Quick Look at Some Photon Pulls

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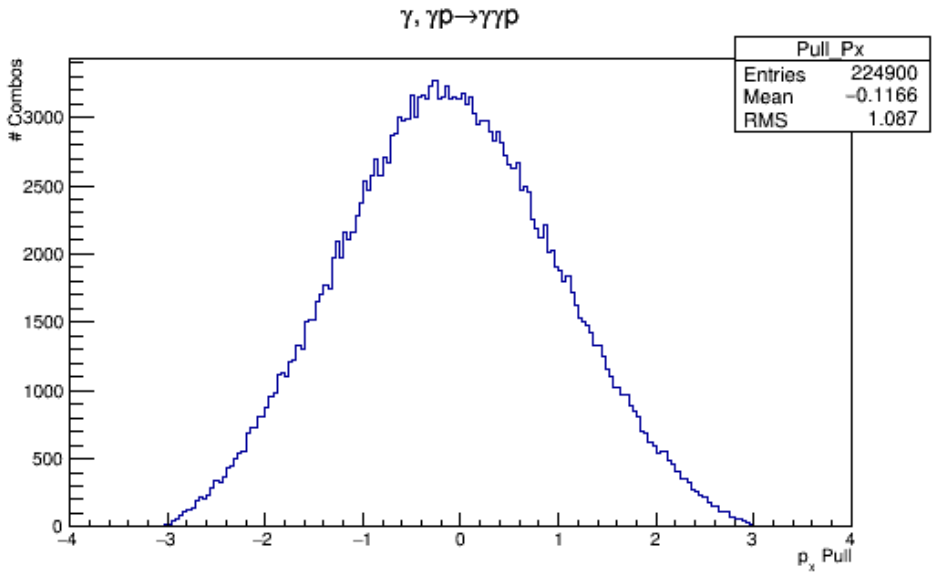
Recall

- Pulls should be gaussian distributed with a mean of 0 and RMS of 1
  - If mean ≠ 0: tends to shift measurements up/down on average
  - If RMS ≠ 1: variance-covariance might be off
- Has variance-covariance matrix been determined again for geant4?
  - I know it was updated in 2016, not sure if it has been re-examined since

