CLAS12 – "Ready for Science" Review

Jefferson Lab, CEBAF Center

9/25-26, 2017

Room L102 (9/25) , F326/7 (9/26)

Review Committee :

E. Smith (co-chair), S. Stepanyan (co-chair), K. Griffioen, K. Joo, D. Lawrence, S. Philpott, B. Zihlmann

CLAS12 "Ready for Science" 09/25-26, 2017

The scope of the meeting is to:

(A) Review the readiness of the "CLAS12 First experiment" effort to coordinate the CLAS collaboration in the task of producing first rate science in course of and following the data taking period, and be ready for expedient analysis and result publications (this includes both understanding the detector and having the simulations and reconstruction software in place for physics.)

(B) Review the readiness of the effort to operate and commission all systems, providing the on-line monitoring and controls, trigger system, and the readout of all detector and ancillary systems.

(C) Review the readiness of the calibration effort to use the scheduled engineering run for optimizing the detector responses. This effort must be prioritized to support the CLAS12 First experiment effort in the physics run immediately following the engineering run.

Note: For the purpose of this review, the committee should assume:

Both magnets will perform at the level required for the completion of the ***First Experiment*** plan, and beam time will be made available to carry out the program as requested.

Specific Charge Items

1. *Is the presented **commissioning plan** for CLAS12 comprehensive and developed in sufficient detail to ensure that upon completion the CLAS12 system will be ready for production data taking? Is **the timeline reasonable** and optimized, both in terms of duration of the study and the order of activities.*

2. *Have the necessary **production triggers** been developed that are needed for the physics run, and are plans in place to test their efficiency?*

3. *Are the presented **monitoring and software tools** adequate for the efficient commissioning of all CLAS12 systems?*

4. *Are the **online and offline analysis shift staffing** plans during the commissioning period appropriate and adequate?*

5. *Are the **available resources** (e.g. computing manpower) sufficient to enable the implementation of the commissioning results into the production data analysis on a reasonably short time scale (weeks)?*

6. *Is the **documentation of all systems** (detector hardware, online/offline software, operating procedures, etc.) sufficiently detailed and complete to provide the required support for the shift taker and experts?*

7. *Is the scope of **simulation studies** that have been performed or are planned before the run period adequate to understand the expected baseline performance of the CLAS12 system*

8. *Are there **studies or tests missing** that should be specifically included in the plan to ensure the readiness for production data taking and processing?*

CLAS12 components for this review

- ***Torus magnet*** *- to be operated up to ±100% of design current*
- ***Solenoid magnet*** *– to be operated up to ±80% of design current (estimate)*
- ***Forward Detector (FD)*** *– High Threshold Cherenkov Counter (HTCC), Forward Micromegas Tracker (FMT), Drift Chamber system (DC -R1, R2, R3), Low Threshold Cherenkov Counter (LTCC, 1 sector), RICH (1 sector), Forward Time-of-Flight (FTOF 1b/1a), Preshower Calorimeter (PCAL), Electromagnetic Calorimeter (EC)*
- ***Forward Tagger (FT)*** *– FT-calorimeter, FT-Hodoscope, FT-Tracker*
- ***Central Detector (CD)*** *– Silicon Vertex Tracker (SVT), Barrel MicroMegas Tracker (BMT), Central Time-of-Flight (CTOF), Central Neutron Detector (CND)*
- ***Slow Controls***
- ***DAQ/Online*** *computing*
- ***Trigger***
- ***Beamline*** *equipment*
- ***Offline*** *Software*