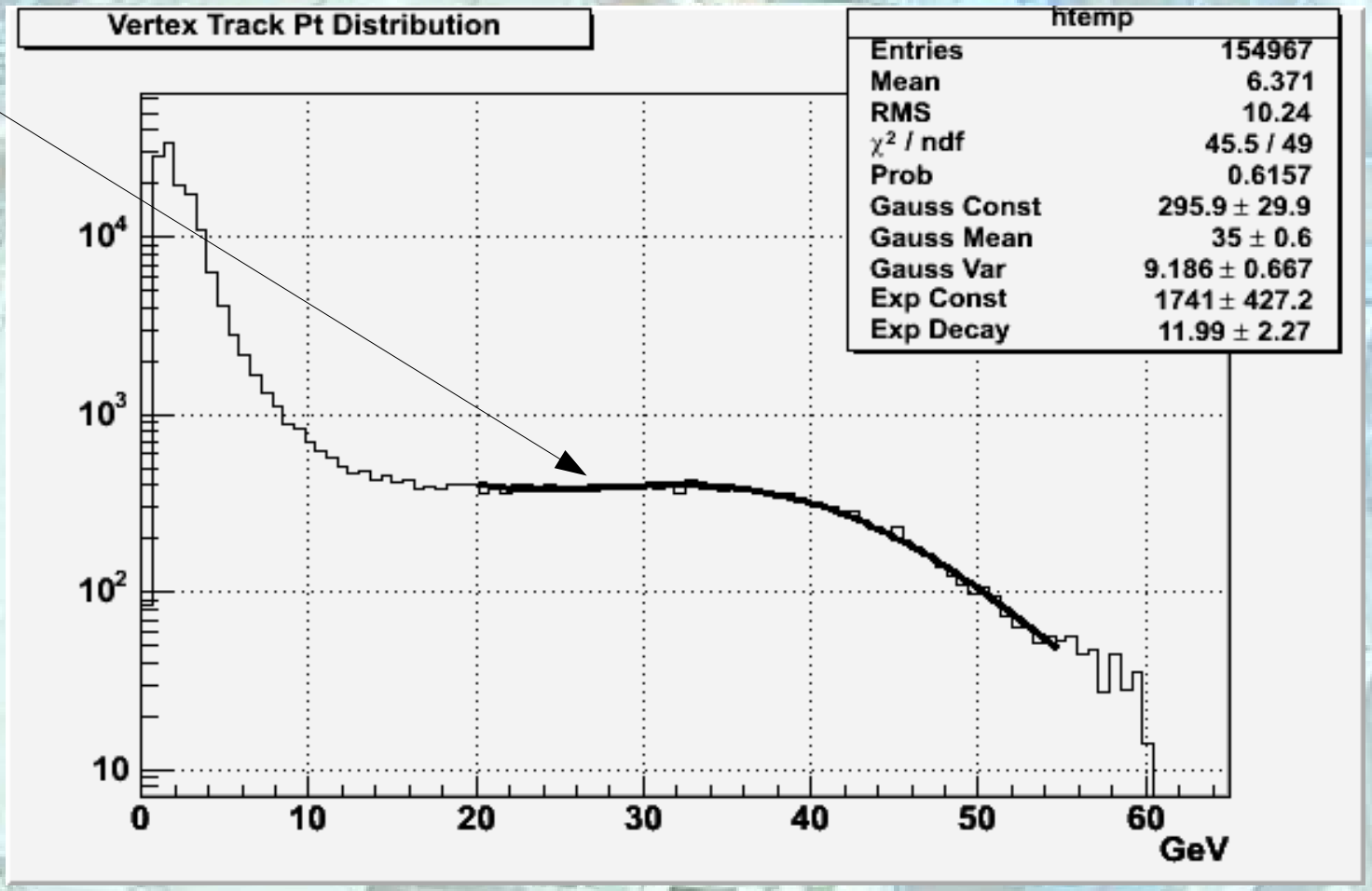
Tracks Reconstruction (xKalman)

dominated by tracks coming from the Z0 decay.



