# MC Tracking Resolutions

Feb. 22, 2009

David Lawrence JLab

the low-down…

- ~16M single π^+ 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.
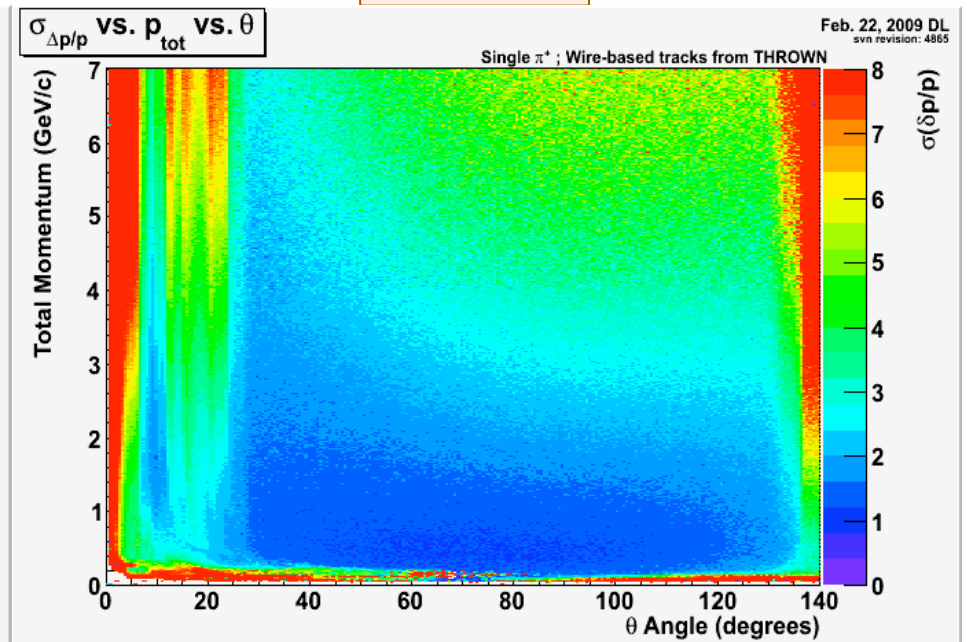
Track Fitting Efficiency
