

# MC Tracking Resolutions

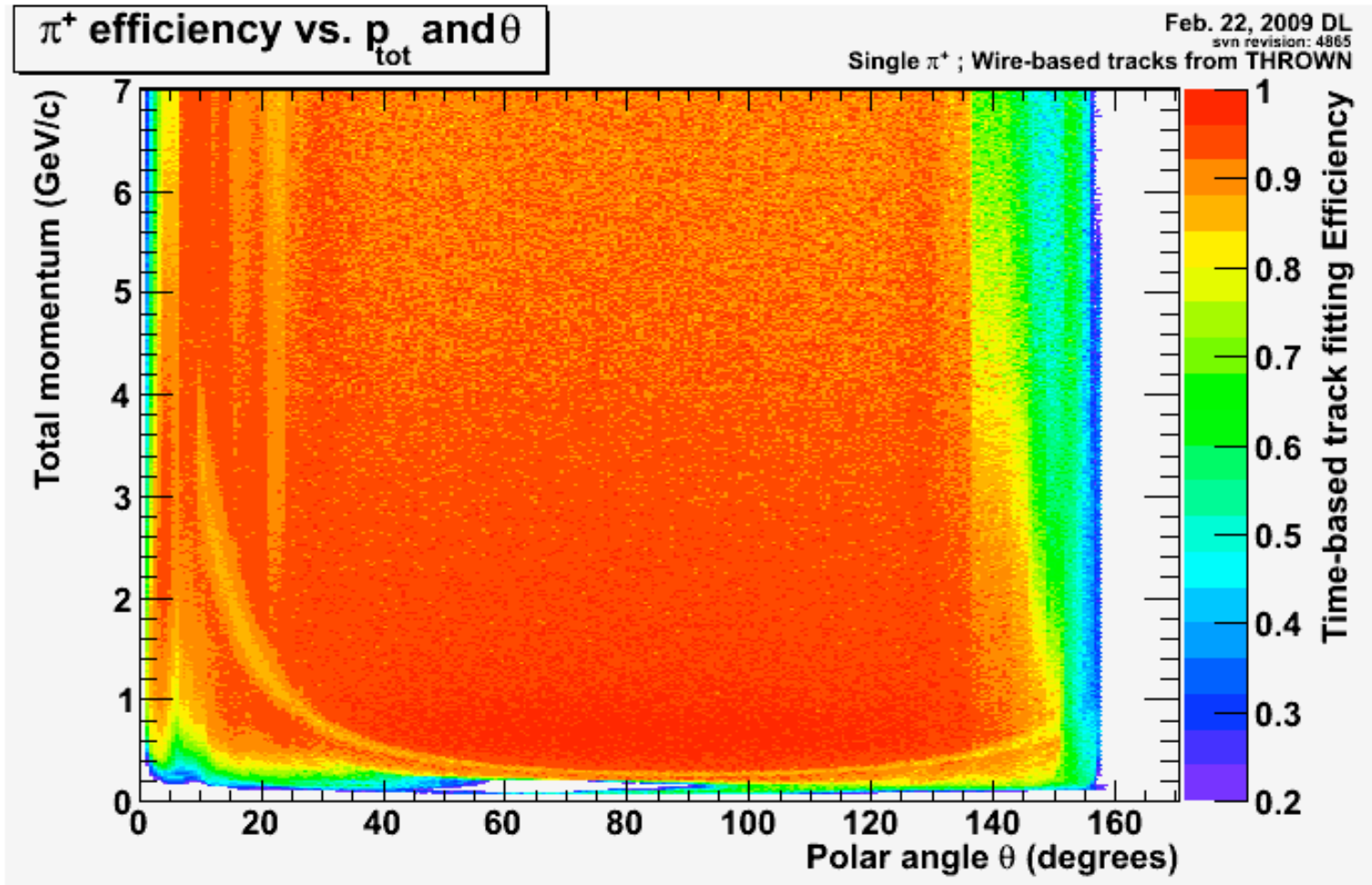
Feb. 23, 2009

David Lawrence JLab

# the low-down...

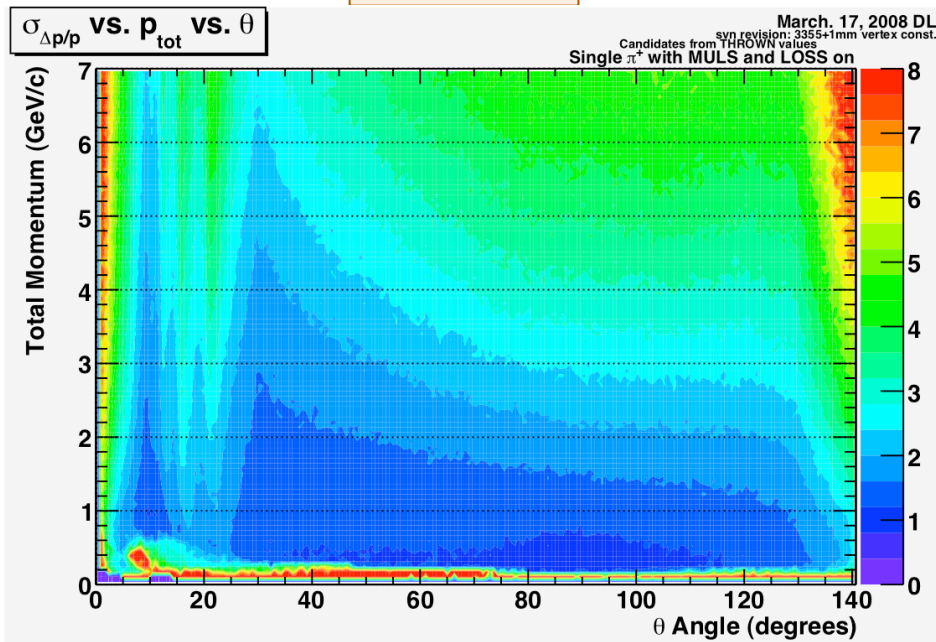
- ~16M single  $\pi^+$  particles were thrown over a wide range of angles and momenta in order to map out the resolution and acceptance of the GlueX detector.
- The motivation comes from having changed the CDC configuration and having removed the target constraint from the ALT1 fitter
- These results do not include track finding or wire-based fitting. Those tend to increase the left-right ambiguity problem which is not currently handled in the ALT1 fitter.