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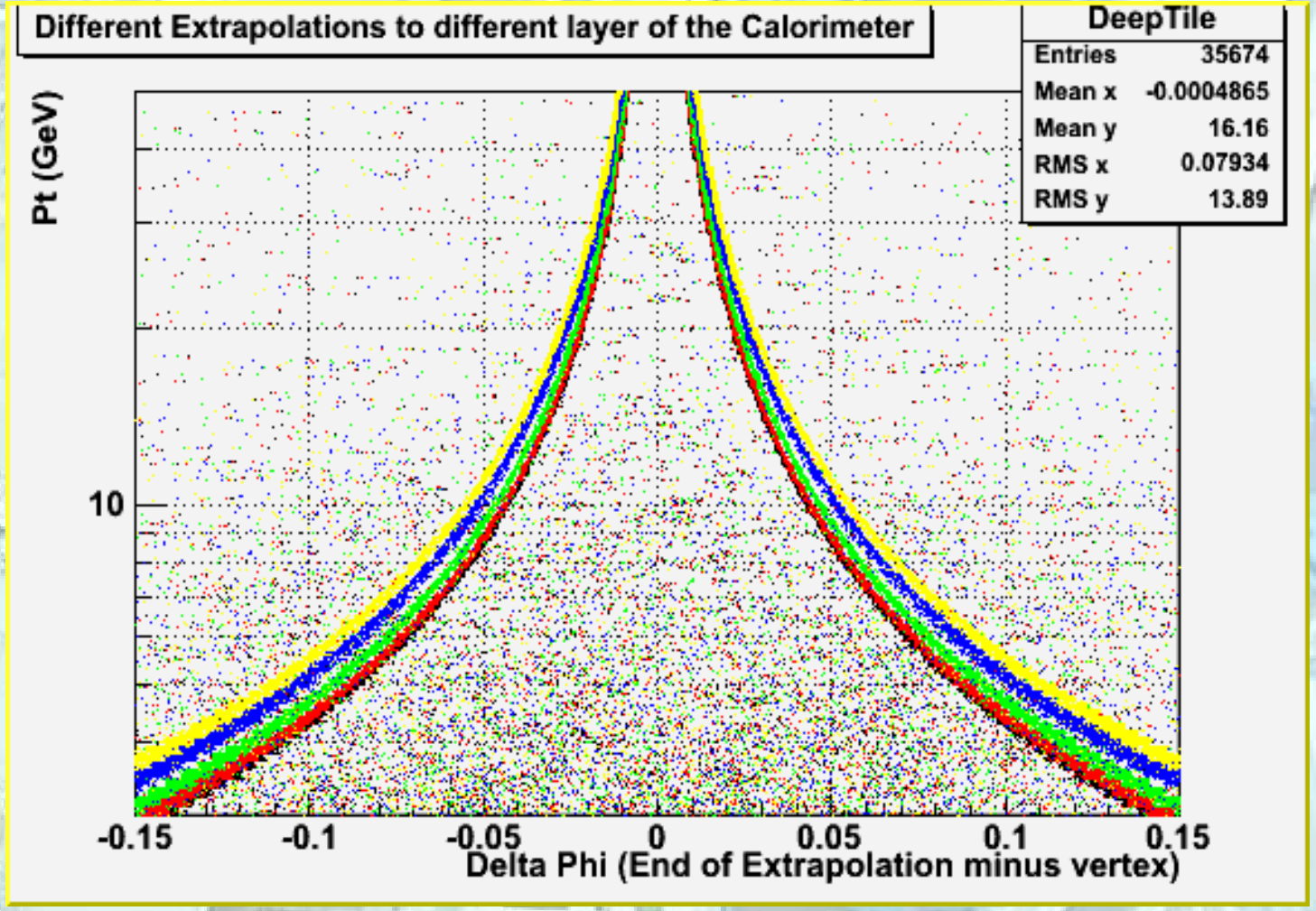
TrackToCluster Tool

- Different Pt tracks bend differently.
- One can check the extrapolation upto the calorimeter layers.



