



Chair's Report

CLAS Collaboration meeting November 2-4, 2016

Report on the Ad-Hoc Committee on Common Tools

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Report:

<https://www.jlab.org/Hall-B/secure/claschair/nov16/CommonToolsReportNov2016.pdf>

- Charge:
1. **What reaction channels should we focus on now for CLAS12 validation, calibration, and publication of the first papers?** The identified reaction channels should allow defining and validating the procedure to extract novel physics observables, determining for example fiducial cuts, kinematic corrections, cross section normalization, etc.
 2. **Where should we draw the line for the tasks to perform with the Common Tools over the next fourteen months preceding the engineering run?**
 1. In the long term, what parts of the analysis procedure applied to the reconstructed data to extract physics observables from CLAS12 data should be standardized and become part of a “Common Toolset” for the collaboration to use?
 2. How should these common procedures should be integrated into software tools?
 3. **What bottlenecks exist,** hardware or software, that must be overcome before the start of the engineering run?

Definitions

CALIBRATION: tools to convert digitized signals recorded by the DAQ to energy, position and time.

EVENT RECONSTRUCTION: tools to convert detector responses to particle 4-vectors.

EVENT SELECTION: algorithms and procedures to select events from the event reconstruction output and produce DST files with fully corrected 4-vectors.

SIGNAL SELECTION: tools to separate the reaction of interest from background events.

PHYSICS ANALYSIS: tools to extract the physics observables from the selected events.

COMMON TOOLS: software tools (not restricted to) that implement algorithms and procedures to specific tasks of the calibration, event reconstruction, event selection and physics analysis, independently of the specific experiment or physics reaction, and shared by the collaboration.

COATJAVA: collections of Java classes that permit functionalities of various tasks to be performed. They are organized in various packages in the JeffersonLab git code repository under the clas12rec main directory.

Charge #1

1. What reaction channels should we focus on now for CLAS12 validation, calibration, and publication of the first papers? The identified reaction channels should allow defining and validating the procedure to extract novel physics observables, determining for example fiducial cuts, kinematic corrections, cross section normalization, etc.

First reactions to be analyzed for validation of the detector calibration and reconstruction are inclusive electron scattering, single and double pion production. The measurement of the inclusive electron cross section will allow us to verify absolute normalization and efficiency evaluation. Single and double pion production would allow us to validate reconstruction of multi-particle events, test the selection of exclusive final states via missing mass and determine mass resolutions. Double pion production would permit to determine kinematic corrections.

These reactions could also give access to observables that could be the subject of a speedy publication such as the F2 structure function in poorly studied kinematics regions or N-pi beam asymmetries. The final choice will be made after completion of full simulation and reconstruction of the selected reactions and considering the scientific impact of the corresponding publication and the proposal ratings.

Actions

1. Complete the COATJAVA reconstruction and calibration tools.
2. Extend COATJAVA to incorporate Event Selection, as per our definition.
3. Create a new group of “wise experts” (Analysis Group) who will guide the development of algorithms for momentum corrections, PID, background subtraction, fiducial cuts and other corrections, exploiting the expertise accumulated with analysis of CLAS data. Algorithms developed by this group should be reviewed by an analysis review committee (see 4). Upon approval they should be considered “standard”, requiring no further review when applied to specific analysis and only a short reference in future analysis notes.
4. Create a “First experiment analysis review committee” drawn from the relevant PWGs before the experiment even begins, and have that committee review each individual tool/algorithm/method used to arrive at Physics results, as they are being developed (by the RG A collaborators or the “experts” in 3). If this approach will prove to be effective for the First Experiment, it should be extended to any future CLAS12 experiment.

Actions

5. Set up a work plan defined by Run Group A to determine the optimal run conditions and be ready for data analysis prior the beginning of the first experiment. This includes:
 - setting up event generators,
 - running full simulation and reconstruction of a benchmark reaction for each Run Group A proposal,
 - becoming familiar with COATJAVA, GEMC and CED or other COMMON TOOLS that may become available,
 - determining the optimal detector, target, magnets, trigger configuration for data taking,
 - define a clear management structure, internal to the group, and distribute tasks of common interest with a clear timeline and milestones.
6. Utilize the CLAS12 software discussion forum for the exchange of information between software users; encourage the use of the clas12-software mailing list; organize software workshops during Collaboration meetings, and identify collaborators who will update documentation and tutorials on the software wiki.

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Now is the time to submit comments on the ideas in this report to the Coordinating Committee.

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Report on CCC meeting

- Experimental shift issues discussed.
 - We will likely require a third shift person in the fall for the engineering run and Run Group A. These additional shifts will be counted towards the institute's service work.
 - Subsystem technical leads have to identify on-call experts.
 - It is time to generate a list of shift experts for the fall – needed for ERR in December.
 - Upcoming SoS statements due November 15 are important for generating list of shift takers.
 - Send me suggestions for changes to shift policy, but please read the Charter by-laws first.
- Membership issues
 - Limited enthusiasm for a new type of membership for current members who focus exclusively on CLAS6.
 - Please send me your ideas of changes for CLAS12.

Report on CCC meeting

- Changes recommended by Common Tools committee will effect Physics Working Group analysis reviews.
- All three Physics Working Group have recently held elections,
 - Marco Battaglieri – Hadron Spectroscopy
 - Marco Contalbrigo – Deep Processes
 - Mike Wood – Nuclear Physics
- Spring meeting: March 28-31 tentatively.
 - Lateness driven by avoiding collision with KPP and conferences.
 - Let me know if these dates create problems.

CLAS Announcements

- Statement of Service
 - due November 15.
 - Institutional representatives should access <https://www.jlab.org/Hall-B/shifts/index.php>
 - Number of full plus term members will be used to set the number of shifts required for Run Group A running.
- Common Tools committee planning for First Experiment.
 - <https://www.jlab.org/indico/event/180/session/13/contribution/100/material/slides/0.pdf> (Raffaella de Vita's talk).
 - Written report:
<https://www.jlab.org/HallB/secure/claschair/nov16/CommonToolsReportNov2016.pdf>
- CLAS12 KPP Commissioning Plan – Version 4
 - Completed Oct 31, 2016.
 - <https://www.jlab.org/Hall-B/calcom/cwb-kpp.pdf>
- The April APS meeting is in January.
 - Post-Deadline Abstract Submission Deadline – Nov 11, 5 pm EST
 - Washington, DC, January 28-31, 2017
- No reception this time. Please give me your feedback.



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