

# Test beam updates

Beam and data accounting

Reason for poor trigger rate in final week

Updated survey information and  
Improved WC and TOF calibrations

How hard it is to find positrons

Detector energy scale

Tracking and clustering first look

Full data processing

# Beamline data accounting nearly final

Alex W.

20E-20H (calorimeter) negative particles:  
4261 spills, 77203 triggers to disk, **8930 PassAll**

20E-20H (calorimeter) positive particles:  
3299 spills, 73685 triggers to disk, **10153 PassAll**  
**improved MINERvA DAQ installed for above**

20T-20E (tracker) positive particles:  
5377 spills, 98119 triggers to disk, **15734 PassAll**

20T-20E (tracker) negative particles  
1207 spills, 13105 triggers to disk, **1581 PassAll**  
**power supply went bad = poor trigger rate**  
**broken wire in WC1 took us down for three days**

# Data accounting nearly final

Alex has cataloged the reason subruns are rejected.

Josh is working on an innovation to recover some beamline-rejected events. We suppose a 10% to 100% improvement.

## Separate beamline/facility rate estimates

Because the MINERvA DAQ is the limiting factor, a non MINERvA user can expect to run near the Beamline DAQ limit of 50 to 60 Hz.

~200 triggers to disk per spill (300 to 400 raw triggers)  
negative 11.4% PassAll = 22.8 good events / spill  
positive 13.2% PassAll = 26.4 good events / spill

Trigger rate dropped  
to half what it was  
for final week or so.

Josh finds that the  
capacitor in preamp  
power supply took ill.

Maybe too warm in hall.  
(Er. It says 105C on it)

Other caps are fine.

Not yet sure if it had  
negative effect on the  
data quality, or only  
on the trigger efficiency.



# Updated survey information used for Reco

Updated information from Alignment Group Survey is now a part of the beamline reconstruction.

Indications of accuracy of 1mm or so same as wire spacing in the chambers.

Still an uncertainty in the internal position of the wires relative to the external survey points.

Some other information to check about those positions. and some magnet off data to use for verification.

We see the potential to realize the true 1mm wire spacing as our RMS variation and max bias.

1mm bias translates to 1% error on momentum in the heart of our momentum region.

# Calibrating the absolute TOF

Josh and Rik tried to calibrate the absolute TOF using two very independent methods and got different numbers (~400 ps)

Rik with the actual beam data

Josh with a carefully constructed cosmics test.

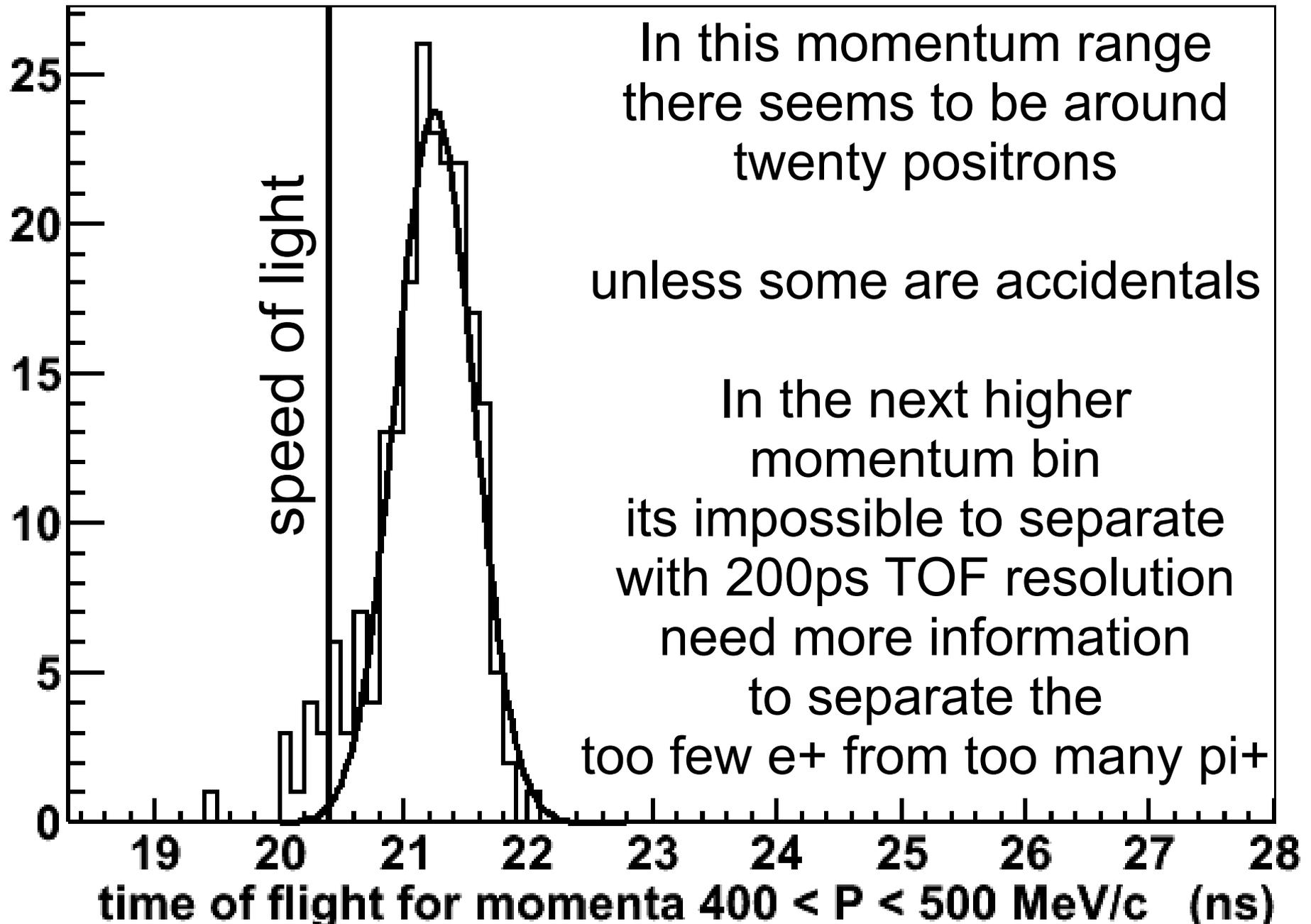
Upon further review, Rik sees hints of an error in his work that affects one parameter.

