CLAS PAC52 Jeopardy Review Committee

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1 RG_H

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 strong scientific motivation remains intact. If carried out as proposed, these are some of the most important measurements in nuclear/hadronic physics as highlighted in the current 2023 NSAC Long Range Plan.

1.2 Assigned beam time and experiment rating

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

RG_H comprises 3 experiments which were conditionally approved with rating A for a total of 110 days by PAC 39. All three experiments were selected among the high-impact JLab measurements by PAC42. To remove the conditionally approved status, RG_G had to prove that the transverse polarized target HDice was suitable for proposed experiment. It turned out not to be the case. The proposal is requesting the PAC to confirm the 110 days conditionally approved beam time and allow the group to pursue their efforts in demonstrating the feasibility of the experiments with a different target and magnet

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)**

  No data have been taken because of the conditionally approved status.

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

  Work in progress as the use of a different polarized target, the replacement of CLAS solenoid by a different magnet are being estimated.

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?**

  The major development is that the technique adopted to realize the transversely polarized target has proven to be infeasible. Here a new concept is proposed. This new target changes the acceptance of the CLAS12 detector. The feasibility and expected performance of this new scheme must now be demonstrated.

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

  The demonstration of the feasibility of the transversely polarized target is absolutely essential to the successful realization of the experiment. Replacing the CLAS solenoid magnet with a different one, and other changes to current detector elements substantially changes the "standard CLAS12 operation" that has taken many runs to understand. The impact of all these changes on the proposed measurements must be carefully evaluated.

1.5 Additional Comments

- It will be helpful to mention the current status of manpower committed to these experiments and working on solving the technical challenges resulting from the use of a different polarized target.
- Give a time line to show when it is expected to have all technical issues under control.
- More simulations are needed with the new target and CLAS12 different target region to show that the new scheme is as good as what was originally proposed.
- Overall, this proposal makes a strong and compelling physics case. The ongoing work to address the technical issues related to the changes of the target area of CLAS12 are critical and need to convincingly show 110 days of running will allow to achieve the original goals.