Hello Moskov et al.,

Hello Reinhard

I have looked over your draft CLAS paper "Photoproduction of pi0 on

Hydrogen using e+e-(g) detection mode with CLAS" undated, but posted

around 11-20-2017. I understand that the target journal is Physical

Review Letters.

Correct

I hardly know where to begin in making comments on this paper because

it is in such rough shape. That is, the style and structure of the

paper are poor, there are an enormous number of inconsistencies and

mistakes in the presentation, and most problematic: you have no

substantial physics case to make. All these things may be fixable,

but in its present state my judgement is that you have zero chance of

getting this into PRL. Frankly, I am shocked that the Ad Hoc

committee agreed to let this draft go out to the CLAS Collaboration.

Well, since I was raised to start a conversation with something positive, I would have to say that maybe next time we can request you on our committee.

I will give you a sampling of comments that can be made about the

paper, but there are many more things that will not be mentioned.

Prior to your scathing review, we have already undergone a series of changes per request of other collaboration members, therefore it might be that some of the requests below have already been addressed.

Title: BAD! It does not state clearly what the physics result(s) of

the paper are. Who would want to read this paper, especially in PRL?

You must make a strong case. How about "Elementary photoproduction of

pi0 at high energy and high t"? The fact that you used Dalitz decays

is incidental to the measurement results. But even my suggested title

is weak because it has no punch. What IS the main conclusion of your

work?

Your suggestion WORSE! We feel that your proposed title does not represent our paper very well.  In fact, Dalitz analysis with almost zero background is an unique analysis and nobody used it before.  g12 allows us to cover both resonance and high energy range.

Abstract: It does not make a strong case for your work. The last

sentence is a hint of why your work is interesting, but the

"quadruple" detail is much less important. You have a weird notation

here and elsewhere where you write "\gamma p \to p e+ e- X(\gamma)";

the "X" conveys nothing and ought to be removed. The following

sentence to that phrase is entirely redundant.

We are afraid to say that we disagreed - that is a piece of physics which new g12 data allow to get.

The paper begs for some additional structuring, apart from some

reorganization. I suggest section headings:

line 7: remove "Abstract"

line 9: insert "Introduction"

line 122: insert "CLAS Measurement"

line 227: insert "Results"

line 281: insert "Summary"

We cannot see a reasons to do any of this.

The first page of the present draft is of interest only to people who

know the field very well. To get a paper into PRL you ought to have a

more general introduction that everyone can at least partly

understand.

We made some changes following Volker's and Dan's request already.

By the end of the first column of the paper the reader should

understand WHAT you did, and WHY it advances the field. You can

outline Regge vs. counting rules vs. handbag models, but the details

ought to go later, after you have presented your results. The

detailed discussion can then be made in light of your new results.

The present organization leaves the reader with little mooring to your

(eventual) scientific message.

We are thinking that all is in the text already.  Or please be more specific.

line 124, 129: your notation for the cross section is idiosyncratic.

Why write "(t)s". This is unnecessarily obscure. Just say

"d\sigma/dt as a function of t" (or whatever you are trying to say

here).

We fixed that following Dan's suggestion.

line 156: It may not be OK to refer the reader to an unpublished

document to describe the experimental details. The standard thing to

do is to refer to a long/archival paper that explains everything, even

if that paper is given as "to be published". I assume g12 will write

such a paper.

G12 has no such aspirations, hence why we made the CLAS-NOTE publicly available.

line 183: You talk of cuts on C.L. and tuning thereof, but then don't

tell the reader what the pro's and con's of your choices were. I

think you need to spell this out fully... or delete this sentence if

it is not important.

We did not see why these details would be important to a reader.

Fig 1 caption: I am quite confused by this figure. First of all, you

should specify the axes as "Y versus X": your caption has it

backwards... twice. I am also not sure what the vertical axis on the

left side is. The missing mass off the detected proton, e+ and e-

should be the photon, not something centered at 0.3 GeV. For the

right-hand panels you have blobs that are centered on zero for the

vertical axis, which I interpret as the missing photons, but the label

in the figure say pi0. Also, how do M\_E and M^2\_x differ?

We have updated the caption previously. The pi0 and pipe labelling is to show the domain on where the resonates reside in the plot. This should be quite clear from the X axis.

line 226: again you commit the sin of referring the reader to an

unpublished report. The reader has no idea, for example, what you

mean by "sector to sector" systematic uncertainty. This should be

spelled out clearly.

Sins and blasphemes do not belong in a scientific discussion.  
Again, the note is publicly available.

Figure 3 and Fig 3 caption: First, there is wasted space here and the

figure is anyway too small to interpret quantitatively. Use the extra

space. Maybe show only ONE BIG PANEL with the data offset for the

different energies. Then the reader would have a hope to see the many

lines and points clearly. You refer to "tagged" and "bremsstrahlung"

data here (and elsewhere), but this is an irrelevant distraction.

Yes, CLAS used tagged photons and yes, old experiments used untagged

bremsstrahlung, but so what? That is probably not relevant. As long

as you trust the old data, just plot it without this detail mentioned.

On the fourth line you use "open filled", which makes no sense. You

refer to [26] which is, however, not a SAID paper.

We have modified the plot  
The reference is correct. That is the A2 Collaboration at MAMI paper with new SAID solution

line 254: You point out a dip at |t|~5 GeV^2. There is no dip in the

data at that momentum transfer. Do you mean 0.5 GeV^2.

Fixed this typo previously

line 260, 261: Here again you refer to "possible new structure" around

5 GeV^2. This is not what your data shows. Why the scare quotes

around that phrase?

We have included an additional plot to show the values we refer to. The "scare" quotes are because we are not claiming a structure, just an observation that can be interpreted in many ways, one interpretation is "possible new structure"

Figure 4 caption: here is another instance of using odd notation for

the cross section. You don't need to include "(|t|)".

Done

line 302: Michael Kunkel should get this thesis link given in the

references for the paper. That is common CLAS practice. In the

references put the link to

<https://www.jlab.org/Hall-B/general/clas_thesis.html> .

Done

That's all for this round.

Cheers,

Reinhard

We thank you for your outstanding comments and criticism

Best Regards

Team π paper

What I did here was a leadership trait that I learned in the U.S. Marine Corps. It's called "the sandwich effect" in which you say something positive, then negative, then positive again. Its a very successful trait to use when trying to get your audience to be constructive. I implore you to try it.