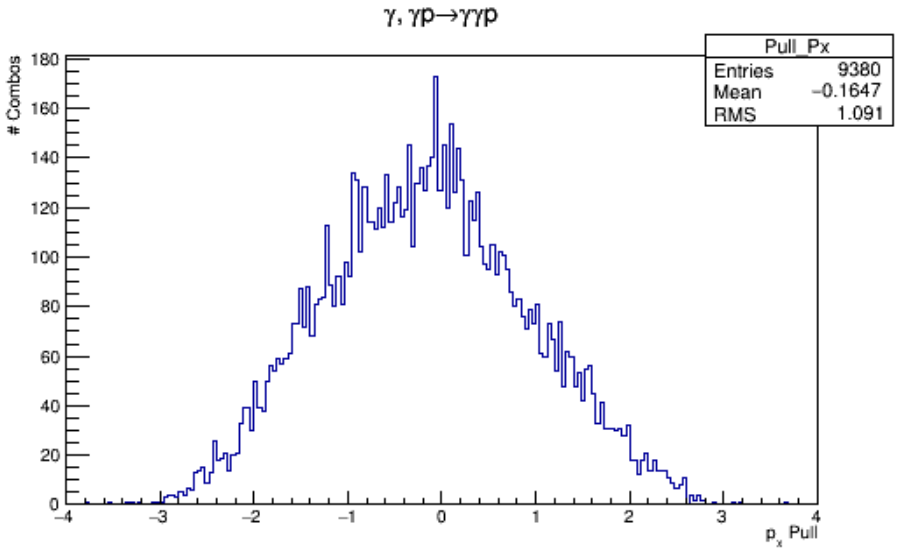
$\gamma p \rightarrow \gamma\gamma p$

- Pull of p_x

2017



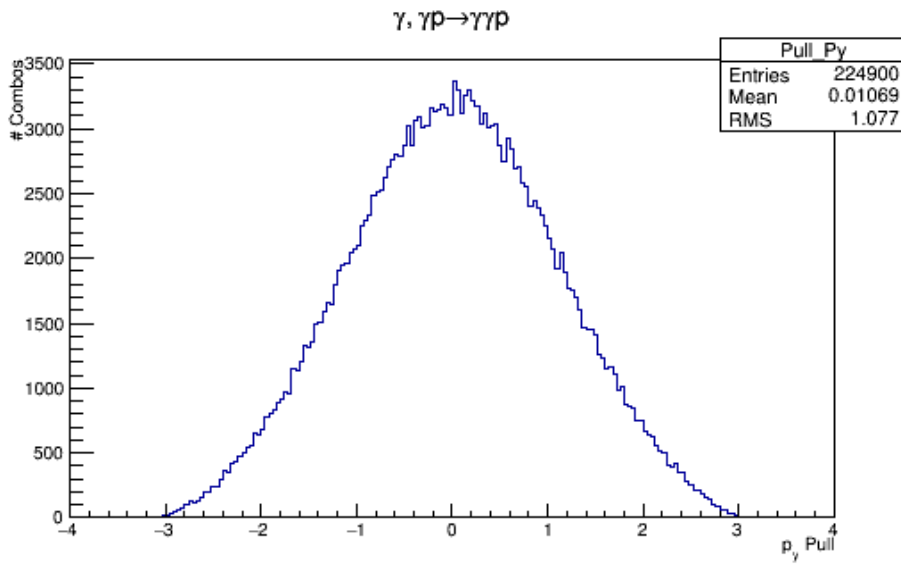
G4 bggen



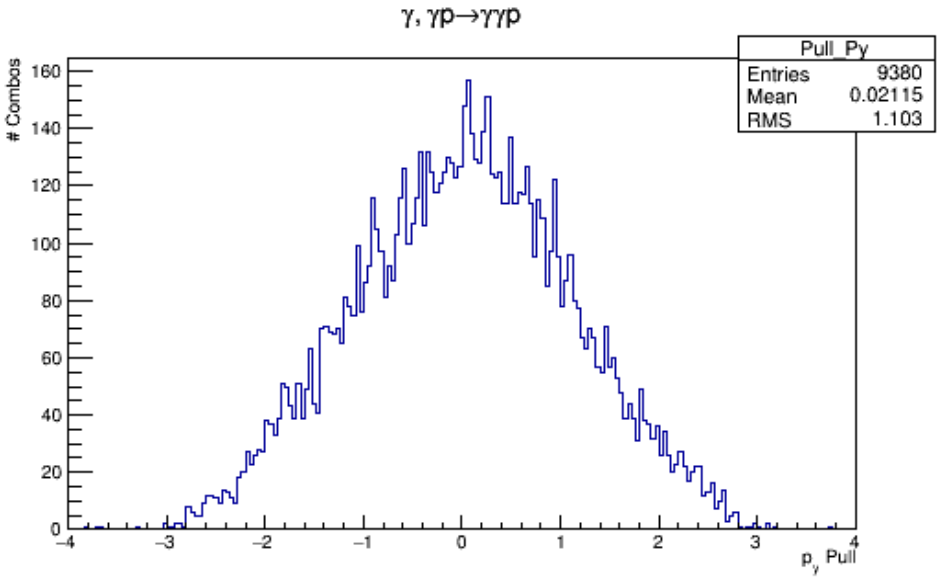
$\gamma p \rightarrow \gamma\gamma p$

- Pull of p_y