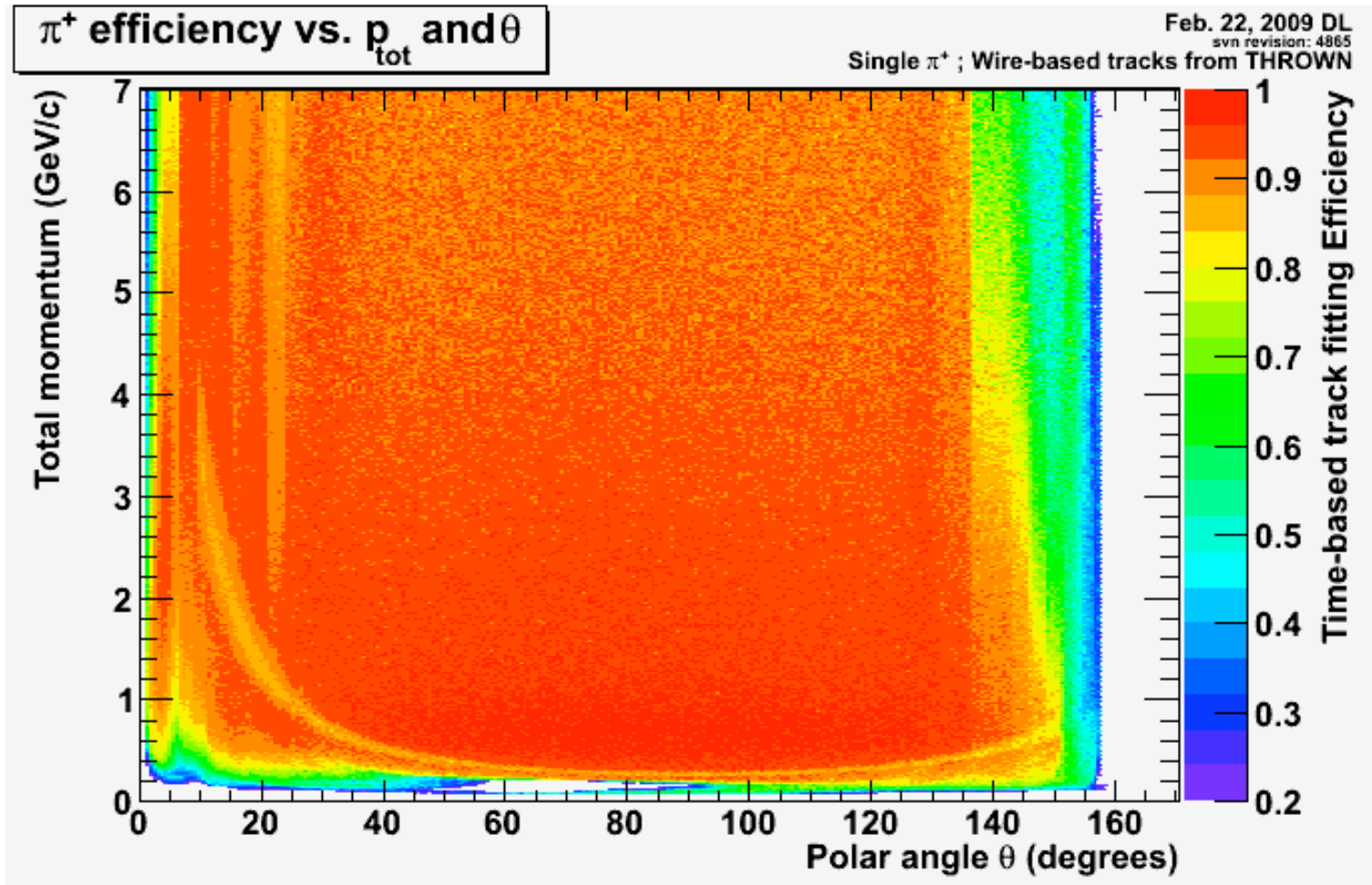
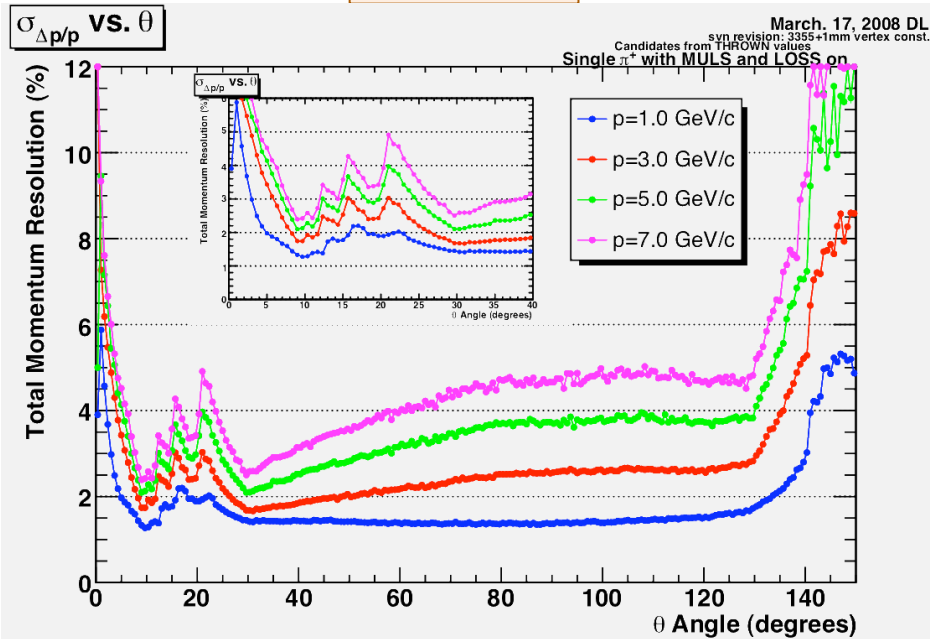# Relative, total momentum Resolution
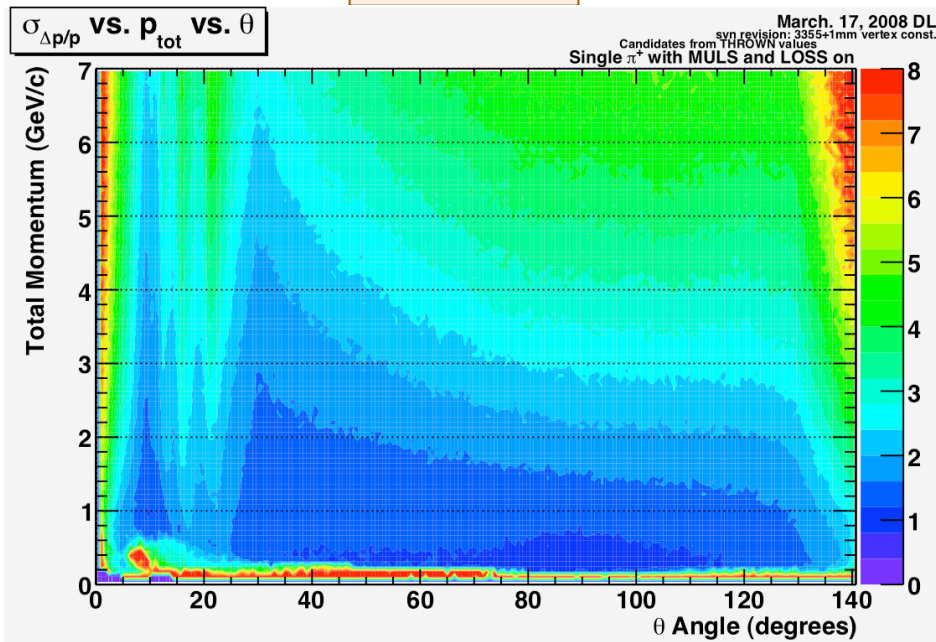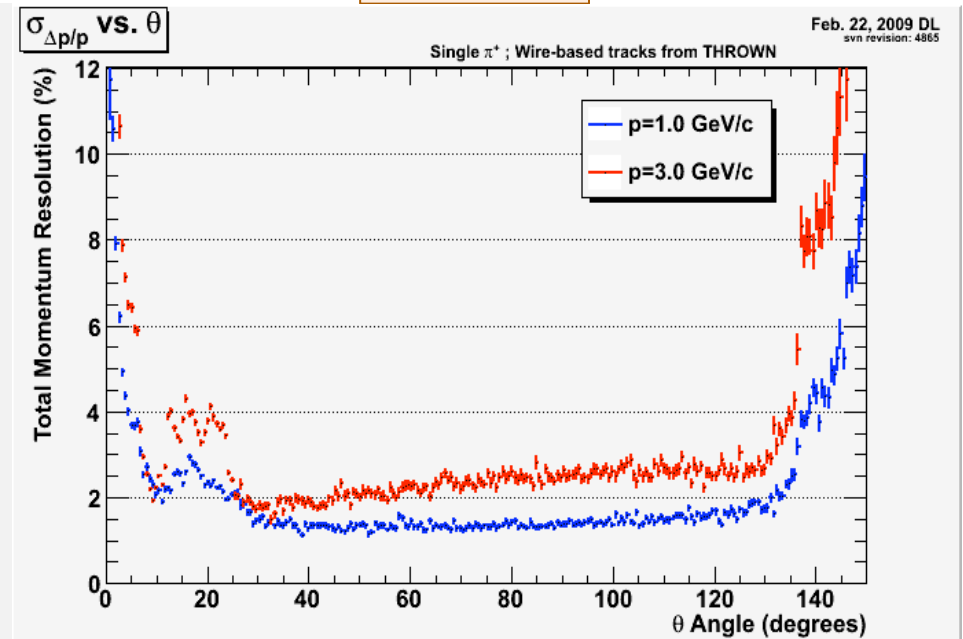
Feb. 2008