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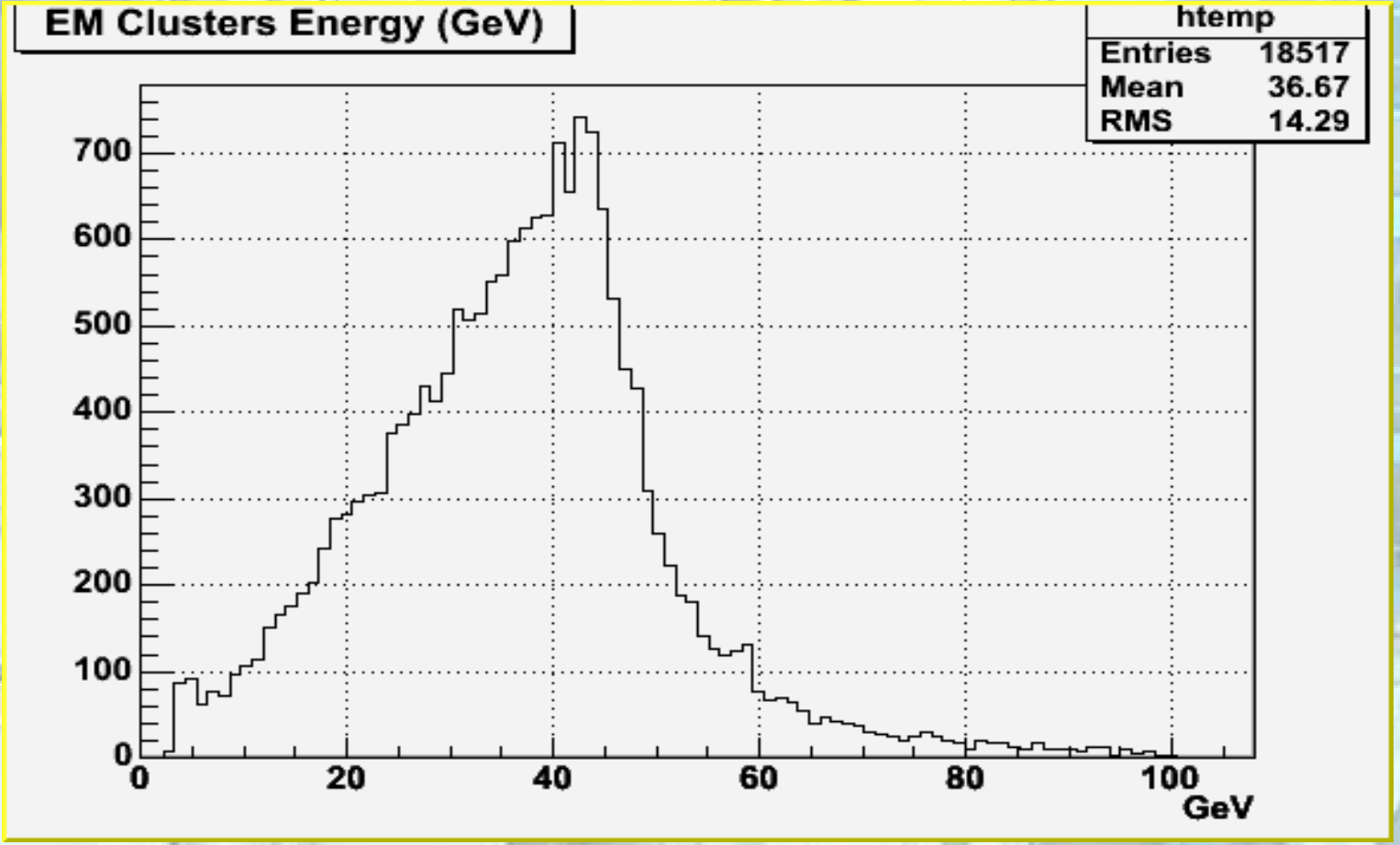
Cal. Cluster Rec. (egamma)