2017



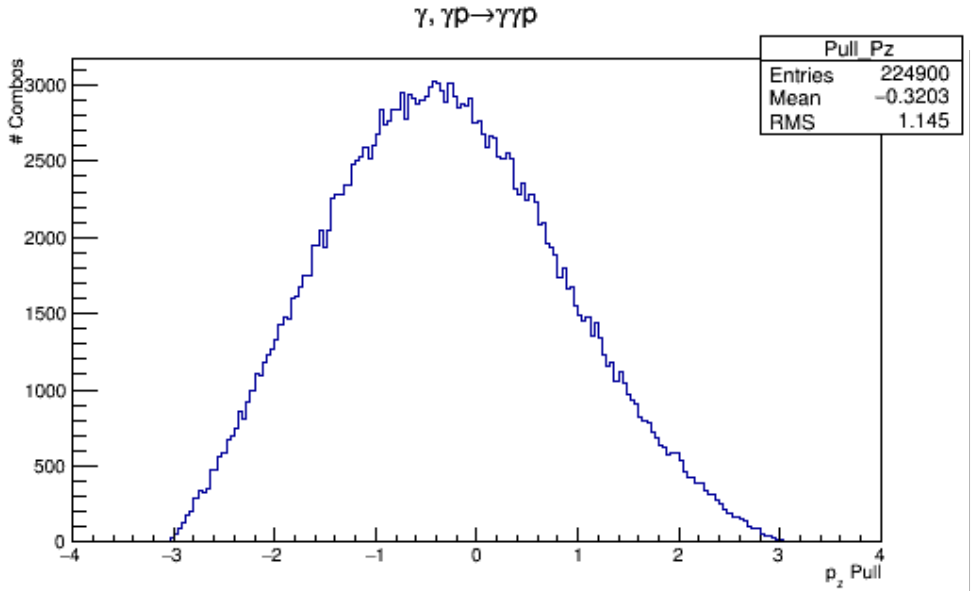
G4 bggen



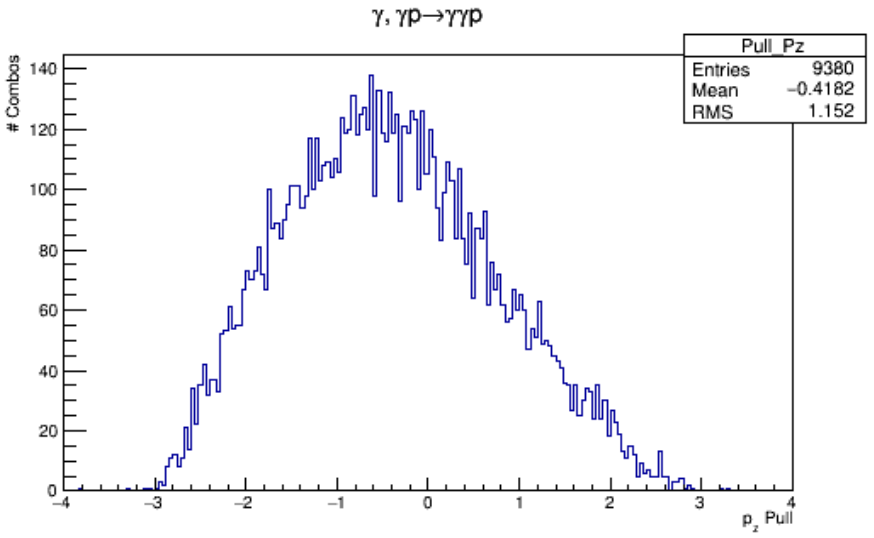
$\gamma p \rightarrow \gamma\gamma p$

- Pull of p_z

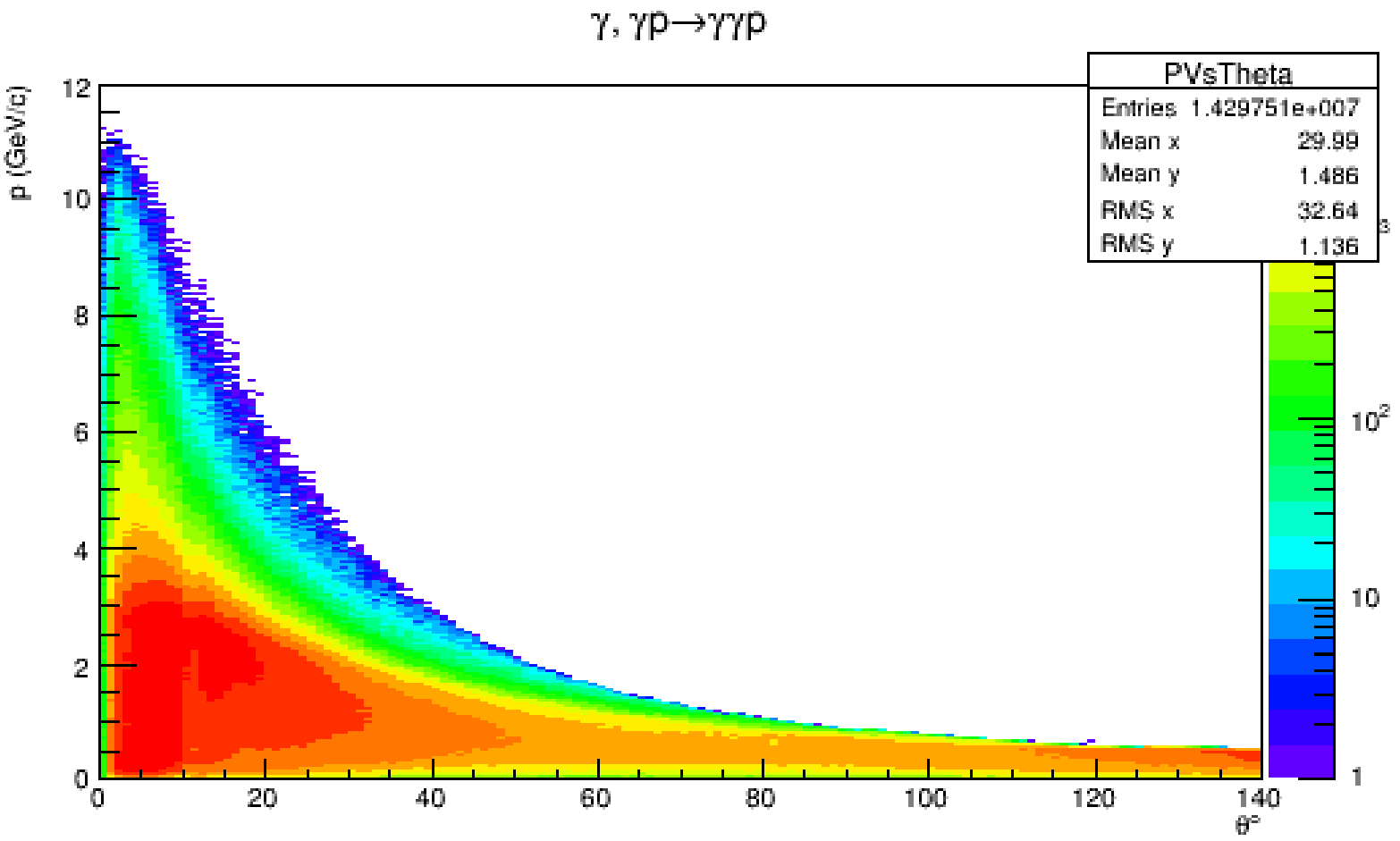
2017



G4 bggen



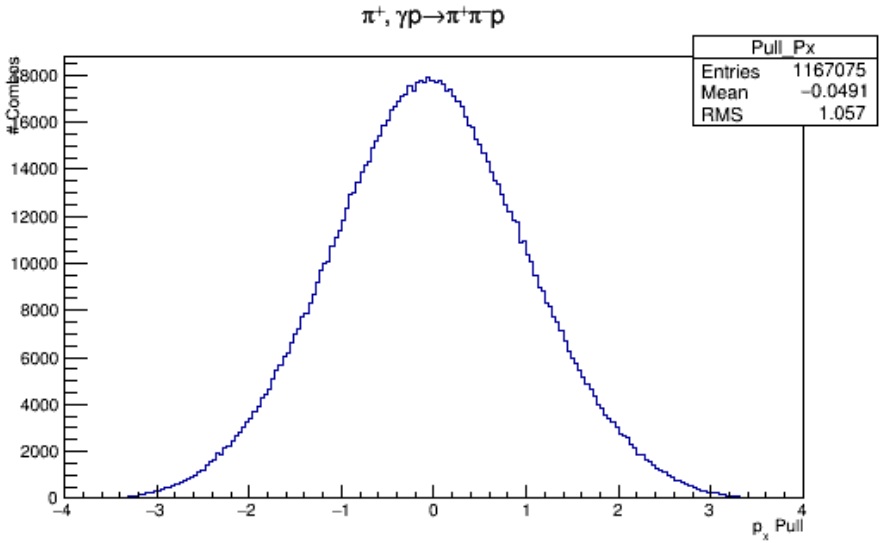
