

# DVCS Run Report – 04/27-05/02

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## **Wednesday**

- Cryo maintenance induced faults in solenoid + torus but no CHL crash

## **Thursday**

- Planned 8hrs of beam studies. During this time, dc repairs and a camac crate was changed to solve the IC discriminators noise problem.

## **Friday**

- More DC repairs. Situation now is much nicer than before.

## **Saturday**

- Electrical maintenance on site induced problems with computer center. Nothing could be written to silo for a few hours. However, there was enough RAID disk to cope with it. Most of the time, we could not take data anyway.
- Solenoid liquid level drop again. Engineer on-call was able to recover the magnet.
- Injector laser (Hall A) laser lost lock. Injector group proposed to switch to Hall C laser, which they did. Beam was back for little time before accelerator had RF problems, followed by more laser issues. It turns out Gun 3 cannot accommodate C laser. Injector group changed to Gun 2 with B laser.

# DVCS Run Report – 04/27-05/02 (continued)

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## ☐ **Saturday (cont.)**

- Situation now is stable with Gun 2 and B laser. However, Matt Poelker could not assure us the right pockels cell was used. Therefore, helicity may not be flipped. Since we could not do a Moller run or a Mott measurement (those should not happen on weekends), the answer will have to wait for the next Moller run (either today or Tuesday right before beam studies).
- Reasonable beam and stable data taking started again at 11pm that day.

## ☐ **Sunday**

- A few issues with RF separator cost us some time.
- Pi0 runs taken: 47117 and 47118. It has been a while so it might be worth analyzing them as soon as possible.
- Smooth running otherwise.

# DVCS Run Report – 05/02-05/05 (continued)

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## □ Monday-Tuesday

- Moller run is clearly needed to evaluate the situation. This can happen either today or tomorrow before beam studies.
- Laser runs during beam studies.
- The obvious question which will come: do we require to switch back to Gun 3 once they have investigated and hopefully solved the problem with the laser.
- As much as possible production data.

# Analysis of $ep \rightarrow ep\gamma$ , by FX Girod

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## Analysis of one long DVCS production run #46646