Electrons Pt profile similar to truth



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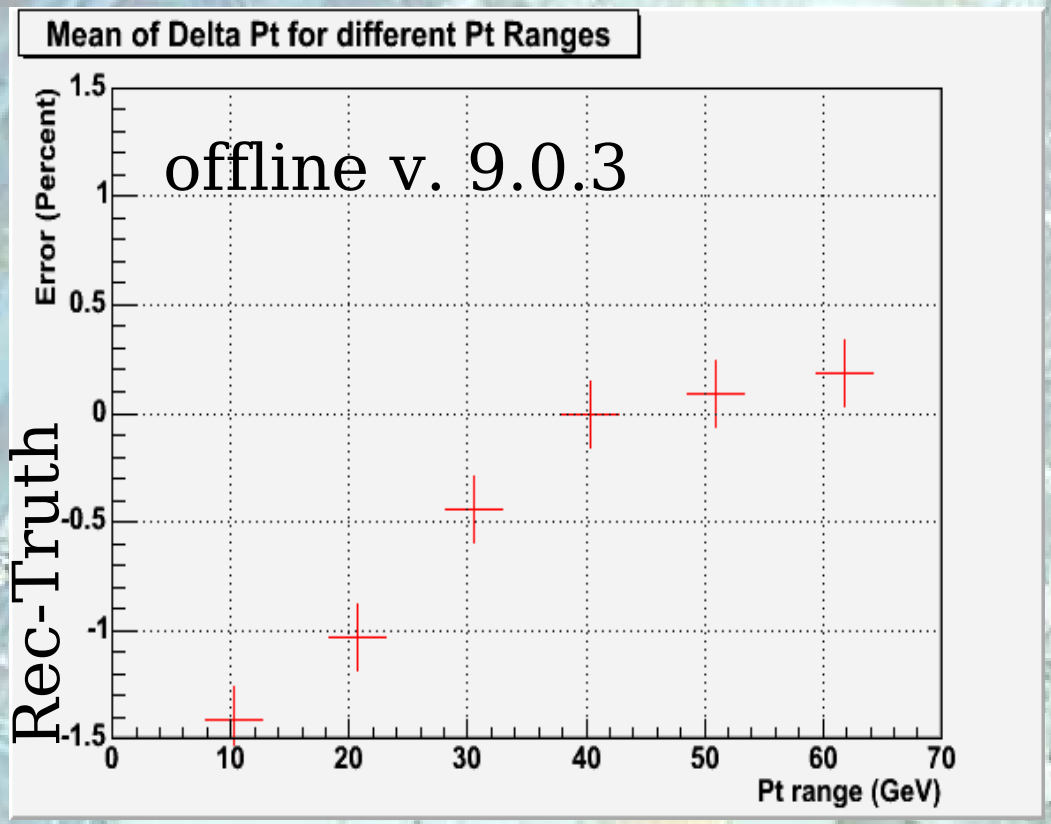
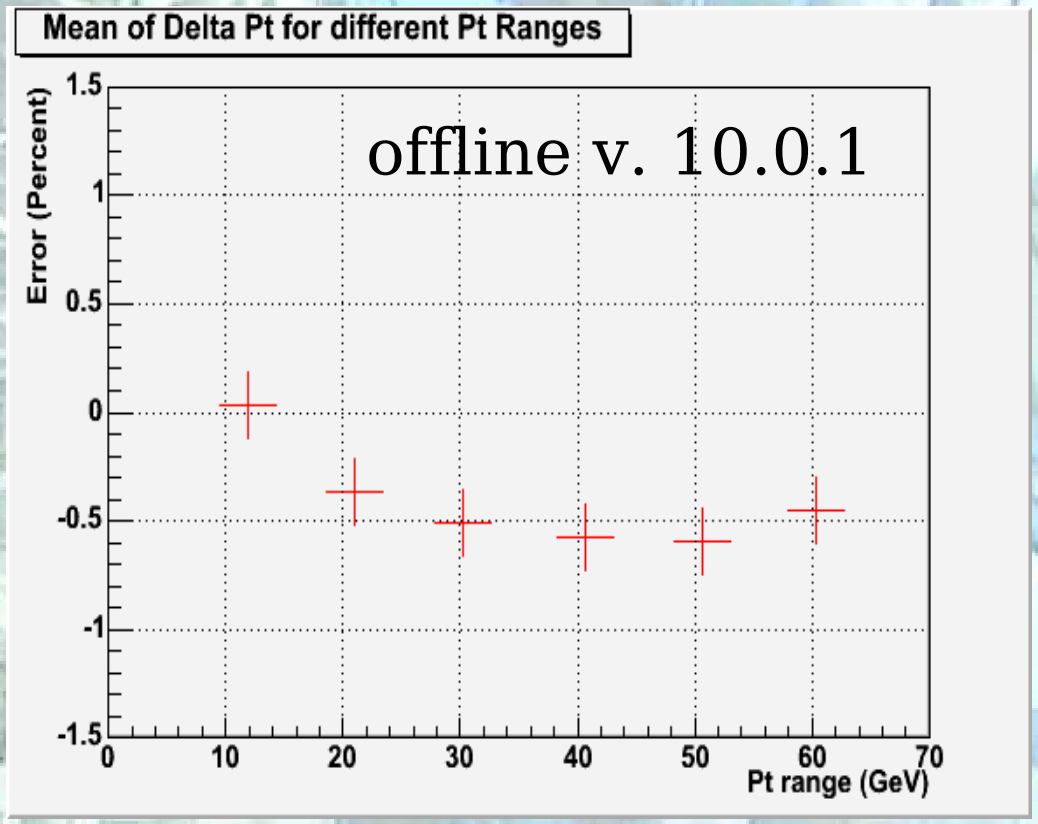
Calibration Issues (egamma Clusters)

Recovery expressed in Pt bins. Change in offline calibration between both versions.