# Track Fitting Efficiency

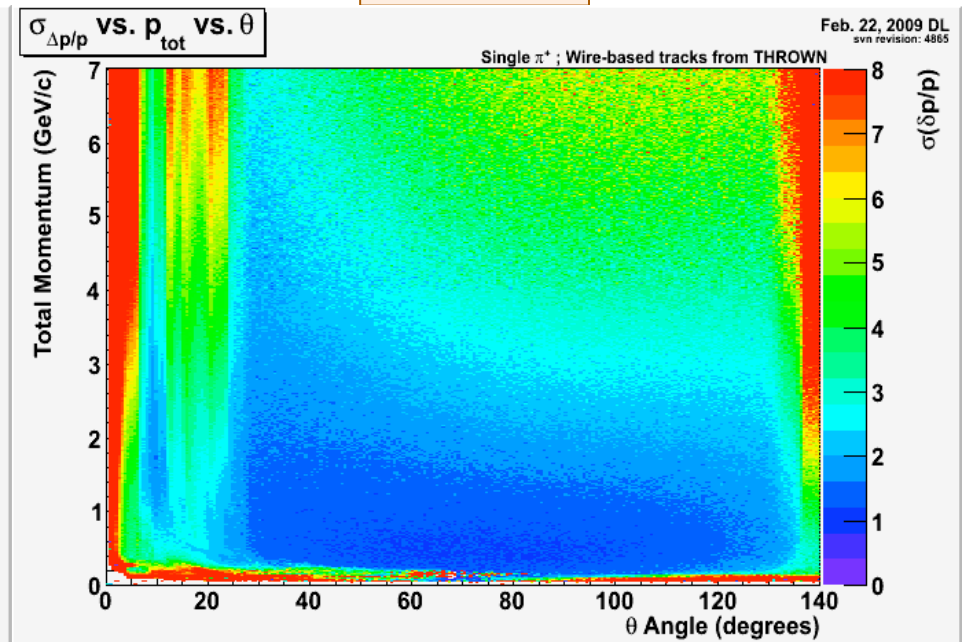


# Relative, total momentum Resolution

Feb. 2008



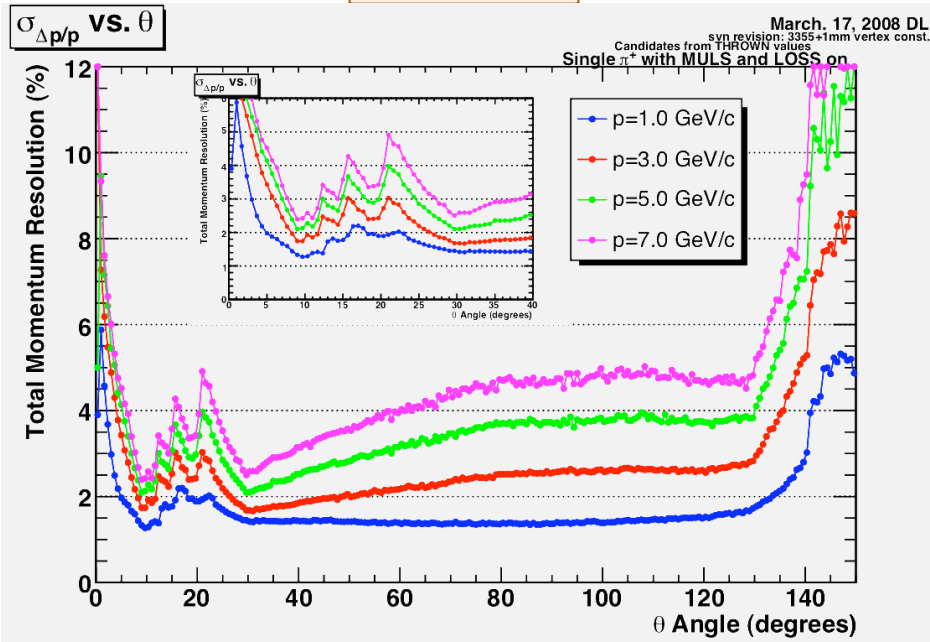
Feb. 2009



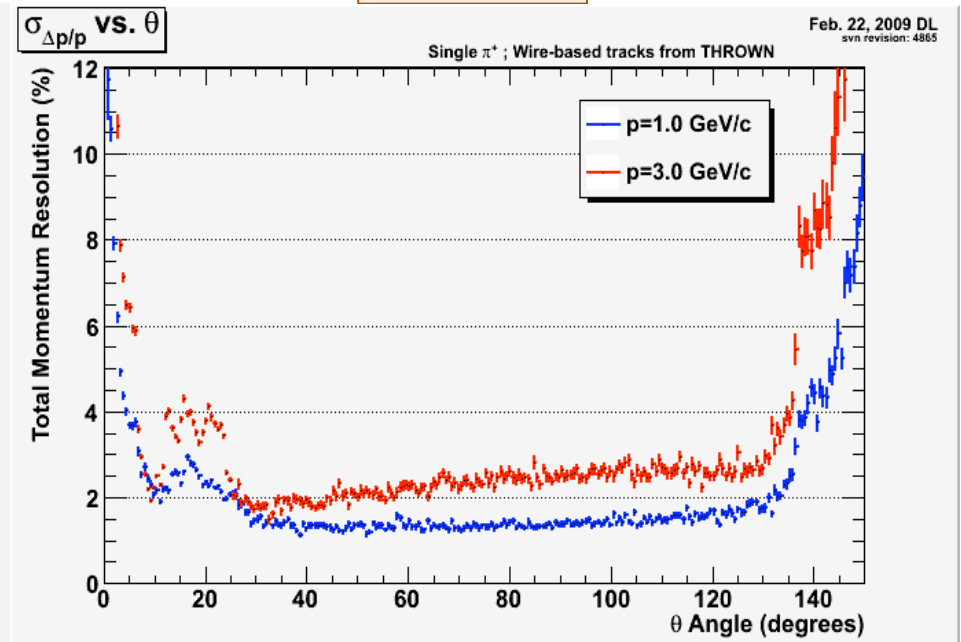
Note: For technical reasons, the plot on the left uses “CONT” option to draw contours while the plot on the right colorizes by bin content.