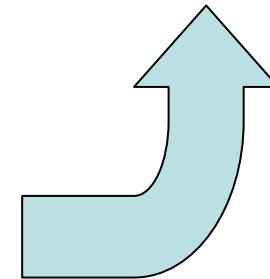
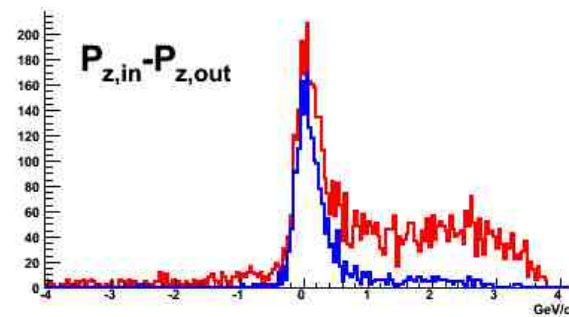
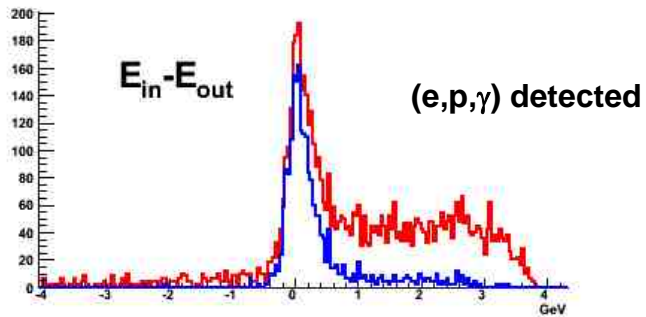
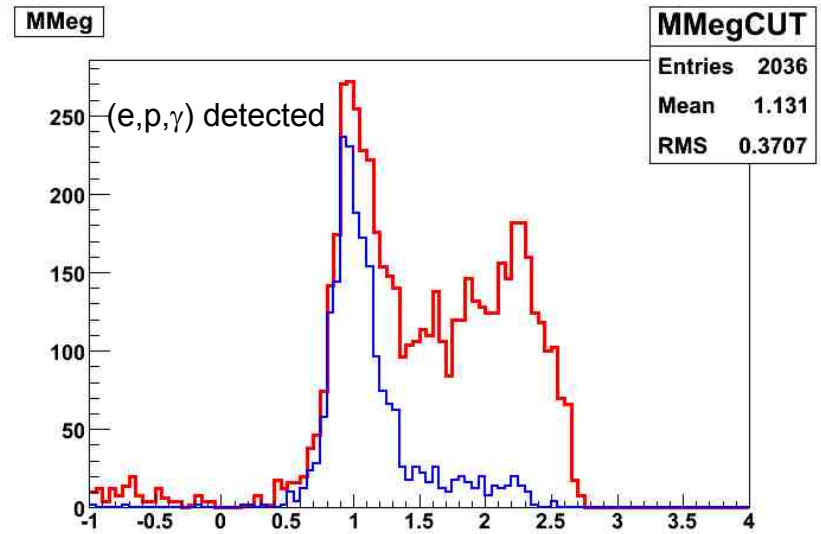
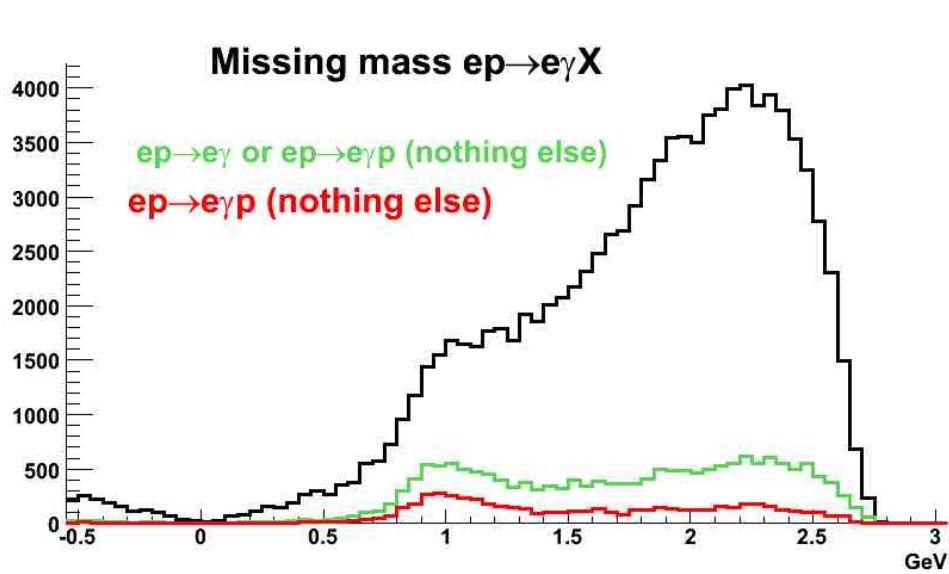
Back-of-the-envelope estimation of the width in this missing mass is about 70 MeV (dominated by resolution in electron momentum  $\sim 1.5\%$ ).

The following cuts were performed in order to identify the electron in CLAS and the photon in IC :