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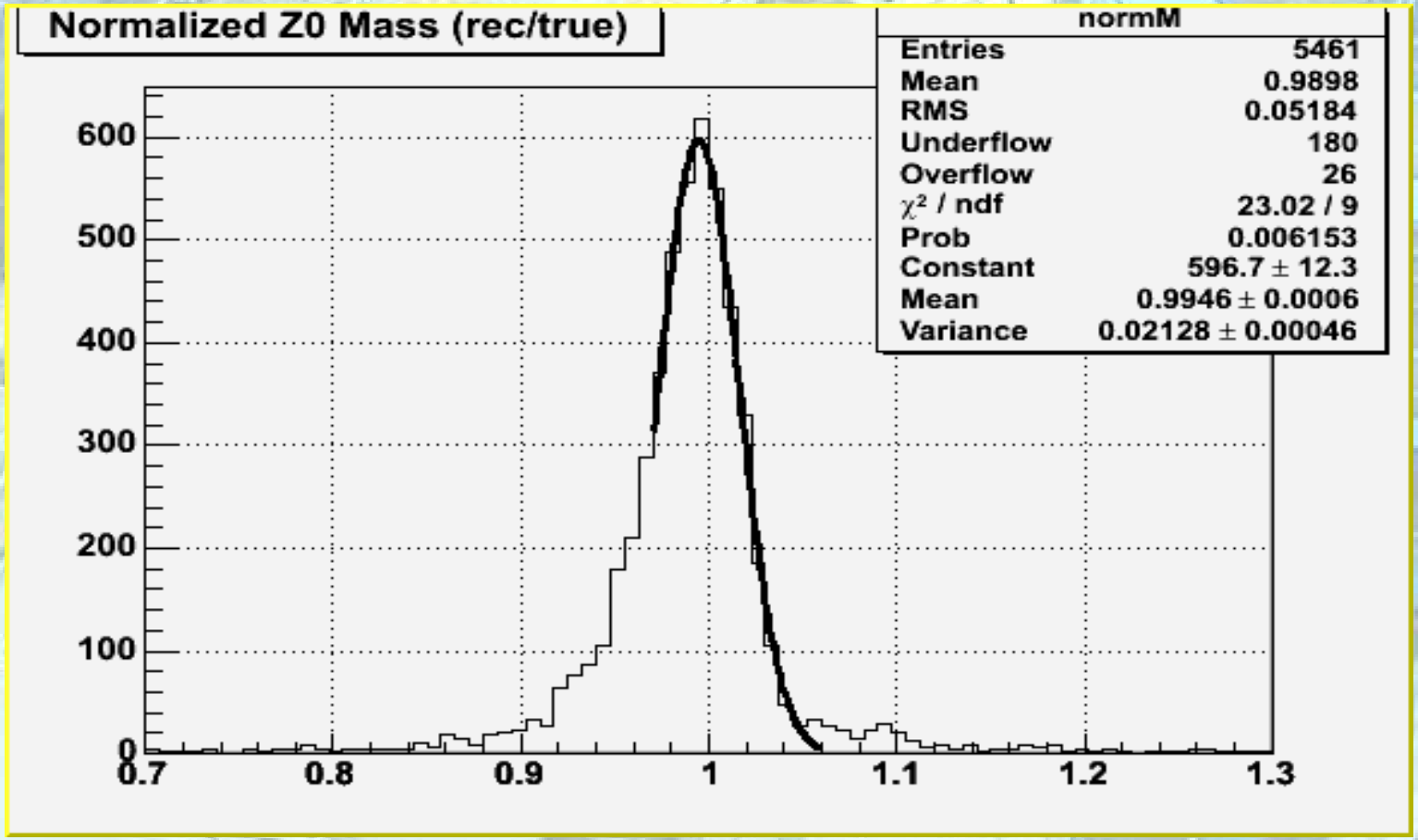
Calibration Issues (egamma Clusters)