# Relative, total momentum Resolution

Feb. 2008

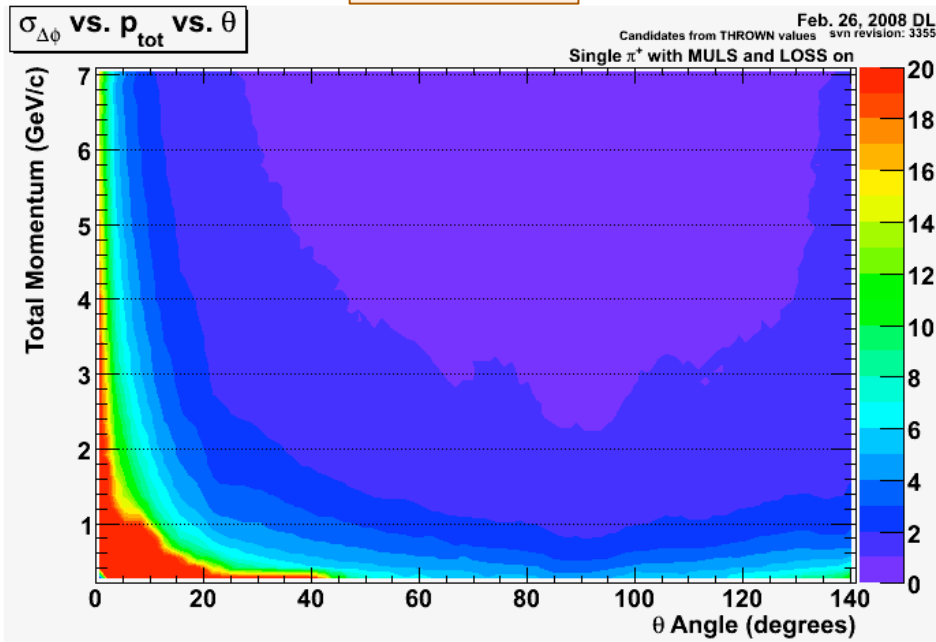


Feb. 2009

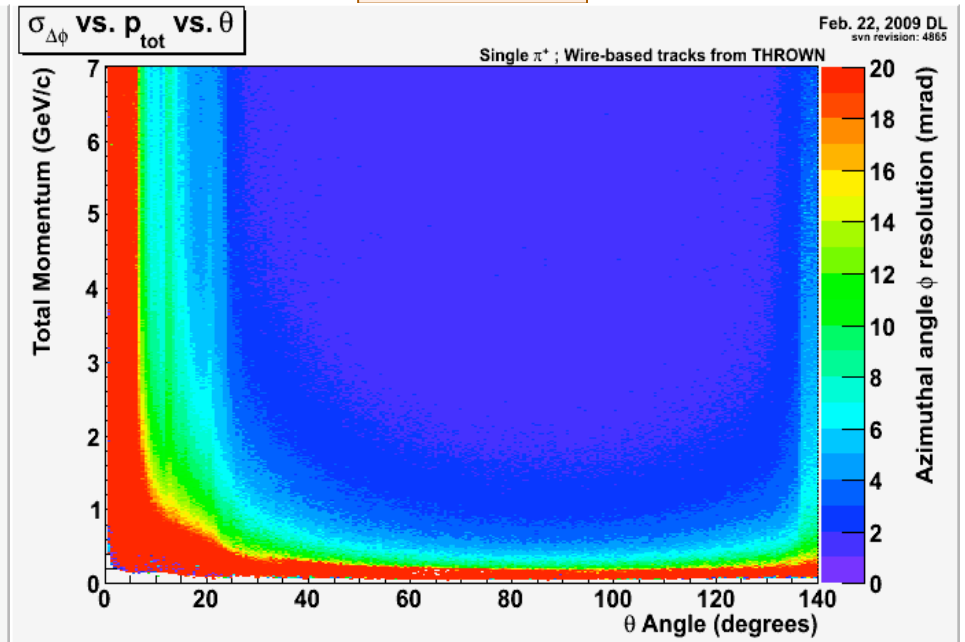


# Azimuthal Angular resolution

Feb. 2008