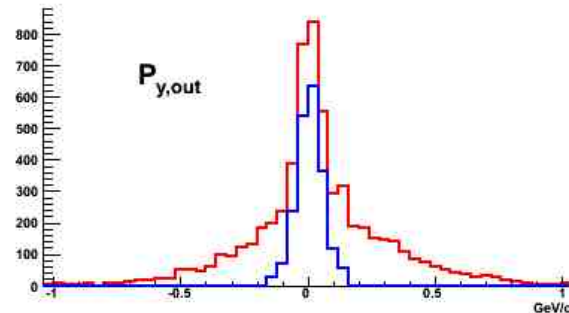
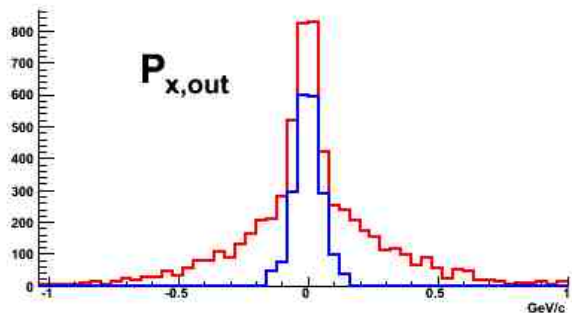
**Electron** : First track, id=11, time-based tracking (stat >0),  $0.2 < ec\_tot/p < 0.35$ ,  $ec\_in > 60\text{MeV}$ , nphe in CC > 2.5, cut on vertex,  $p > 1 \text{ GeV}/c^2$

**Photon** : only one cluster in IC above 500 MeV within the fiducial cuts. This cluster is later constrained to be above 1 GeV (so there is really no other cluster above 500 MeV, but the selected photon is above 1 GeV.)