Z0 Mass recovery



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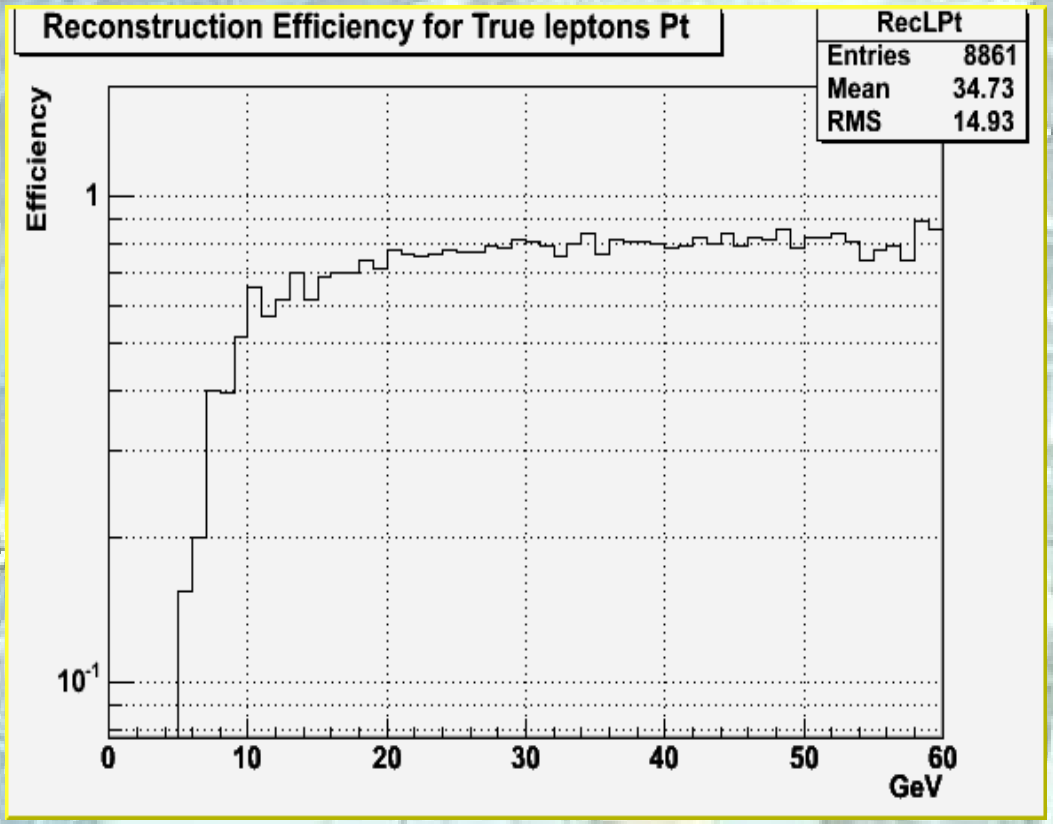
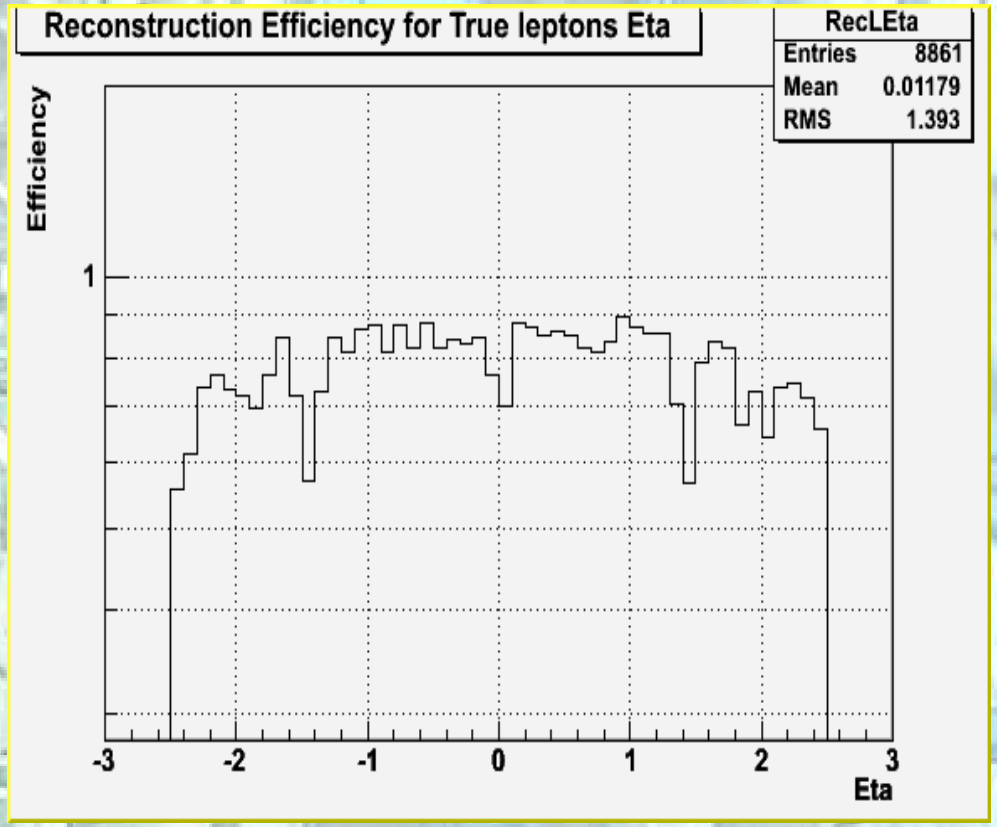
Reconstruction Efficiencies