Josh has an alternate cosmics configuration that may illuminate two other discrepancies.

Potential 20ps accuracy.

Resolution is 200 to 250 ps in most cases.

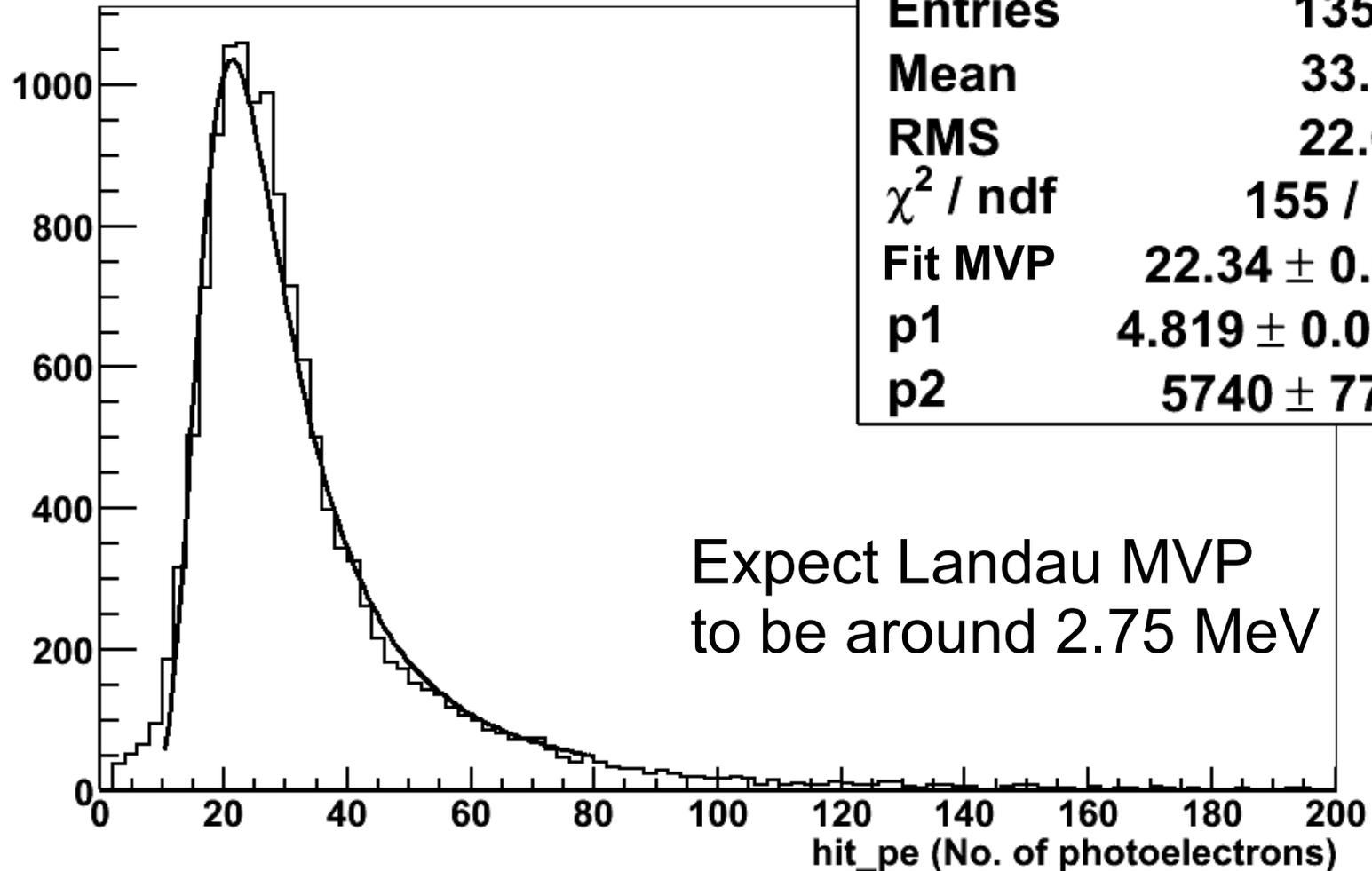
# How hard is it to find positrons in the pi+ data?