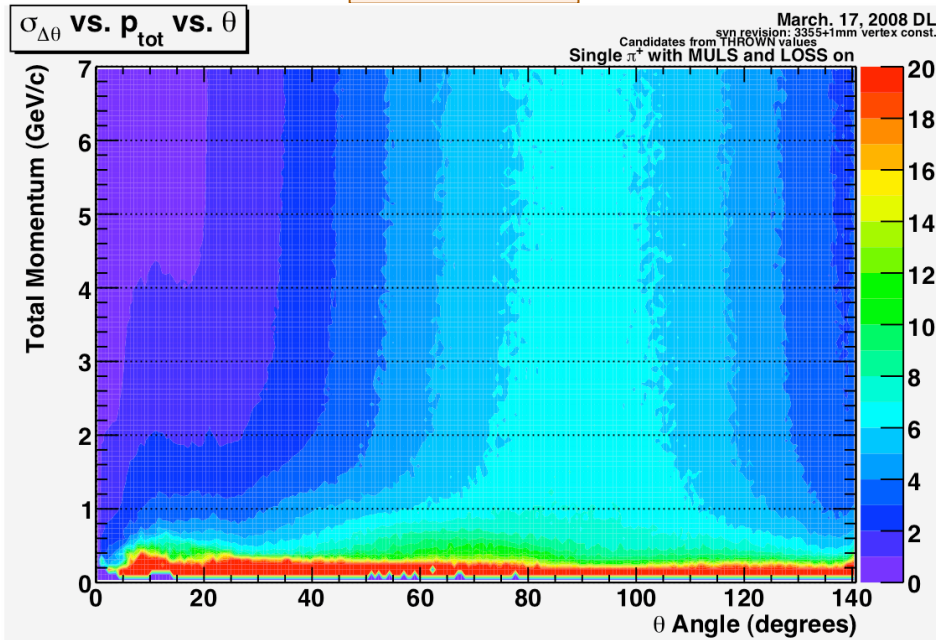


Feb. 2009

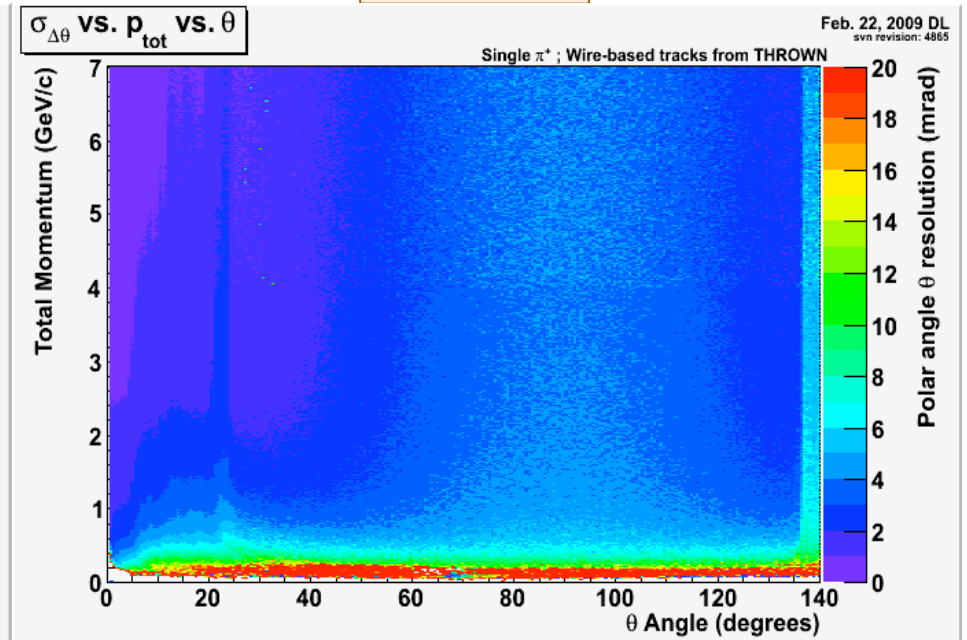


# Polar Angular Resolution

Feb. 2008

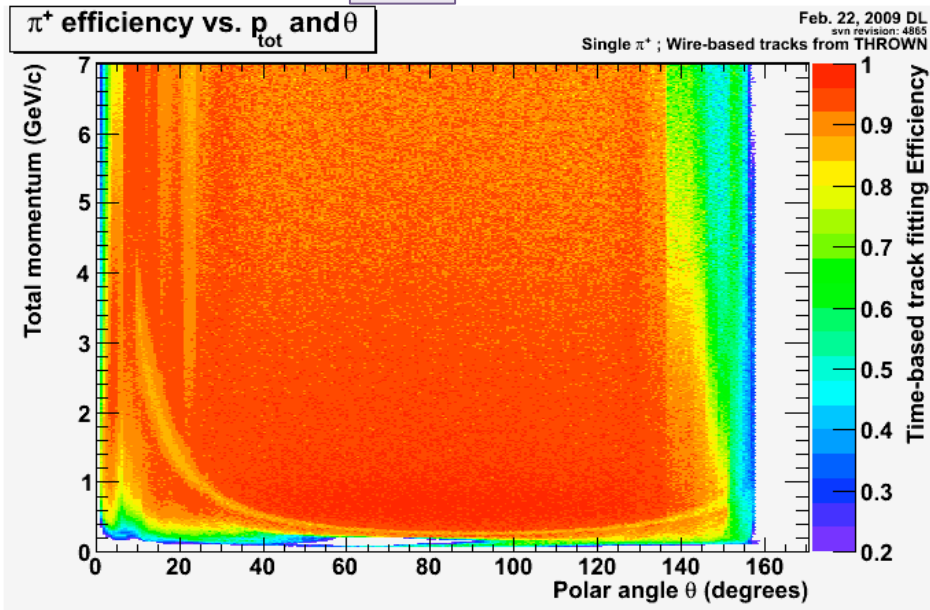