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.

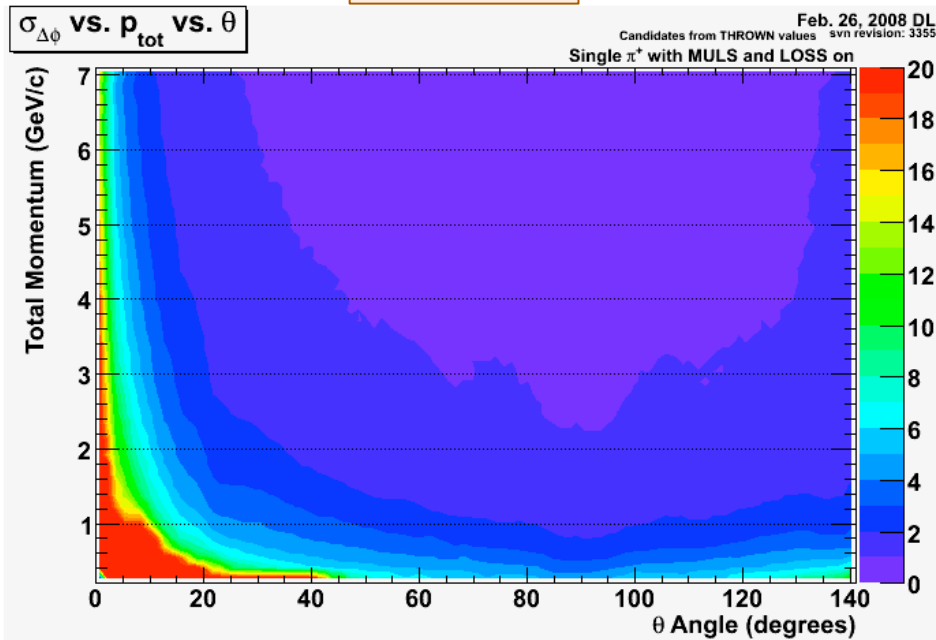# Relative, total momentum Resolution
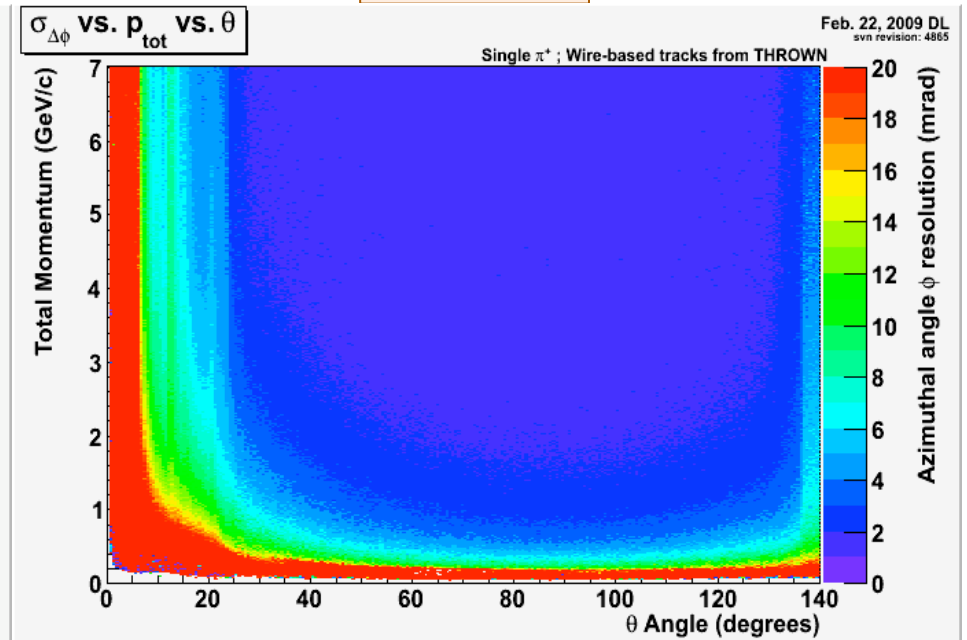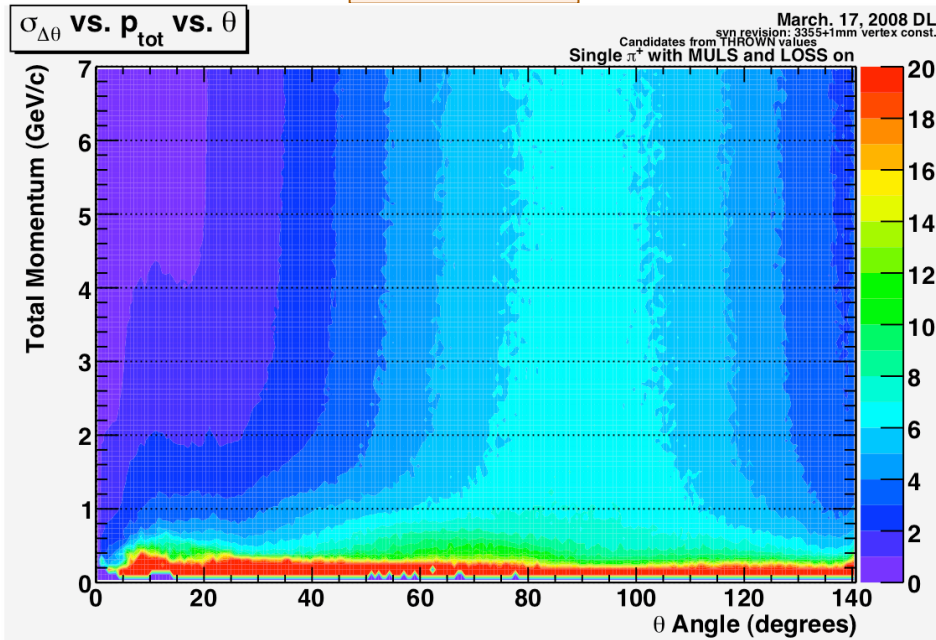
Feb. 2008