Efficiency as a function of Pt



Efficiency as a function of eta



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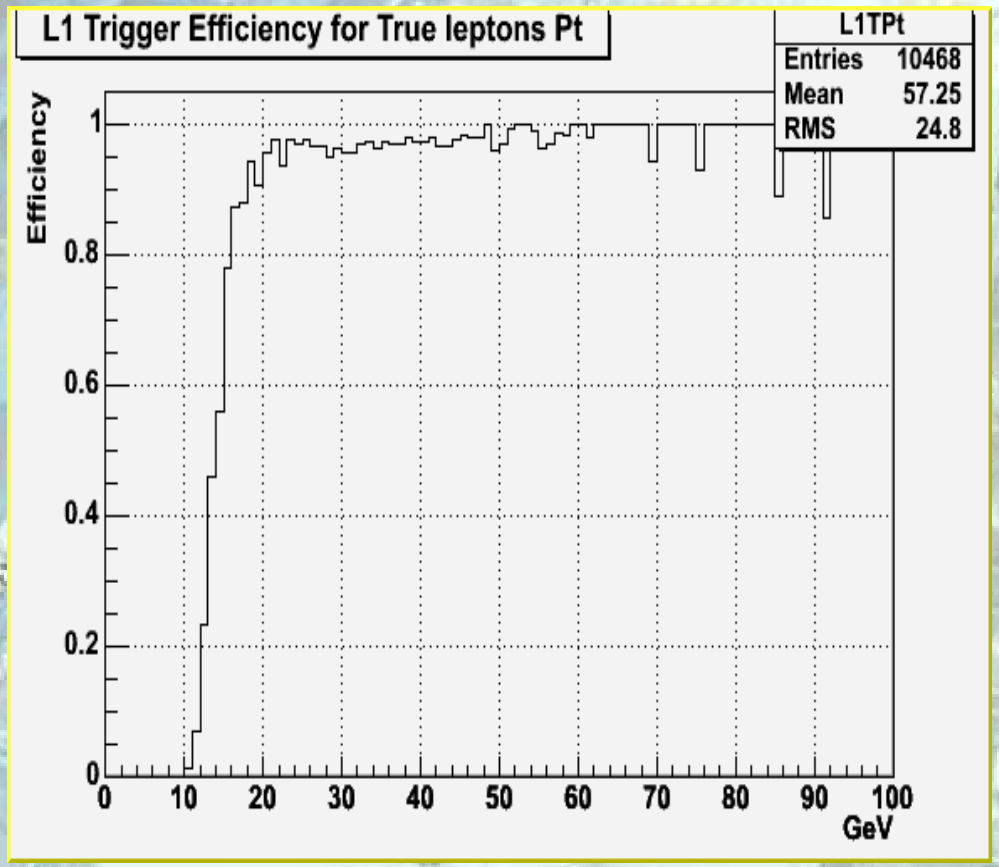
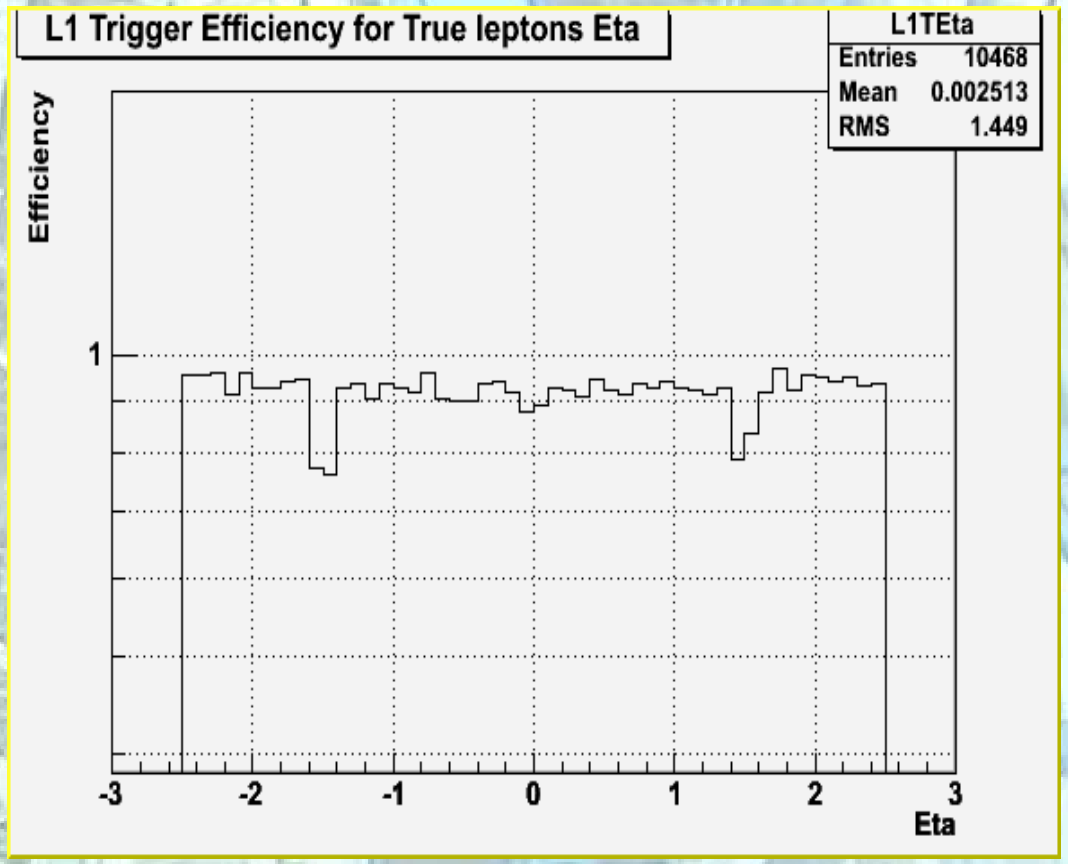
L1 Efficiency