Feb. 2009

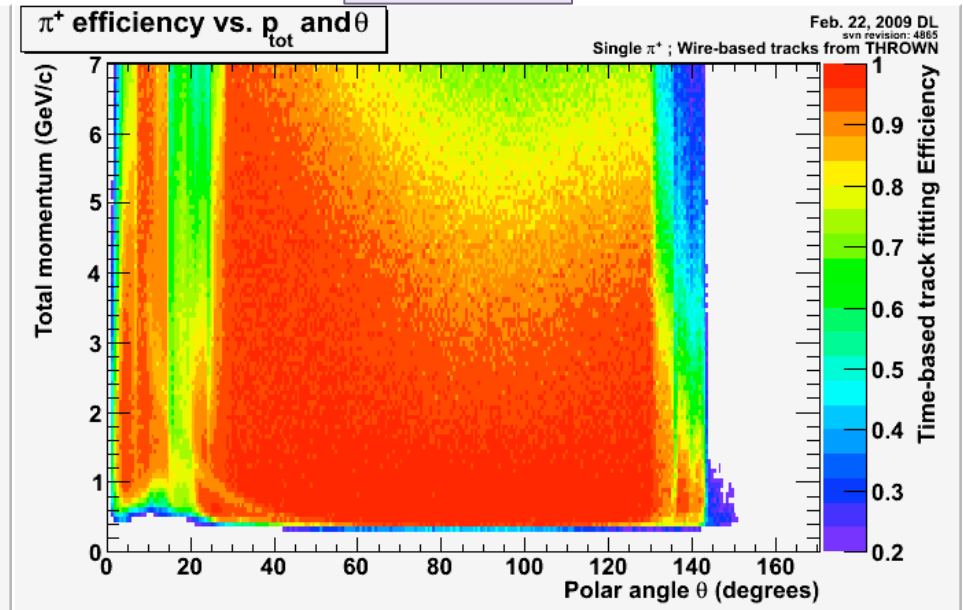


# $\pi^+$ , proton efficiencies

$\pi^+$



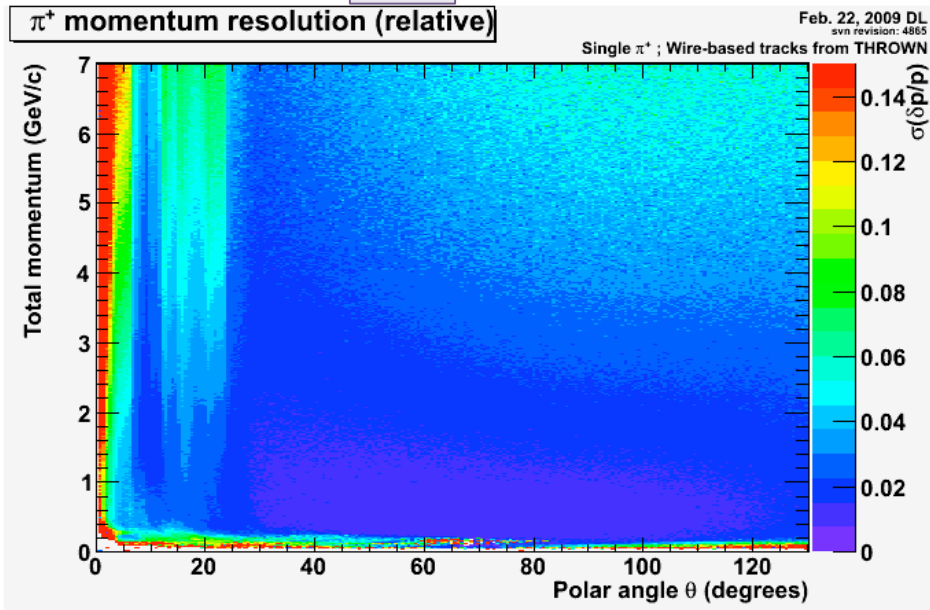
proton



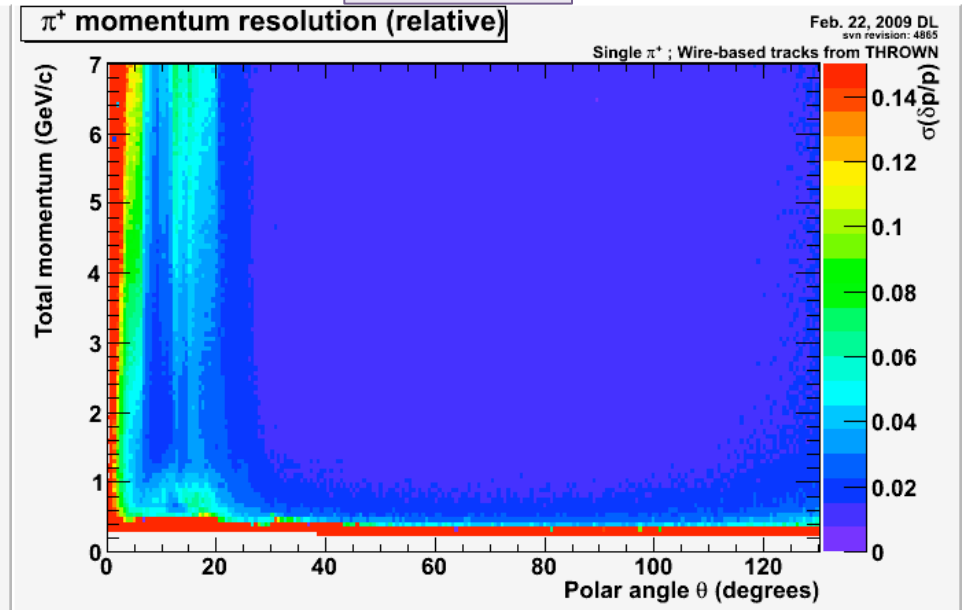