# The detector energy scale and translating measurements to MINERvA

Plane 22 Landau fit  
beam muon data

Jyotsna, Howard

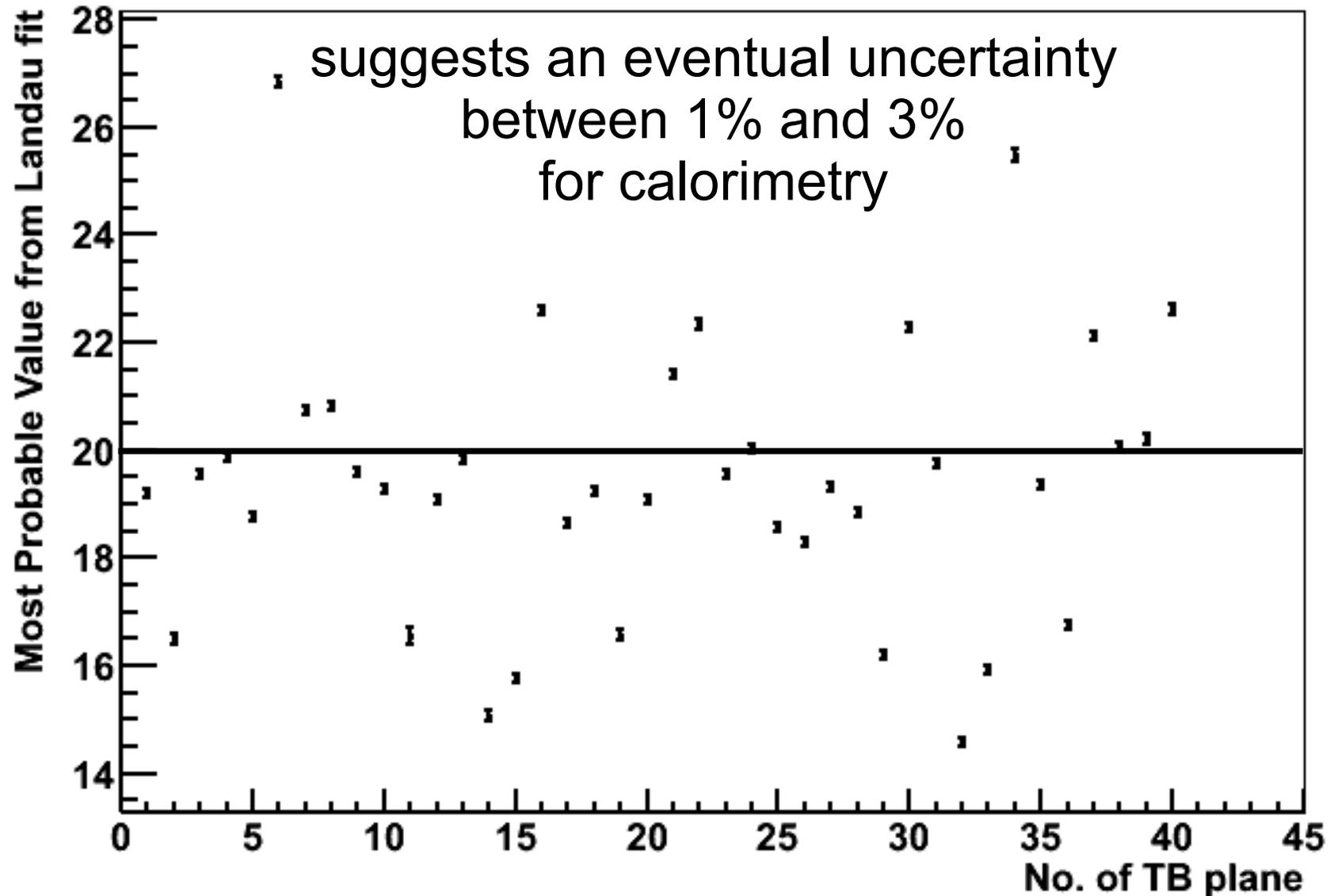


Ongoing work to find the best method and range for robust Landau fits

# Plane to plane variation in Landau fit

Jyotsna, Howard

Average is 20 pe RMS  $\sim 0.6$  PE  
(error on mean  $\sim 0.09$ )