$\gamma p \rightarrow \gamma\gamma p$



$\gamma p \rightarrow \pi^+ \pi^- p$

- Pull of p_x

2017



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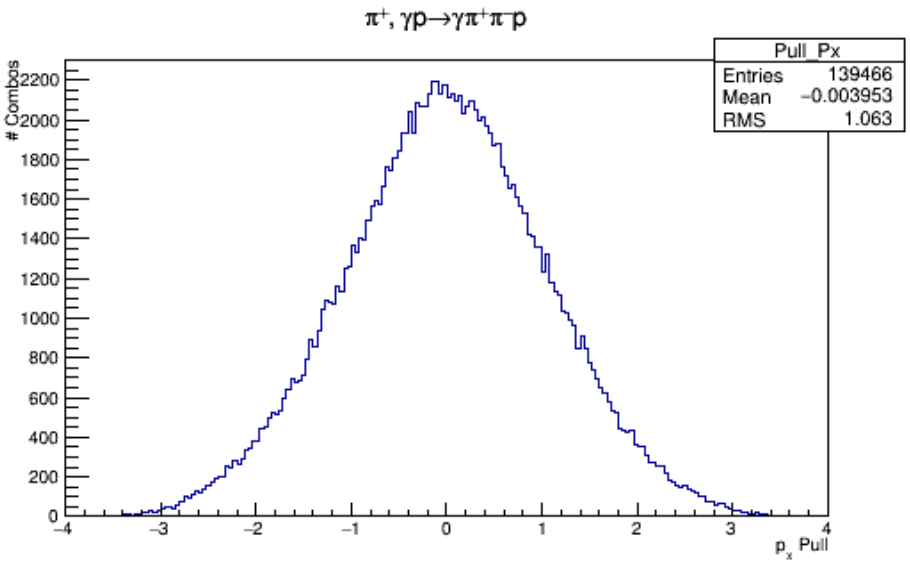
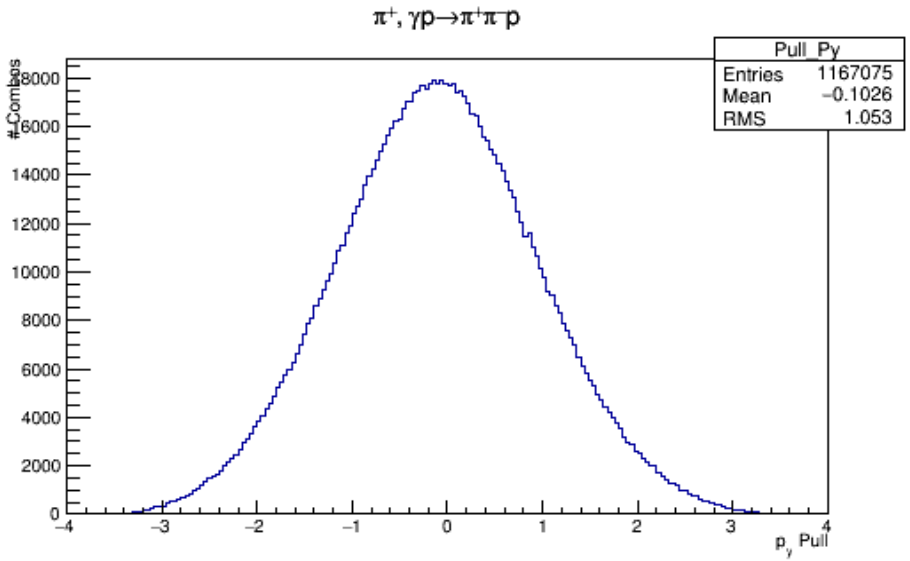