Feb. 2009
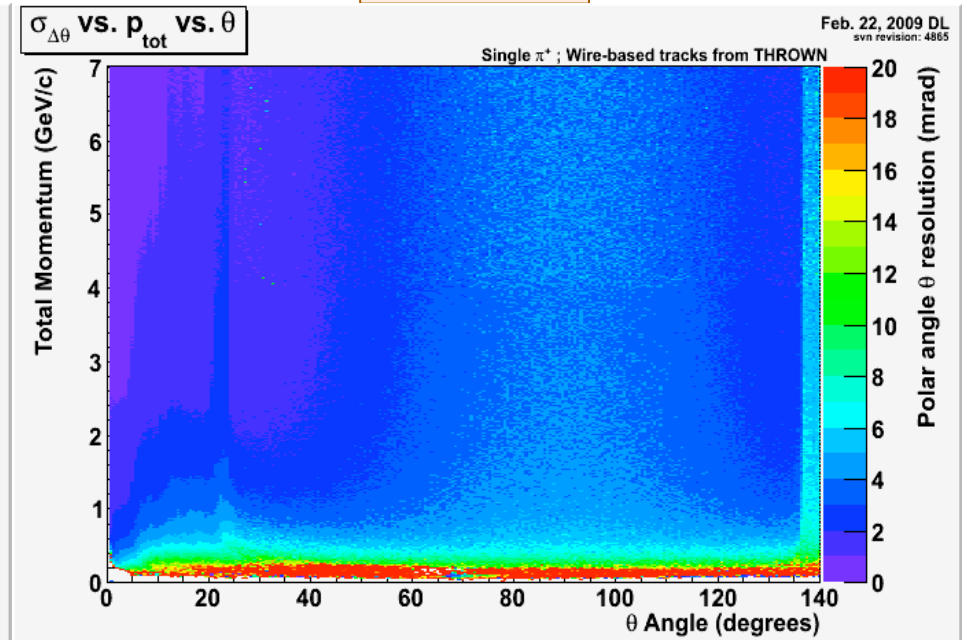
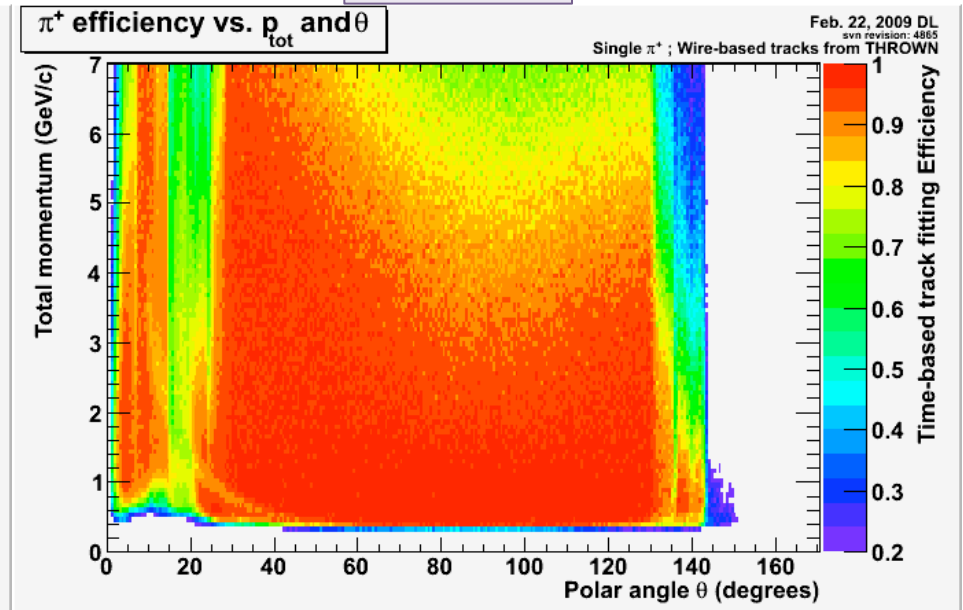# Azimuthal Angular resolution

