CLAS PAC52 Jeopardy Review Committee

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April 22, 2024

1 RG_C

1.1 Scientific Impact of the Experiment(s).

Is there any new information that would affect the scientific importance or impact of the Experiment(s) since originally proposed?

The study of the one and three dimensional partonic structures of the nucleon in the valence region continues to be of great interest. The RG_C experiments results will greatly contribute to the field as highlighted in the current 2023 NSAC Long Rage Plan.

DVCS data have been used to determine the mechanical pressure inside the proton. This result has attracted great interest.

1.2 Assigned beam time and experiment rating

Any request for the remaining beam time allocation and experiment PAC ratings to be reconsidered

In the PAC48 jeopardy review, the original 185 approved PAC days were reduced to 120 days which were scheduled between June 2022 and March 2023. However because of major down-times, only 80 PAC days of data were taken. The request to the PAC is to allow RG_C to run the remaining 40 days to increase the statistics by 50%. A strong case is made to run the experiment in conjunction with RG_G which will use the same target

1.3 Allocated beam time: collected statistics and data analysis.

If the Experiment has already received a portion of its allocated beam time and/or is on the presently published accelerator schedule, the spokespersons should provide an analysis of the existing data set, the projected result for any additional time on the published schedule, and the projected result for the complete data set including all remaining unscheduled time. The goal is to show the physics impact of the respective data sets.

- **What is the status of the analysis of the collected data? (if any were collected)**

  RG-C has taken 80 PAC days of data. Preliminary results from a small subset of the data are shown. Clearly, the data analysis is in the early stages.

- **Any changes/updates of the projected results for the full approved running time?**

  These are not shown.The very limited analysis of the collected data strongly begs for more statistics and doesn't allow to clearly answer the question: will the remaining 40 days of data taking sufficiently improve the statistics to achieve the original goals of some of the experiments.

1.4 Proposal evaluation

- **Is the overall goal of the run group clearly stated with what each experiment brings?**

  Yes.

- **What is new since the last PAC presentation?**

  80/120 PAC days of data have been taken.

- **Is the current status in terms of allocated and used PAC beam time given?**

  Yes.

- **Are any issues with manpower, target, detector inefficiencies, etc... that could affect the goals being addressed?**

  It would be good to see a plan and timeline to complete analysis to publication of the data already taken.

1.5 Additional Comments

- Provide [Ref ??] in III-A and III-C
- Captions, labels and texts in Figs 1 & 2 are too small and barely legible.
- Need consistent symbols in Fig 3 (δ or Δ).
- In Fig 5 caption , Right and Left are pointed to the wrong figures.
- Bottom of page 8: add the figure is available
- Make sure that all the figures presenting preliminary results do show the preliminary watermark across them

- Overall, this proposal makes a strong and compelling physics case. It shows that CLAS12 and the new longitudinal polarized target are uniquely suited to carry this line of research. However it doesn't strongly make the case that the remaining 40 days of data taking will allow RG_C to achieve its proposed goals. Statements such as on page 1 "The beam time originally allocated for RG_C was 185 PAC days, corresponding to the minimum time required to complete all PAC-approved experiments within the run group" and on page 7 "...would greatly benefit from more beam time" and on page 9 "...Significant statistics and precise four-dimensional binning will be required" only make it clear that more data is badly needed. But are 40 days enough? If that is indeed the case, it should be more clearly and convincingly stated.