$\gamma p \rightarrow \pi^+ \pi^- p$

- Pull of p_y

2017



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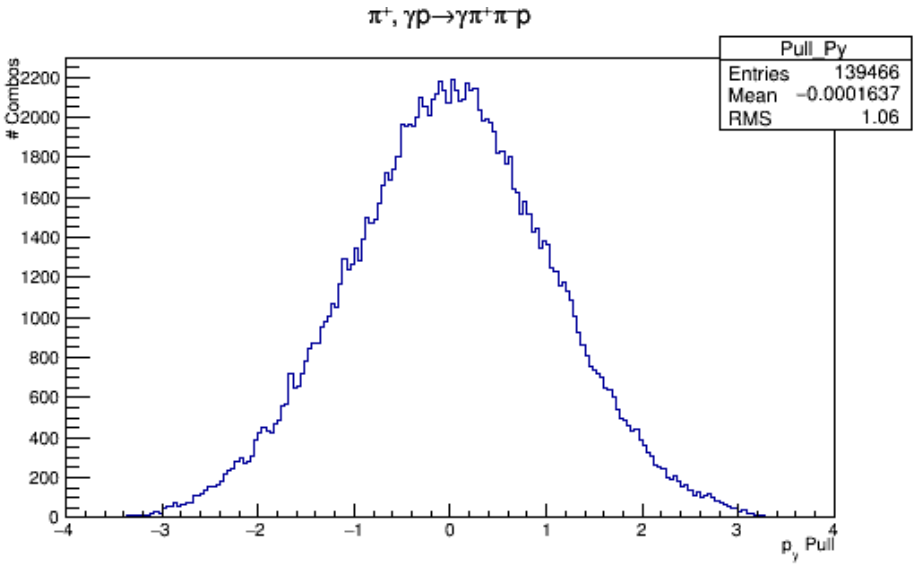
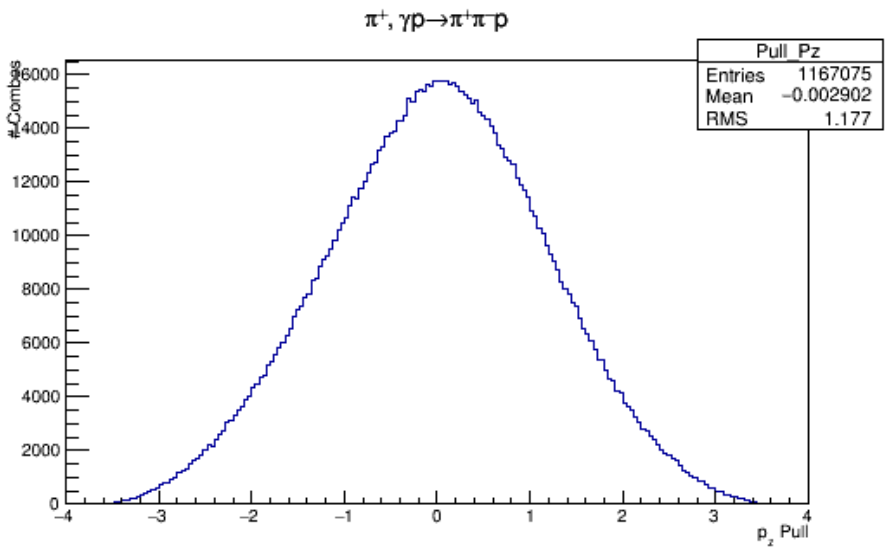


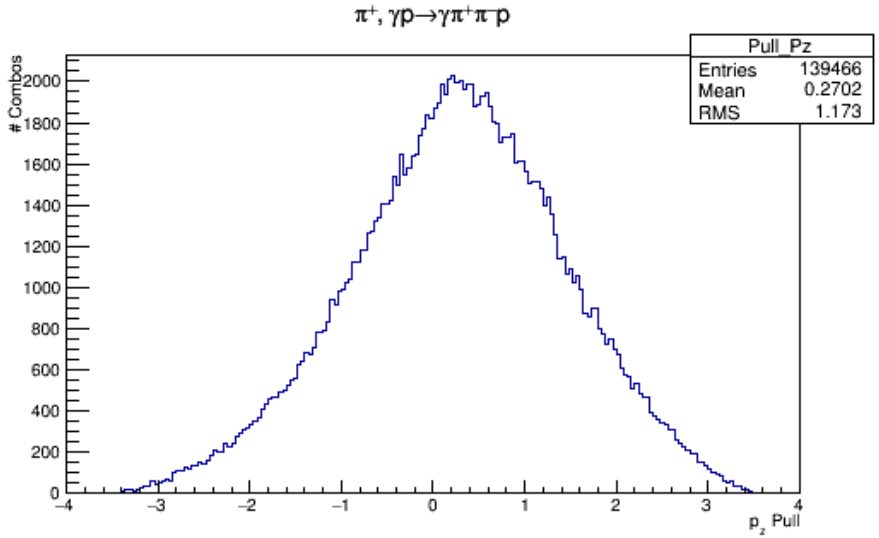
$\gamma p \rightarrow \pi^+ \pi^- p$

- Pull of p_z

2017



G4 bggen



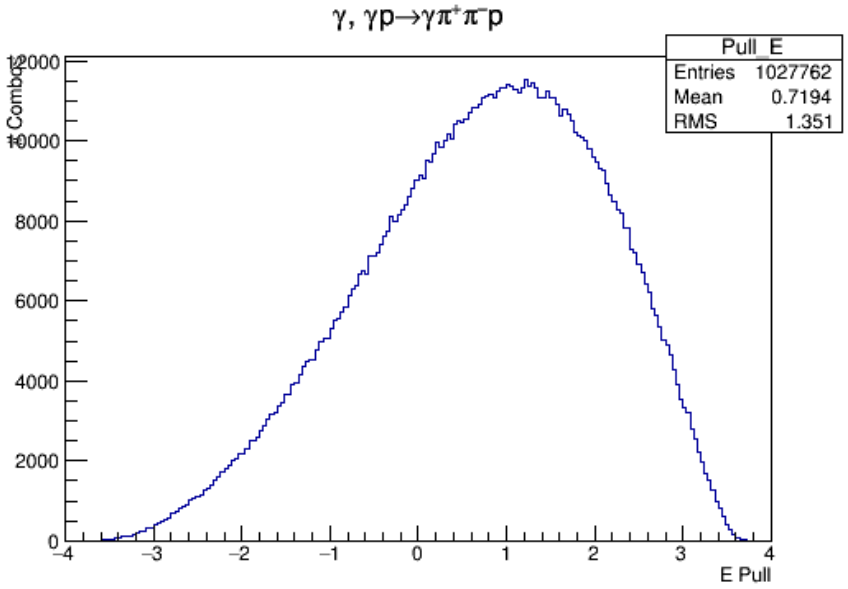
Backup:
A few more topologies I looked at