Polar Angular Resolution

Feb. 2008

Feb. 2009

π^+,proton efficiencies

π^+
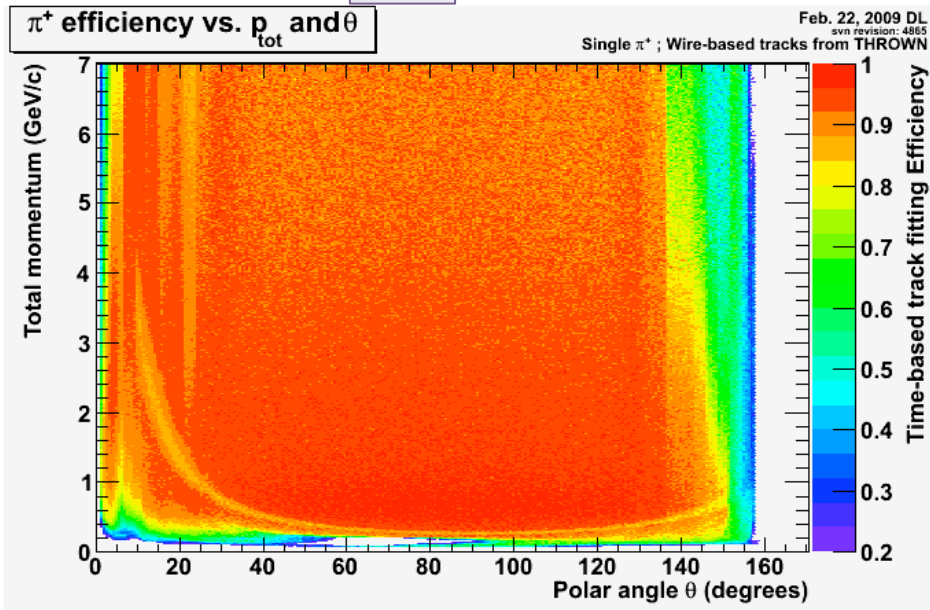
proton

π^+,proton Momentum Resolutions

π^+

proton

π^+, proton ϕ Resolutions