# $\pi^+$ , proton Momentum Resolutions

$\pi^+$

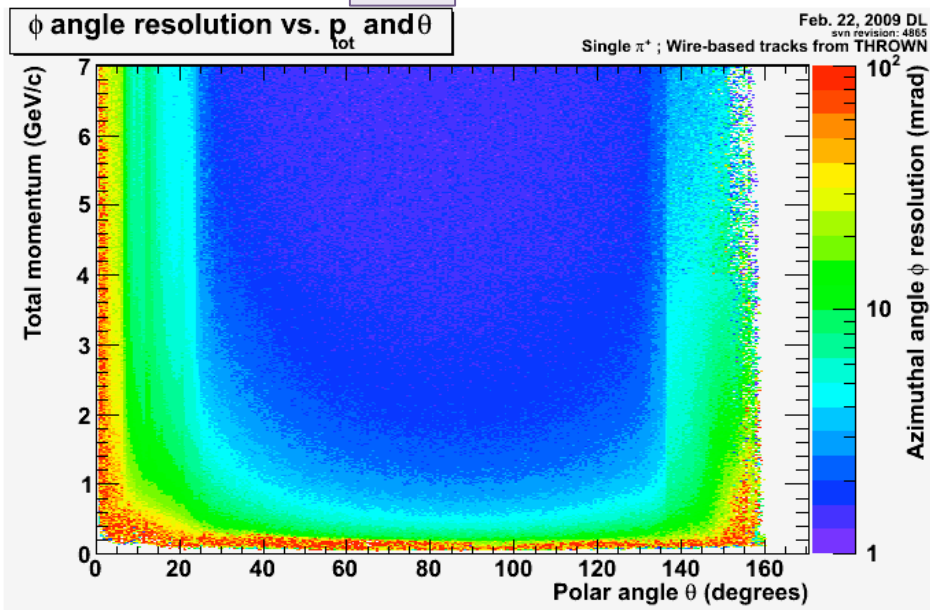


proton

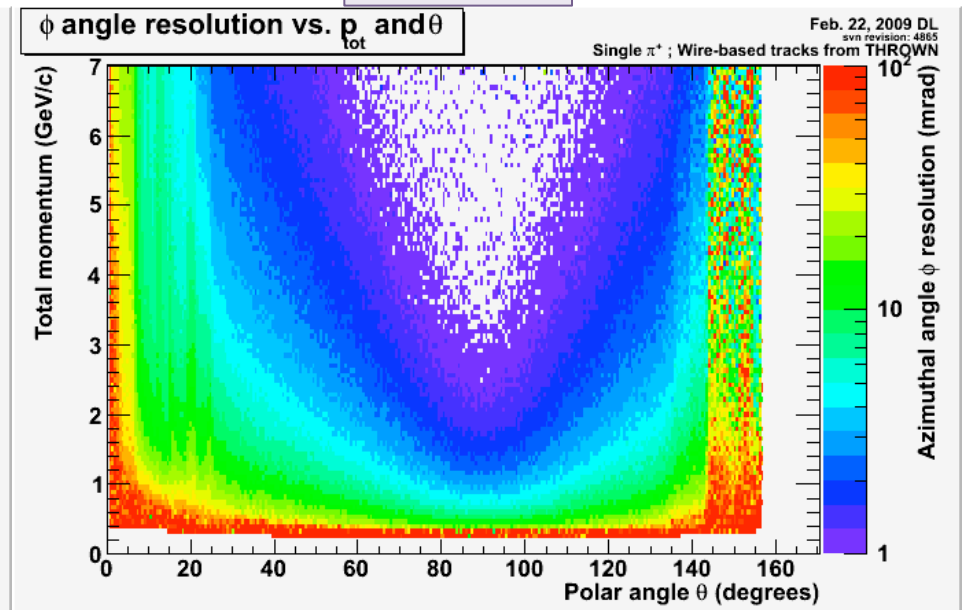


# $\pi^+$ , proton $\phi$ Resolutions

$\pi^+$