- $\pi^+\pi^-\pi^0, \gamma\pi^0, \pi^0\eta, \pi^0\eta', \pi^+\pi^-\eta, \pi^0\pi^0\eta,$ $\pi^+\pi^-\pi^0\pi^0, \gamma K^+\Lambda$
- All have similar general trends:
  - RMS generally high (1.1-1.3)
  - Px pull negative
  - Py pull close to 0
  - Pz pull more negative than Px
- $\gamma\pi^+\pi^-$ stands out
  - Probably dominated by $\gamma p \rightarrow \rho\, p$ misID

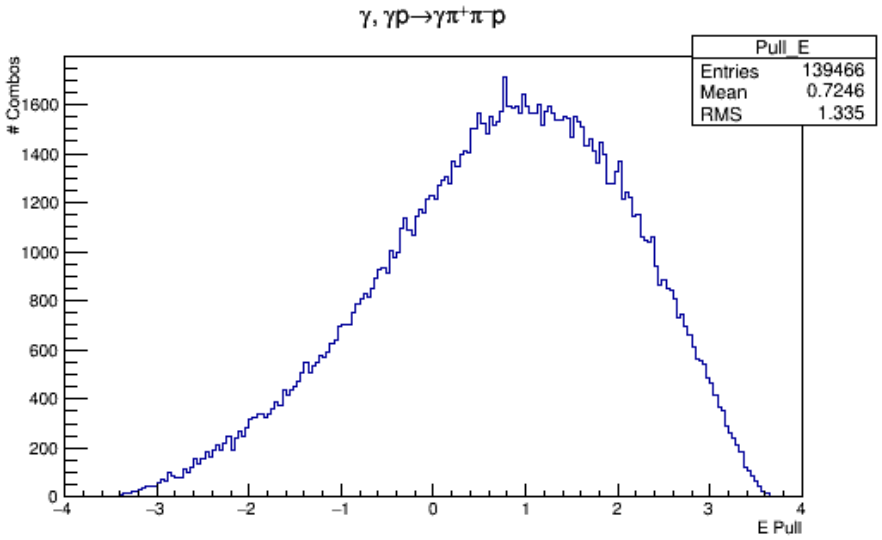
$\gamma p \rightarrow \gamma \pi^+ \pi^- p$