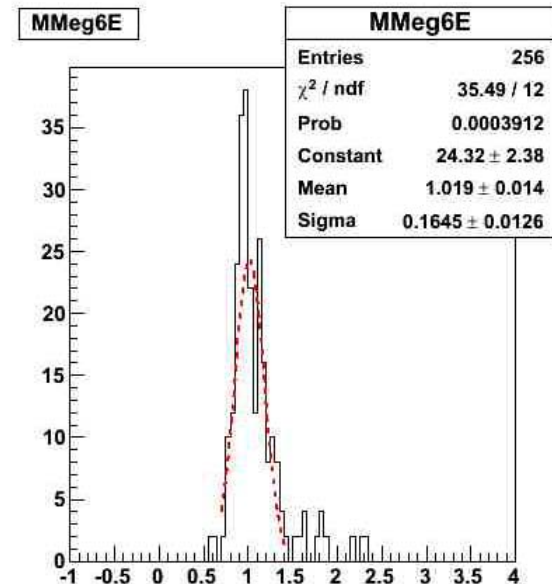
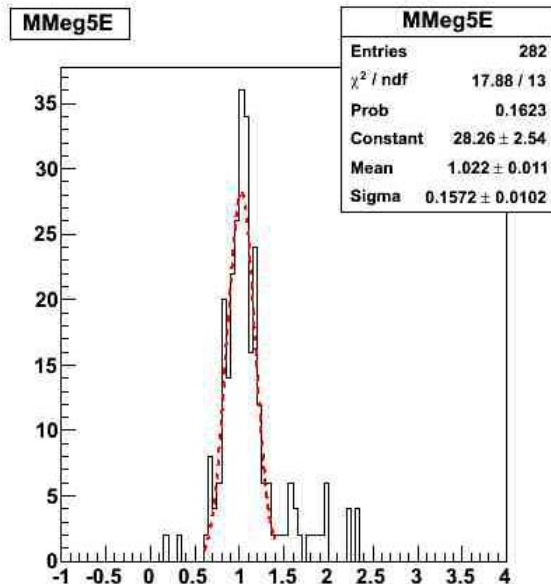
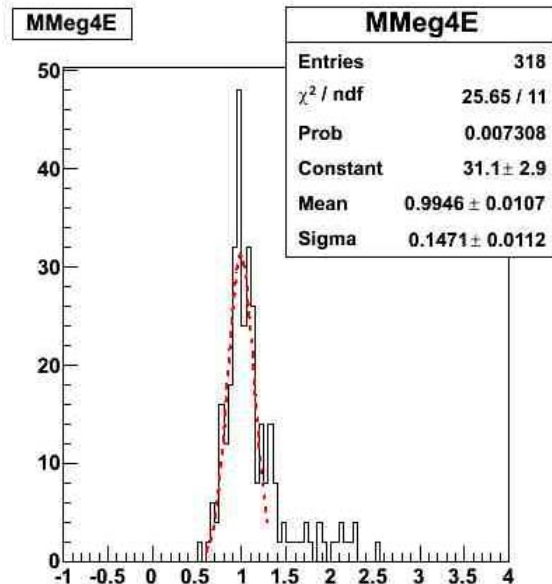
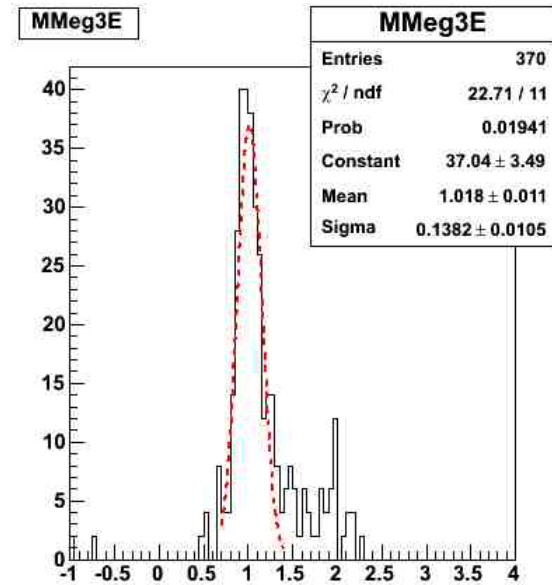
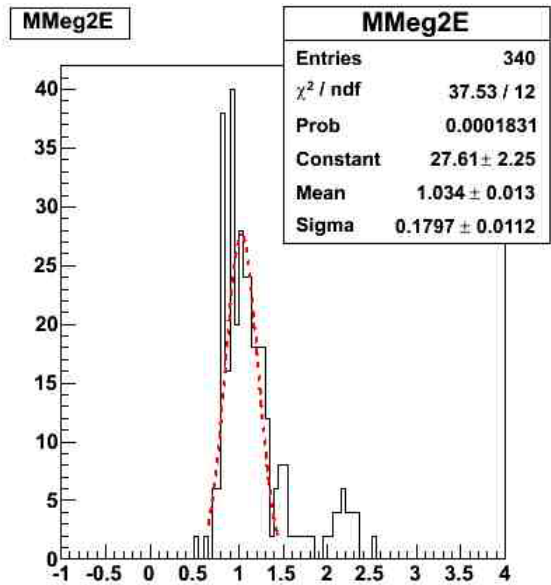
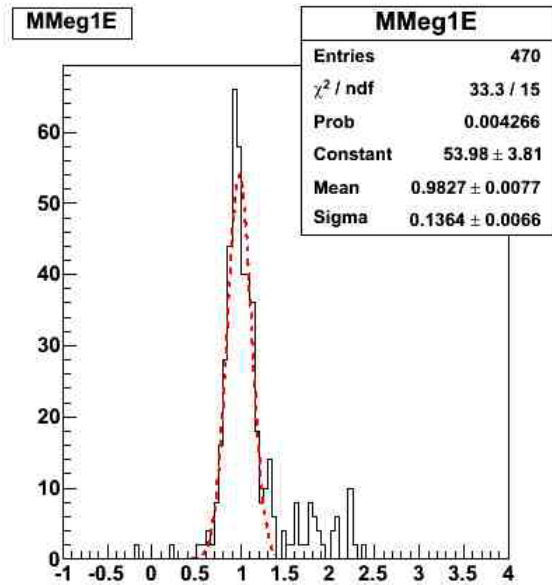
# Analysis of $ep \rightarrow ep\gamma$ (cont.)