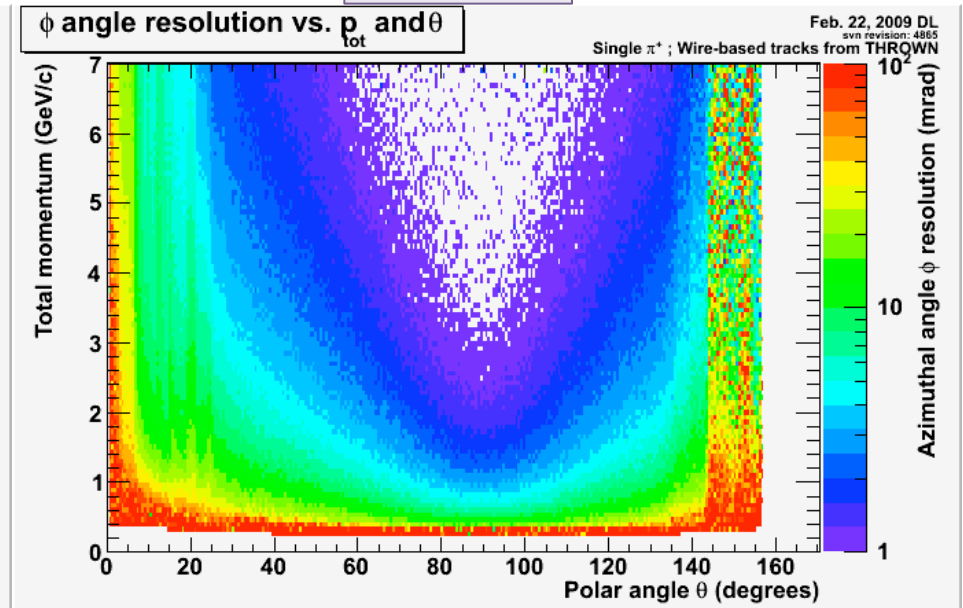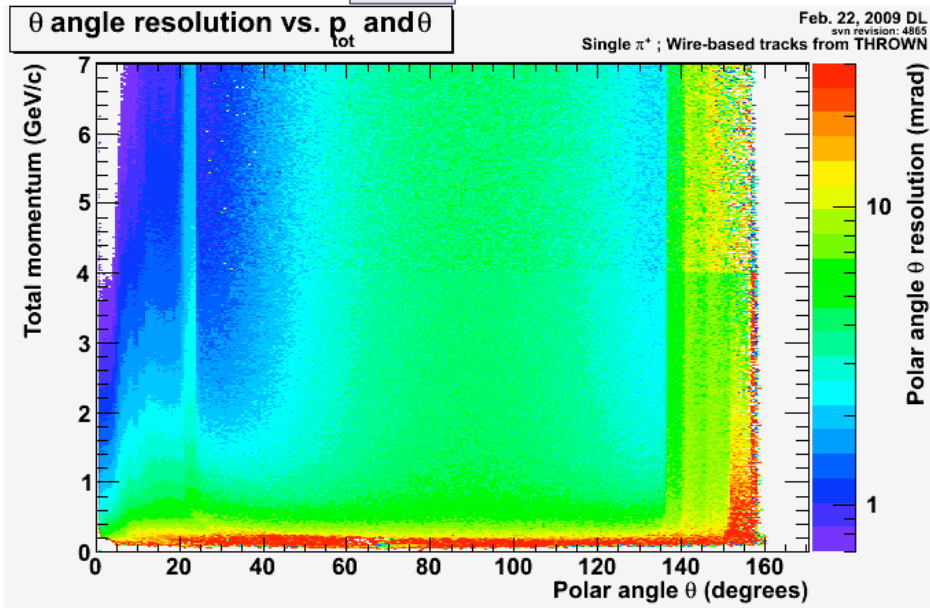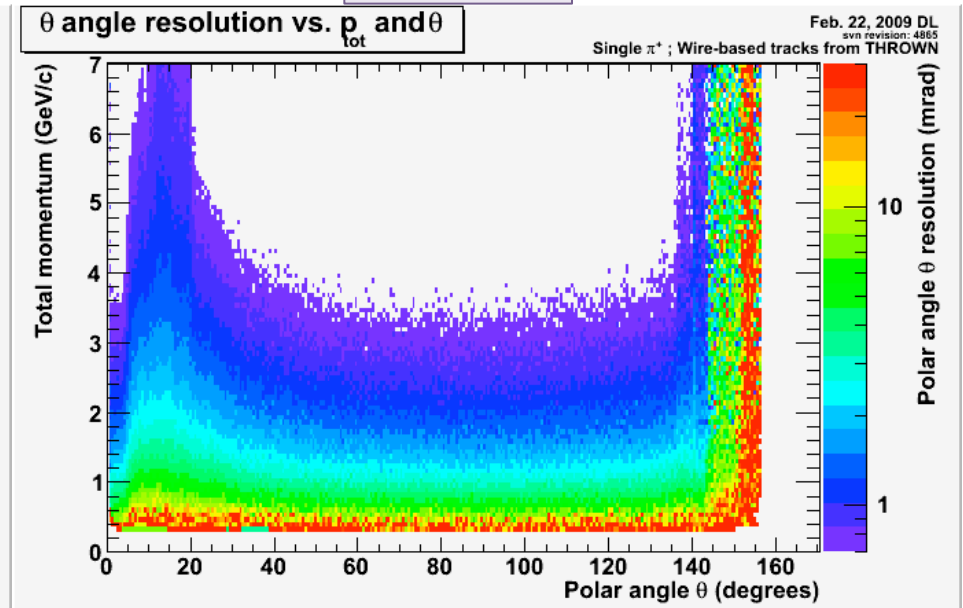*White areas are failed fits. These will be re-fit later with better binning*