- Pull of E

2017



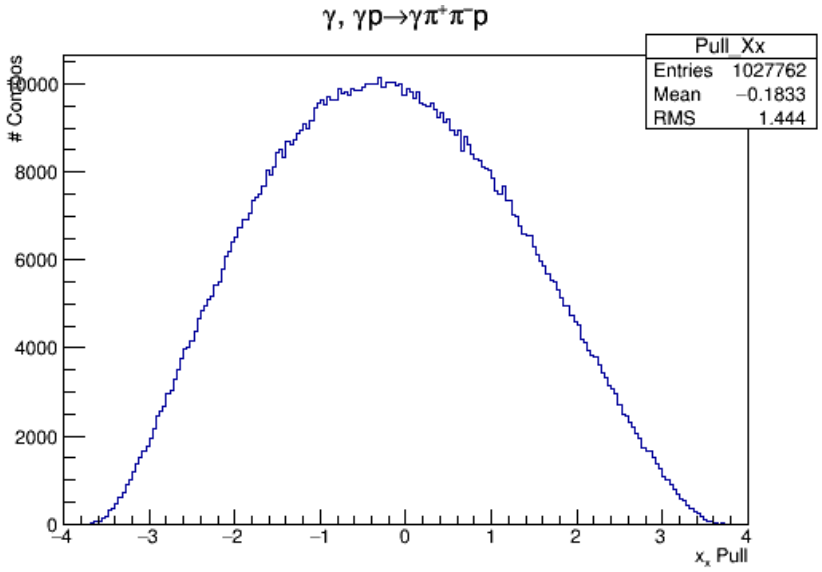
G4 bggen



$\gamma p \rightarrow \gamma \pi^+ \pi^- p$

- Pull of X_x

2017



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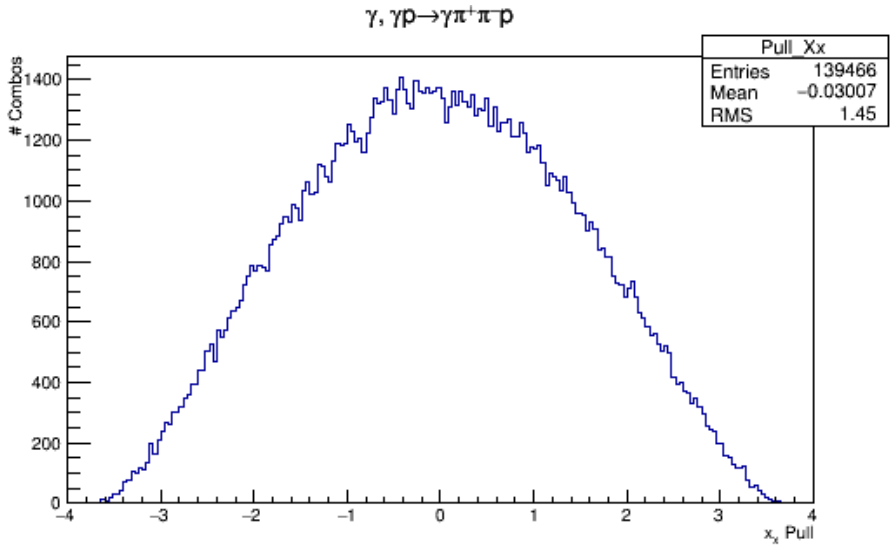
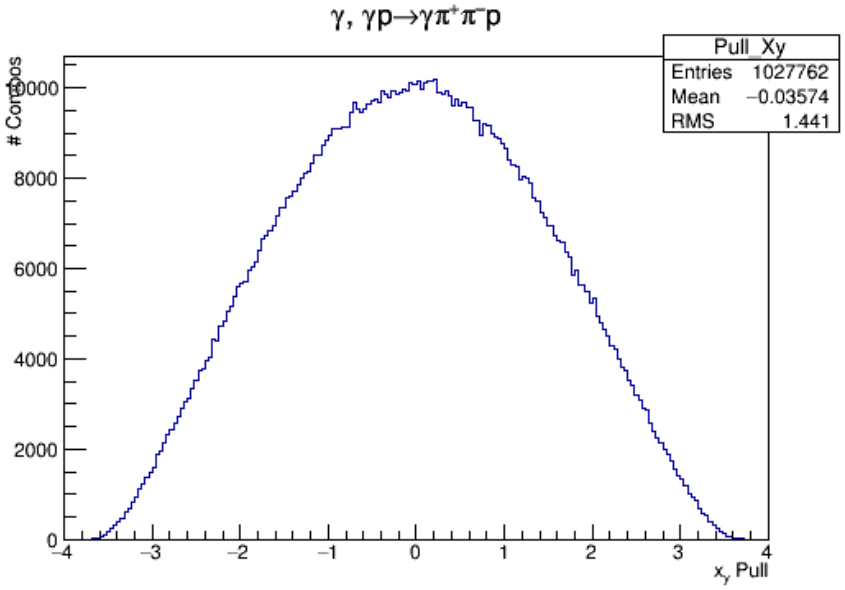


$\gamma p \rightarrow \gamma \pi^+ \pi^- p$

- Pull of X_y

2017



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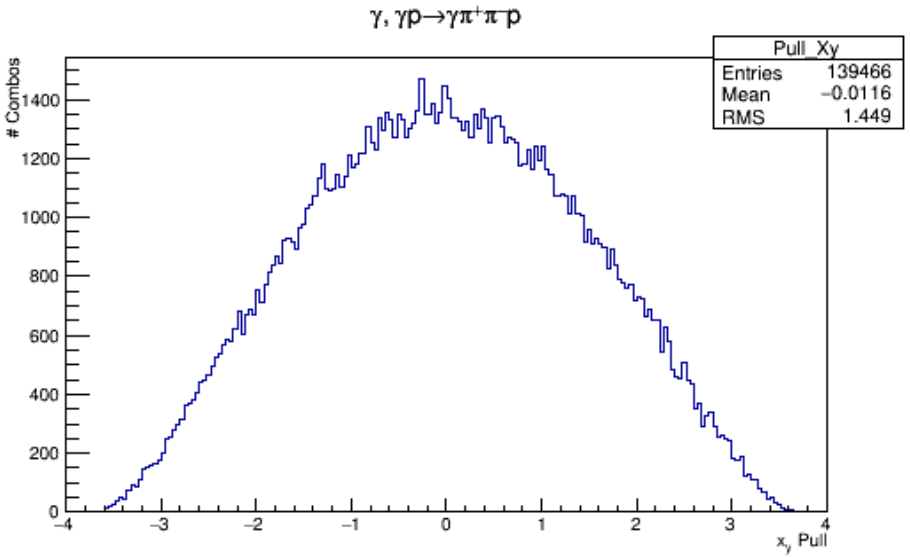
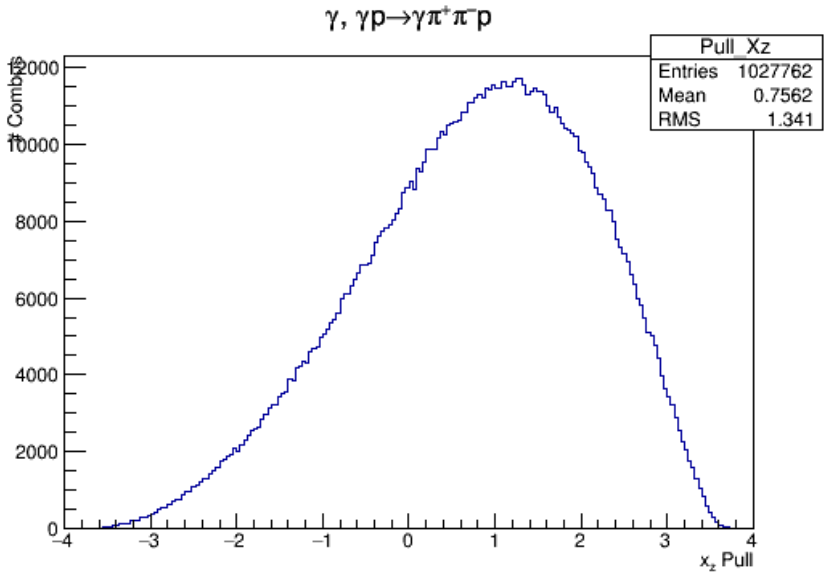