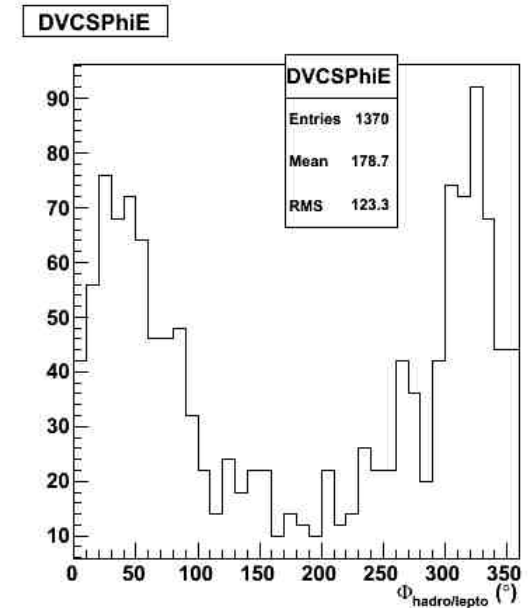
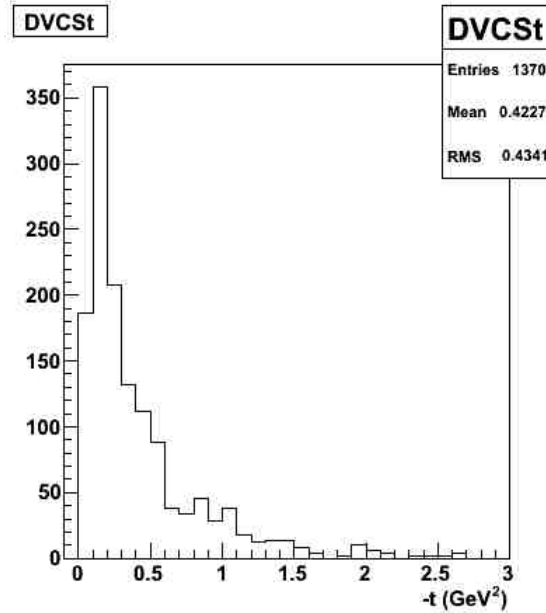
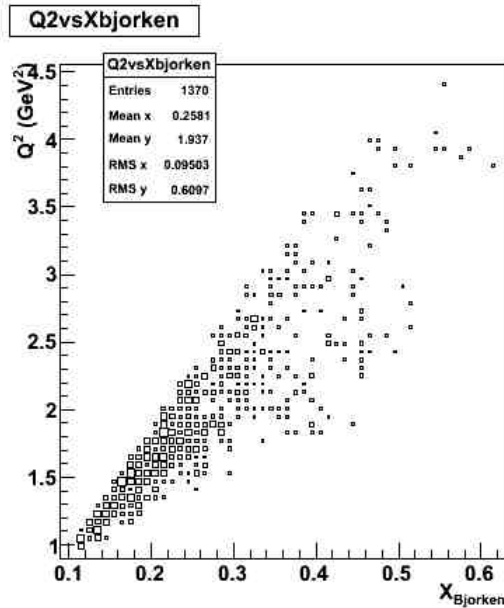
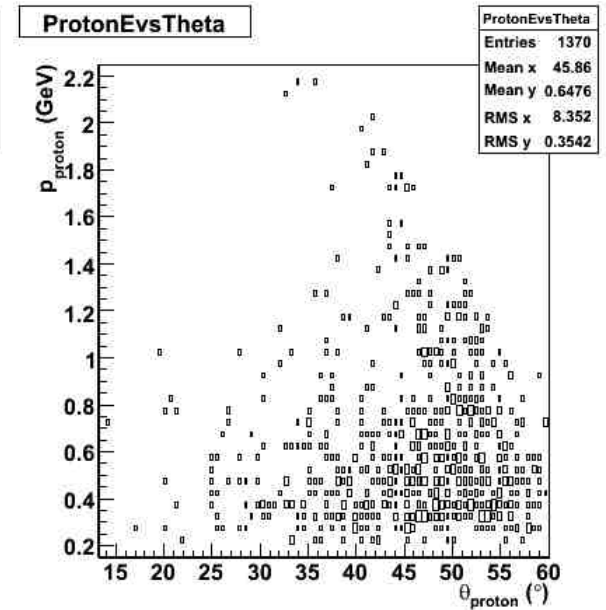
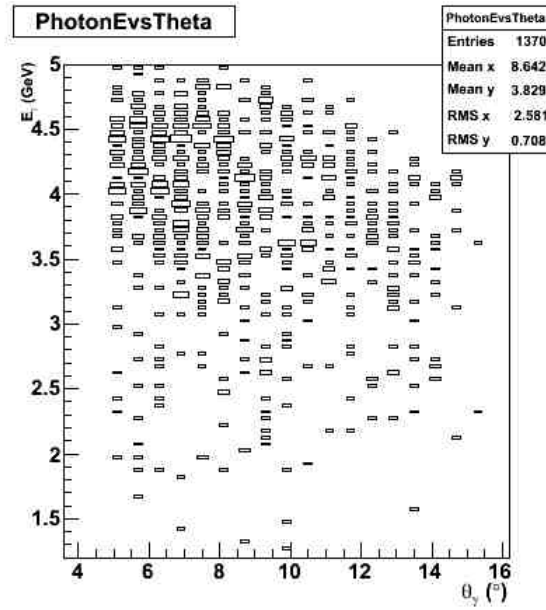
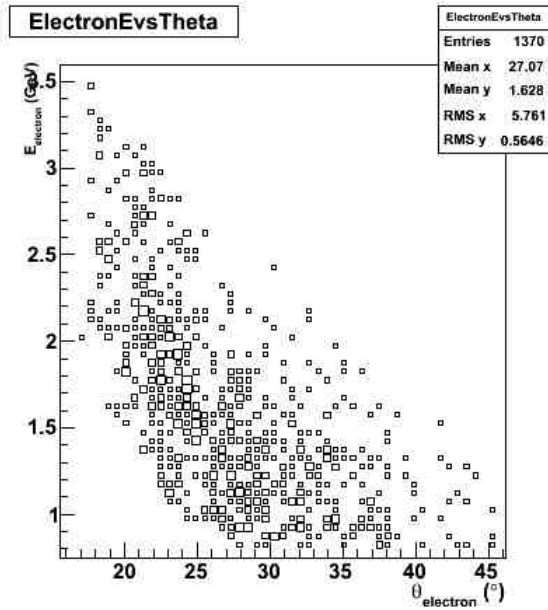
Px and Py compensate to 150MeV