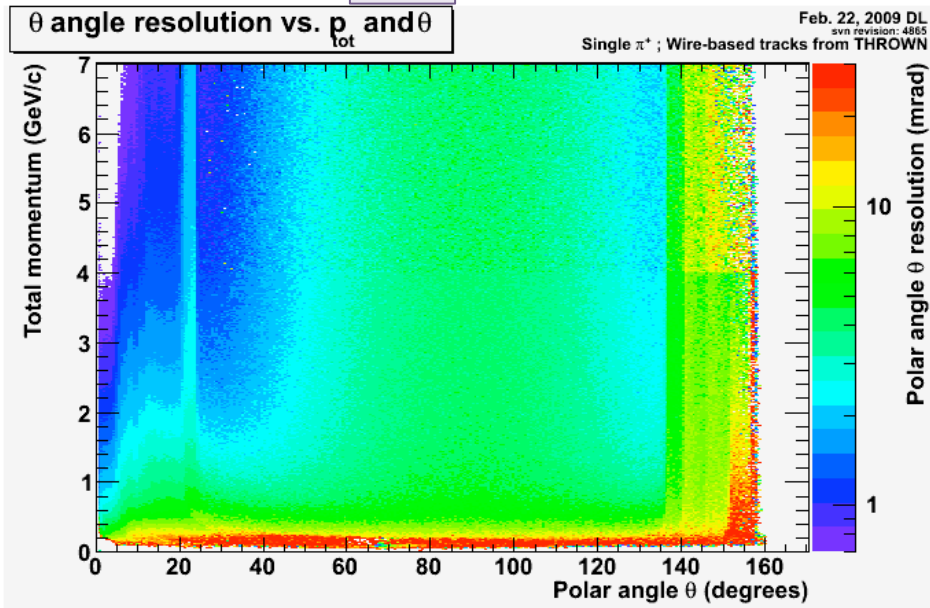
proton



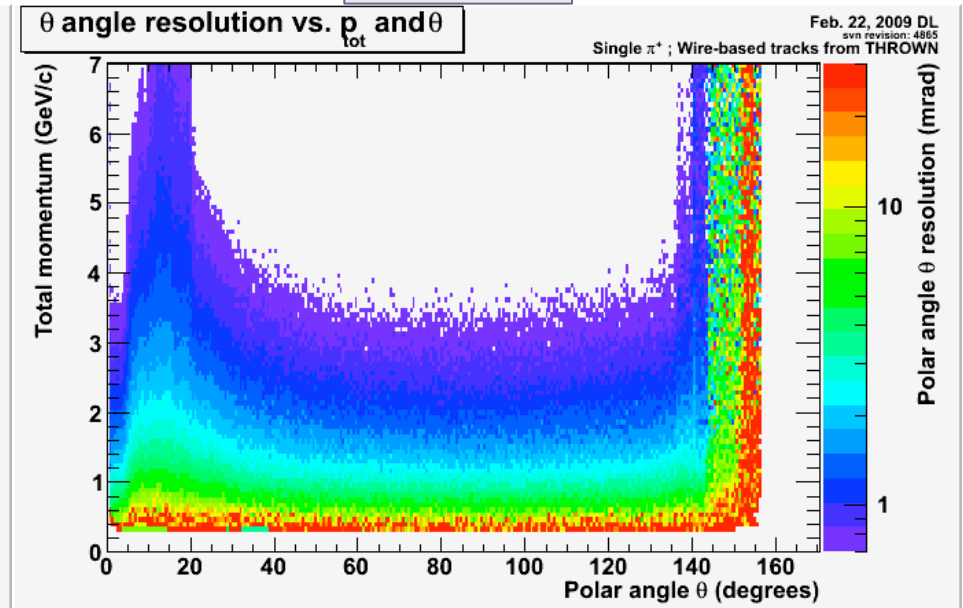
*White areas are failed fits.  
These will be re-fit later with  
better binning*