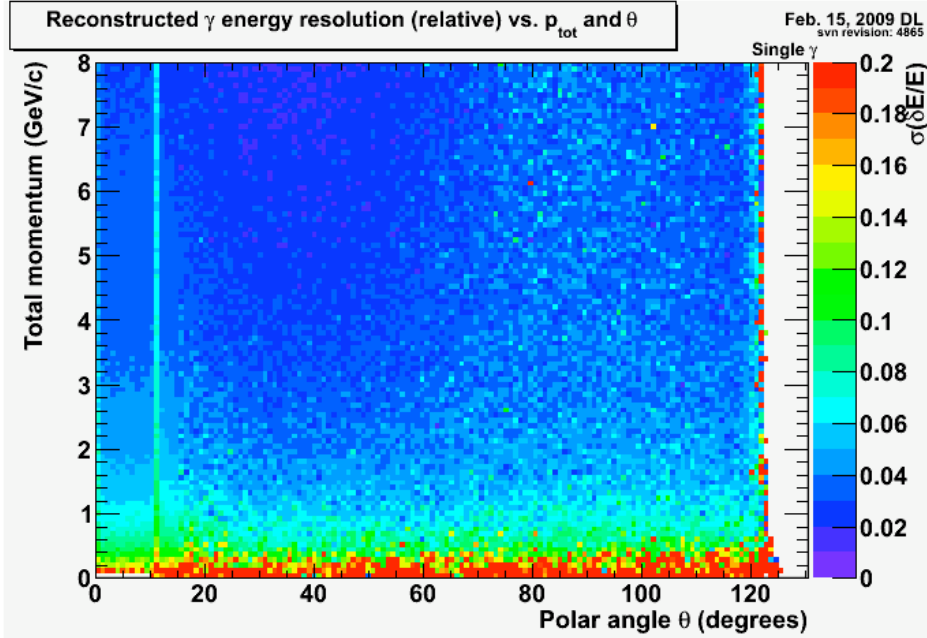# π^+, proton θ Resolutions

π^+
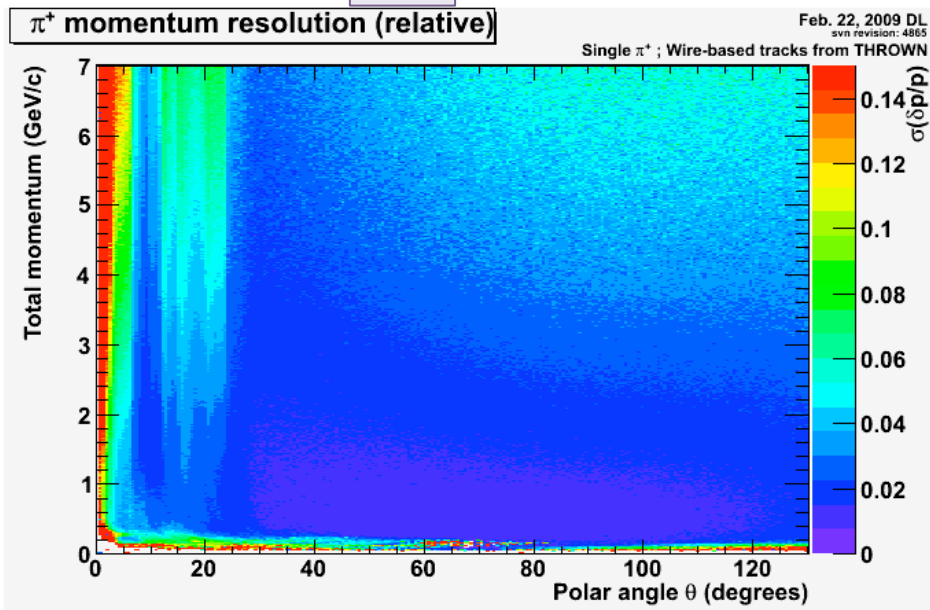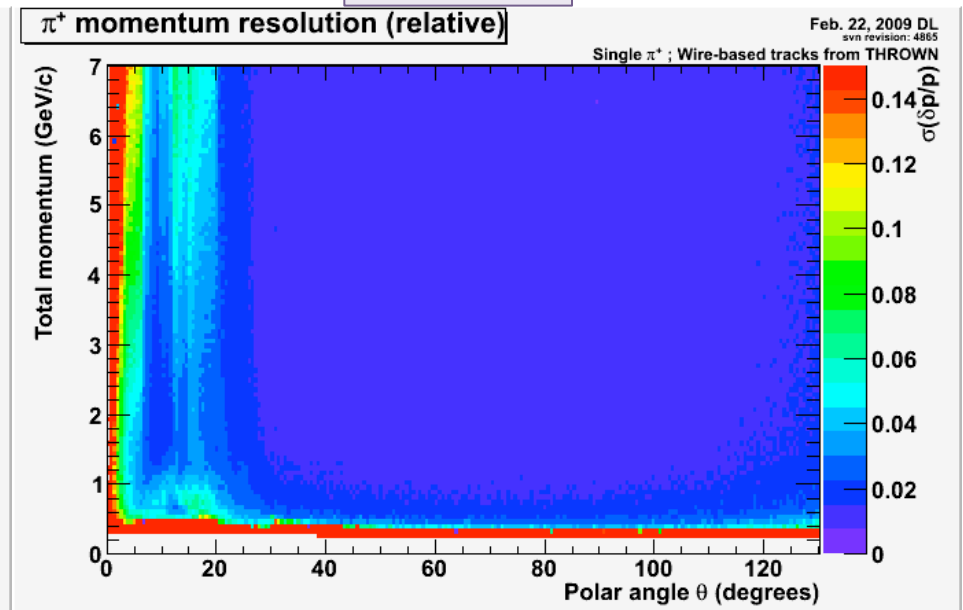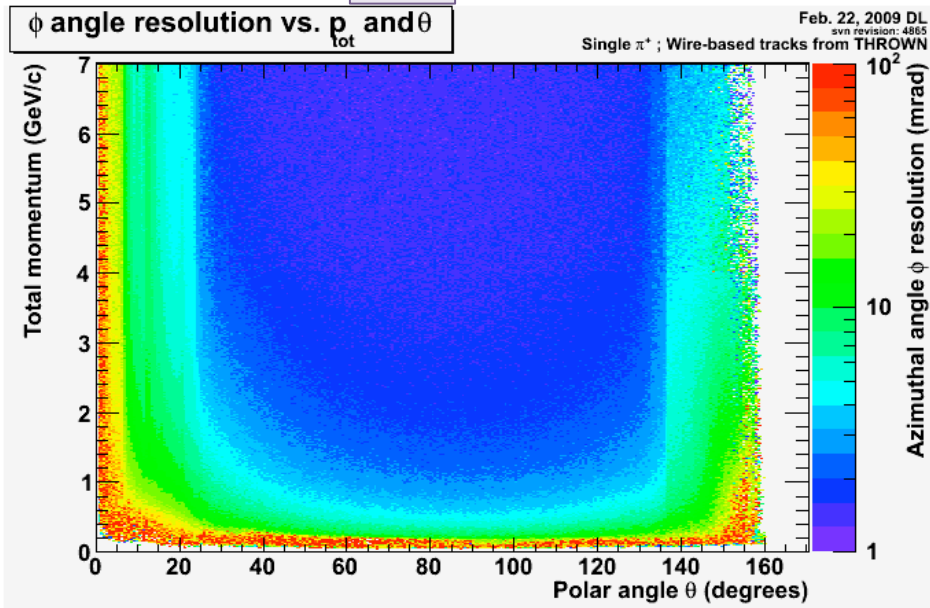
proton