# Analysis of $ep \rightarrow ep\gamma$ (cont.)

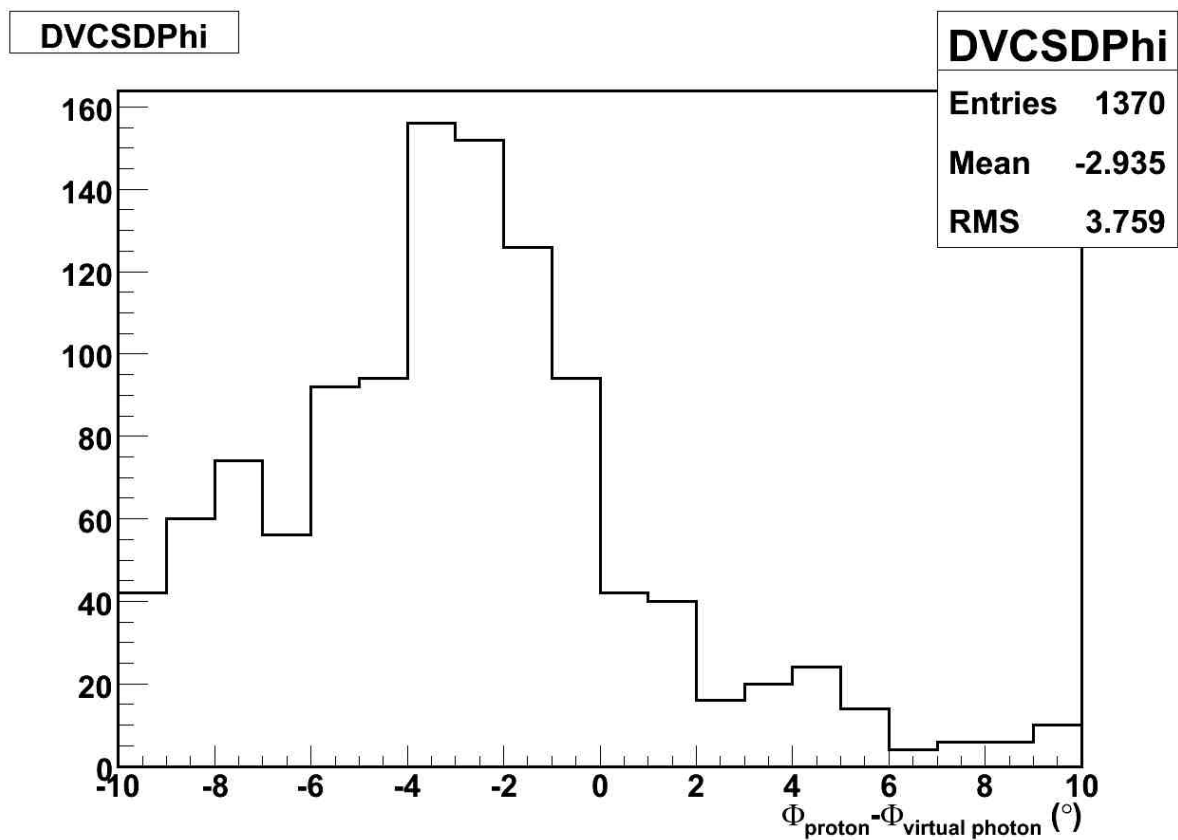


# Analysis of $ep \rightarrow ep\gamma$ (cont.)



# Analysis of $ep \rightarrow ep\gamma$ (cont.)

2 ways to calculate  $\phi$ : using  $(\gamma^*, \gamma)$  and  $(\gamma, p)$



Another hint of reconstruction issue (for the proton most likely)