# $\pi^+$ , proton $\theta$ Resolutions

$\pi^+$



proton

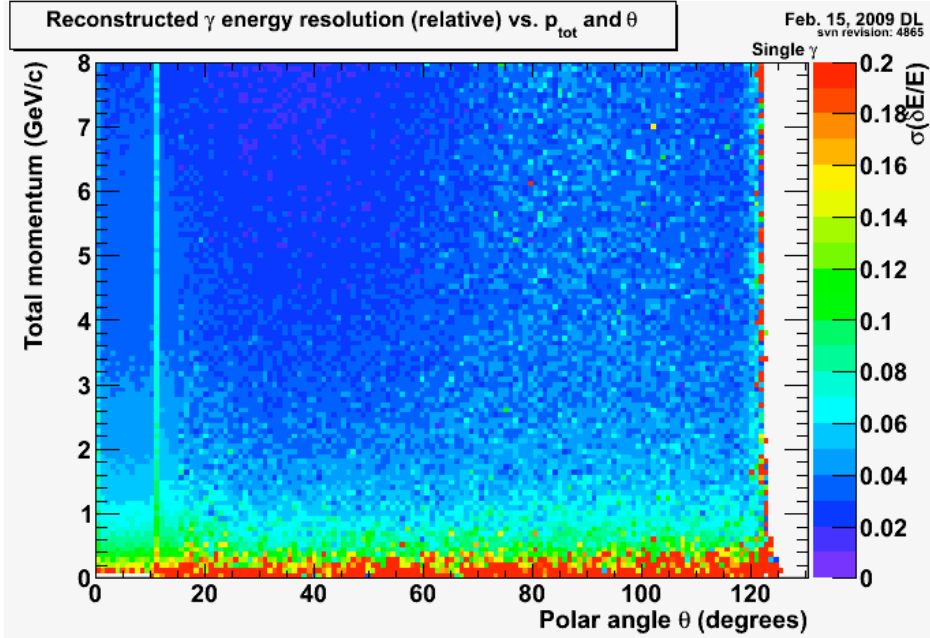


*White areas are failed fits.  
These will be re-fit later with  
better binning*

# Reconstructed $\gamma$ Energy Resolution

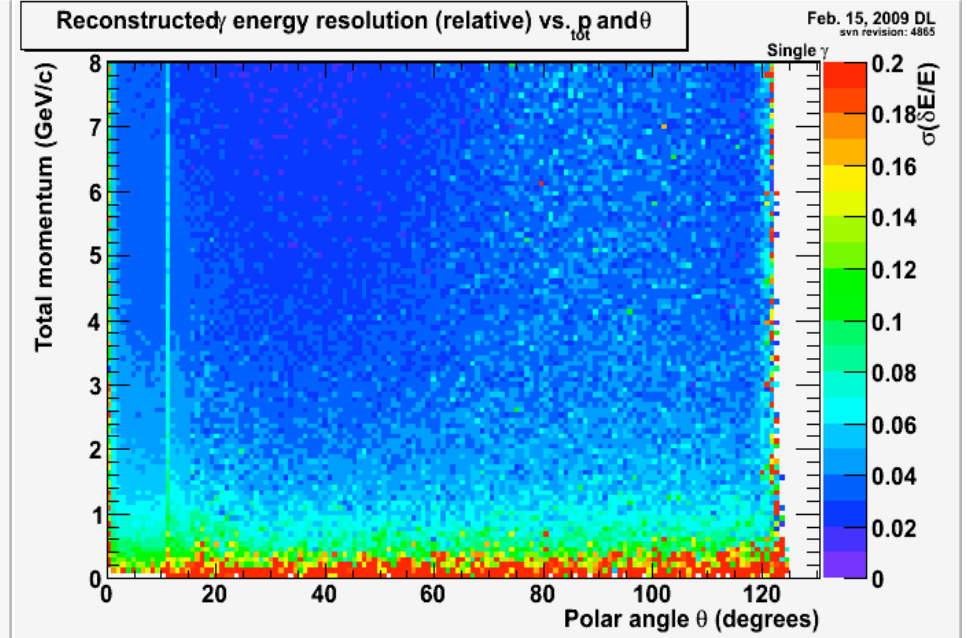
3.2M photons simulated  
and reconstructed

*hdgeant*



100M photons parametrically  
simulated using *hdgeant*  
derived resolutions

*hdparsim*



# $\gamma$ Reconstruction Efficiency

Photon considered found if reconstructed energy was within +/- 20% of thrown

*hdgeant*

*hdparsim*