White areas are failed fits. These will be re-fit later with better binning
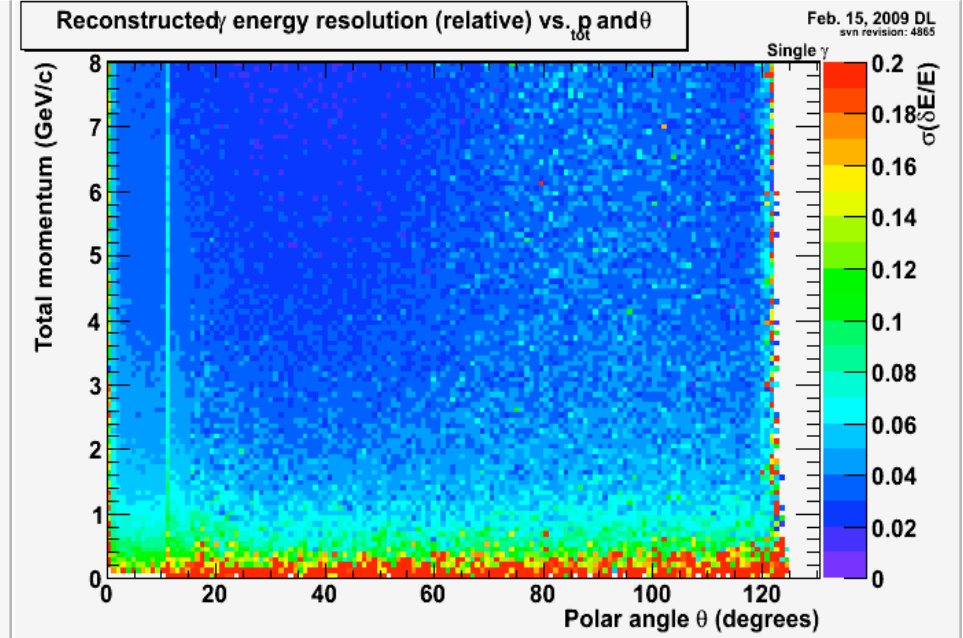
Reconstructed γ Energy Resolution

3.2M photons simulated
and reconstructed

100M photons parametrically
simulated using *hdgeant*
derived resolutions

hdgeant

hdparsim

γ Reconstruction Efficiency

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

hdgeant

hdparsim