$\gamma p \rightarrow \gamma \pi^+ \pi^- p$

- Pull of X_z

2017



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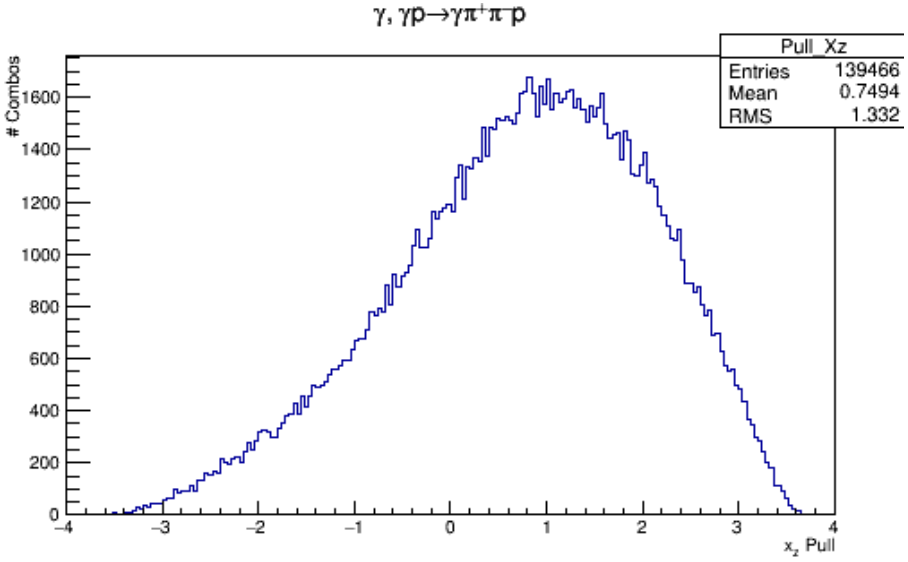
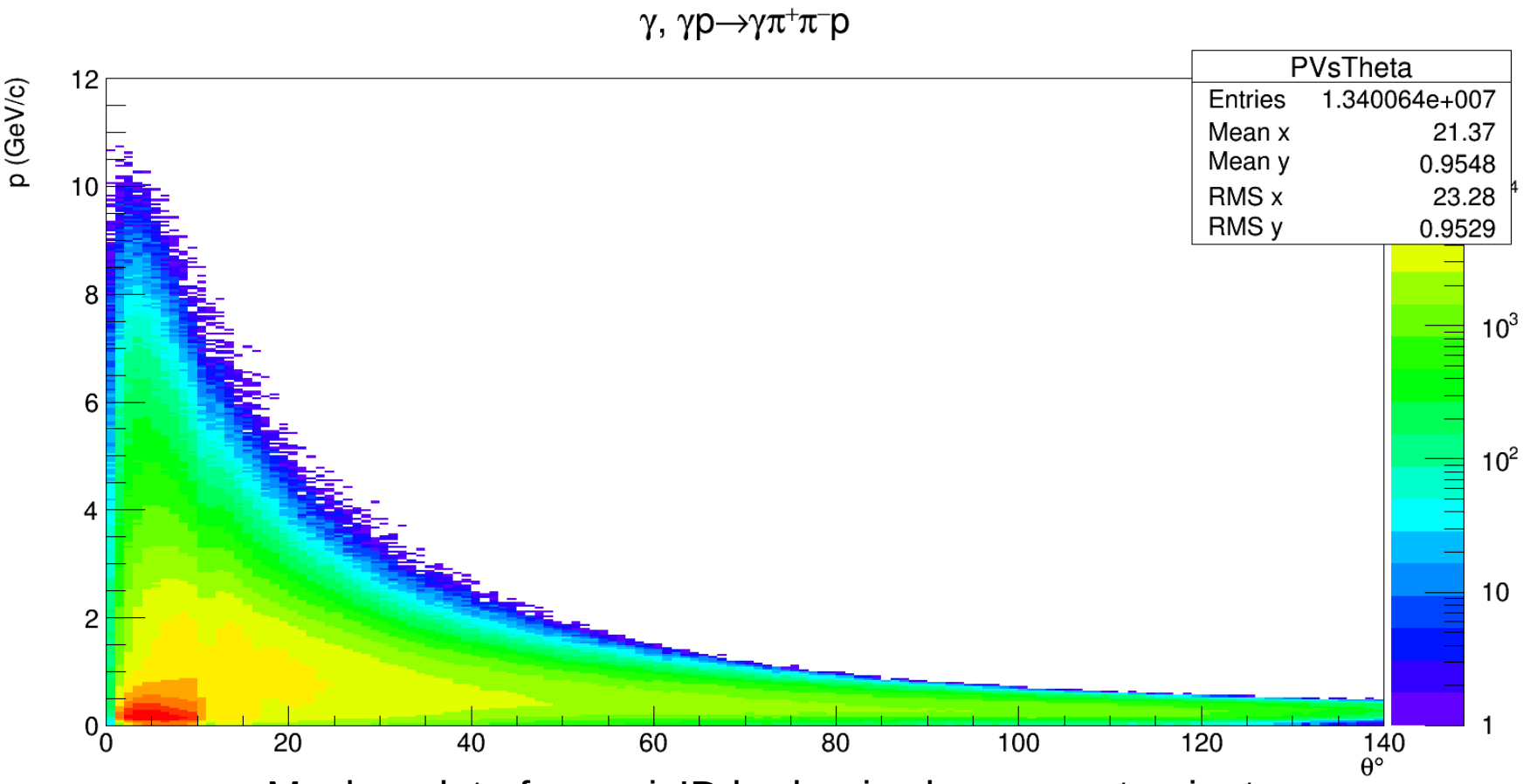


$\gamma p \rightarrow \gamma \pi^+ \pi^- p$



Maybe a lot of ρ + misID hadronic shower contaminates, despite CL > 0.05 cut