RESPONSE TO COMMITTEE COMMENTS USING ORIGINAL TEMPLATE AUGUST 16, 2010

REVIEW OF THE CLAS-ANALYSIS 2007-117

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Normalization study of the EG3 data using the Δ^{++} reaction channel. Analysis note 2009-106

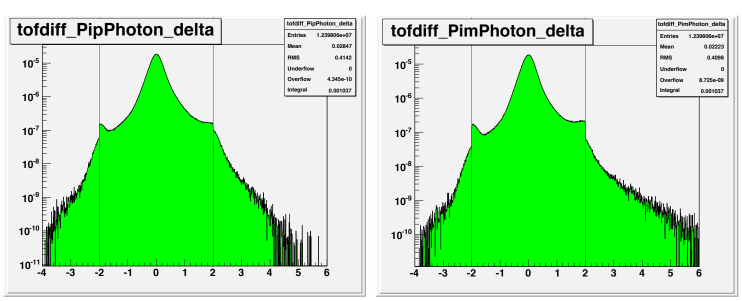
(1) Page 1. Line 5 from bottom. radiator thickness is 5x10^{-4} R.L.
- The text has been corrected.

(2) Page 9. Line 10. Misprint enrgy. energy
- The text has been corrected.

(3) Figure 5. What is right bottom plot? Could you please make a log scale? Your generator uses the constant independent on beam energy t-slope. Is it really the case? Usually the t-slope changes with beam energy. It may affect the acceptance calculations.
- The bottom right plot in Figure 5 shows the accepted corrected yield calculated from the other 3 plots in the histogram. We have studied the effect of the t-slope being independent of the beam energy and presented our best results of the t-slope. We are also consistent with G11 so any errors will cancel, where we are not expecting much error so it is not a 1st order effect.

(4) Figure 7. What is the left plot at this picture?
- This plot shows the maximum vertex timing between the final state particles. The maximum vertex time between any of the final state particles is 2ns.

(5) Figure 8. I don't see 2 ns structure on this plot. It is not clear from the text how did you get it?
- The 2ns structure is not visible in the linear scale plots. Therefore I show here the logarithmic scale plots, in which the peaks at 2ns for the vertex and photon time difference become visible (π^+ with tagger (left), π^- with tagger (right) plotted from measured data.



(6) Figure 9. What is your definition of vertex time?
- Figure 9 corresponds to the left plot in Figure 7. In Figure 7 I show the maximum vertex timing cut between the final state particles at 2ns, so in Figure 9 I display the maximum vertex time between the final state particles to show the time between each pair of final state particles and the red line indicates the 2ns cut that was done at the skim level.

(7) Figure 11. The fit looks very strange. Did you really use the fit parameters to extract the acceptance? I am not sure that you need to fit this distribution at all. Just take the number of the events in the histogram, and that's all.
- The generator arbitrarily decides where to cut the Breit-Wigner on the delta mass, so the cut is at least one full width. I have taken the fits out of the histogram because we played with the fits but did not actually use them. We simply took the bins under the curve to extract the yield to calculate the acceptance.

(8) Figure 12. You state that the flux uncertainty is not more that 2%. The bottom plot shows however that the flux is so irregular that it is hard to believe that the accuracy is really 2%. Look for example to the region EID=0-100, or peak in the region EID=180 or so. What is it? Can you prove that you measure the photon flux with 2% accuracy? Weighted with the photon flux yield of your events may help to resolve this question.
- Figure 13 in the analyis note shows the normalized gflux entries versus the ecounter bins. We used this study of the gflux normalized events to obtain the trigger correction factor. But it also serves to answer this question. The normalized events are flat in terms of the E-counters which shows little flux uncertainty, but our focus is not to prove the 2% uncertainty quoted in the gflux package but rather to show consistency in the normalization applied. We have removed the 2% reference from the analysis note to not bring unnecessary focus to it.

(9) There is big difference between figure 15 and figure 16 for the data with trigger bit 5. In figure 15 with 4 tracks and 3 sector events there is no drop in the normalized yield. The distribution is almost flat. I found no reasonable explanation for this phenomena.
- In Figure 16, since trigger bit 5 is current independent, it is used as an extrapolation point at zero current for the trigger bit 6 current dependency. If you only require 2 sectors, your efficiency will be high (2 out of 4). But if you require 3 sectors, then you lower the efficiency (3 out of 4), thus we assume the Trigger bit 5 (2 sectors requirement) to be 100% efficiency and we correct trigger bit 6 (3 sector requirement) to trigger bit 5.

(10) Δ^{++} **cross section**: the g11 group used the following corrections in the data analysis:
- Rate dependence for the 3 prongs events - 19%
- Multiple hits in the tagger - 18%
- Trigger inefficiency - 15%
- 2 ns tagger cut - 6%

Do you have multiple hits corrections (2 or more tagger hits in the time window +/- 2 ns)?

Do you have 2 ns tagger cut correction in your analysis? 6% of good events have tagger-CLAS time difference more than 2 ns.

For G11 data analysis, we took into account "Trigger inefficiency" already. We clarified two addtional corrections and implemented into this analysis.
(1) 2ns tagger cut correction for G11 5GeV data set shows $\sim$ 6% which is consistent

with INFN group.
(2) Multiple hits in the tagger under 2ns cut has $\sim 15\%$ over all G11 5GeV data set.
For EG3 data analysis, we clarified the multiple hits correction and implemented into the analysis.

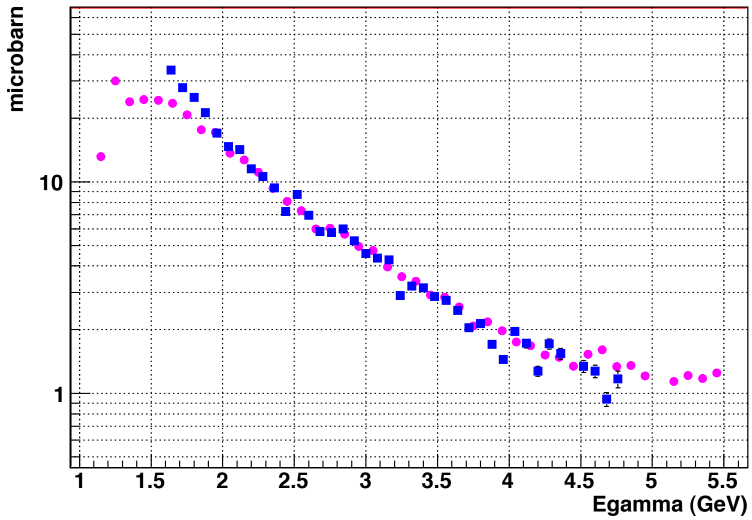


FIGURE 1. EG3 data (•), G11 data (■) total cross section comparisons of the Δ^{++} between 2 GeV and 5 GeV taking into account multi-hit corrections.