LVL1 efficiency as a function of Pt



LVL1 efficiency as a function of eta



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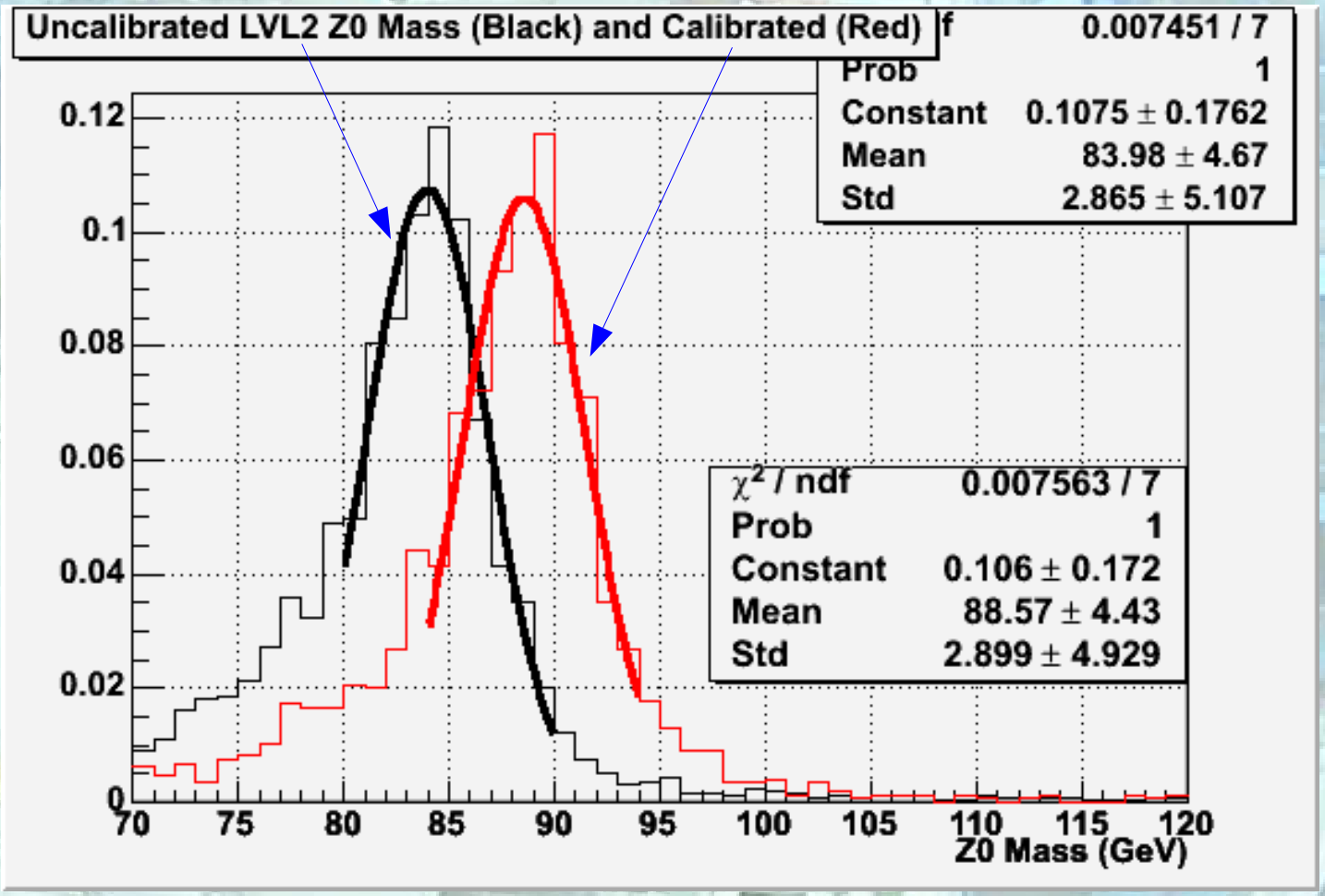
LVL2 Z0 Mass recovery using cluster eta dependent constants from offline



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Conclusions

- A deep analysis of different features of Z->ee (1 Hz) decays in the ATLAS detector is being performed.
- Such analysis could help in a Day 1 type of work (calibration, general system check up like identification of dead or hot cells in the calorimeter).
- Detailed study of efficiencies profile may be important when luminosity measure is concerned.

Next steps

- Synchronize better with the requests of the SM group.
- Perform same analysis with Minimum bias and Z0+pileup samples.
- Move to ESD/AOD world. CBNT will not live longer...
- Please, check the following web page :

http://www.usatlas.bnl.gov/~damazio/log

for further reference and send comments.