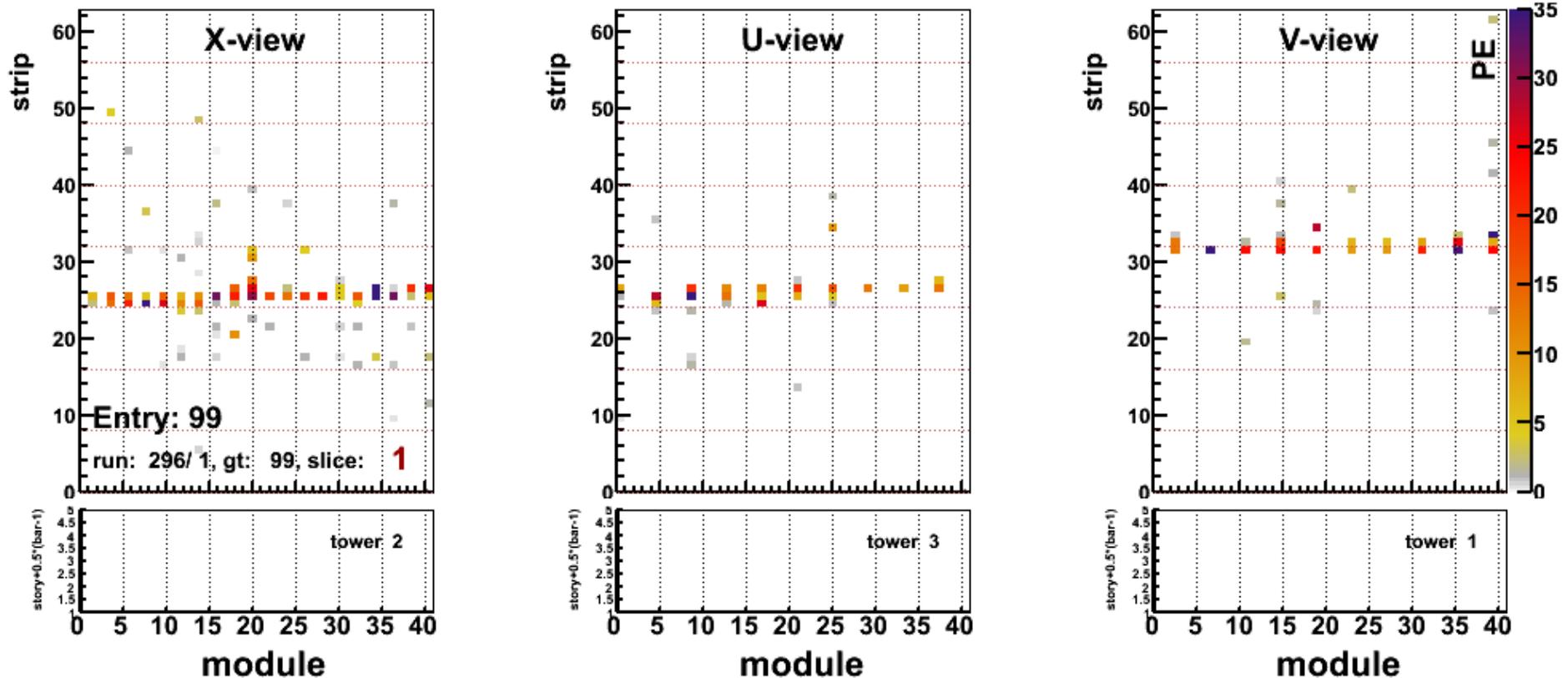


# We are running tracking and clustering

Jyotsna and Chris

Works okay on muons, dodgy on interacting pions  
tracky-protons are an interesting test-sample  
Some MinervaDDDB geometry updates being tested.

~10% of muon tracks are not found



# About to do a first full processing of the data

Some of us are analyzing limited sample of beam data, using all the beam and detector information and want a full set to push next round of improvements

Using simple scripts, not yet using GRID processing.

Beamline reco will take < 24 hours on Duluth cluster.

followed by MINERvA processing and merge ~8 hours running 15 processes interactively on the if cluster

Time to finalize last bits, plus some vacations aiming to do this Tues + Wed 24-25 August