

SoLID review

DAQ recommendations

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Recommendations 2c

1. The plans for the High Level Trigger and the needs for slow control need to be worked out in detail and the implications for resources need to be evaluated.
2. The implications of the need for these resources in the context of availability of resources at the laboratory need to be understood.
3. Closer communication with the other JLab experiments and the JLab computing center is strongly encouraged.
4. Having a functional simulation and reconstruction routines as soon as possible should be a high priority in the software effort. Such software will pay off many times over in experimental design and avoiding pitfalls.

DAQ observations

Observations

- SoLID plans to use much of the current 12-GeV electronics from Jefferson Lab.
- Plans for using the APV25 chip for GEM readout were presented.
- The Level 3 trigger was not described and no costs were included.
- The slow control needs of the experiment were not presented and no costs were included.
- The SoLID collaboration currently has some simulation and limited reconstruction.
- The manpower currently associated with software for SoLID is estimated to be 6 FTE-years. Numbers from both Hall-B/CLAS-12 and Hall-D/GlueX are in the range of 30 to 50 FTE-years.
- The data scale expected from SoLID is similar to that anticipated in Halls B and D, while that in the early Hall-A experiments have a much smaller data footprint.
- No plan for data handling was presented.
- Data storage needs for Monte Carlo simulations were not included.

Findings

- Consultation with appropriate people from the other halls would be useful to get a more accurate estimate of software needs, including manpower.
- Early exploration of the tools available at Jefferson Lab that can handle the data at the expected scale of SoLID will be crucial in minimizing the false starts in software development

Dead time correction PVDIS 1b.2

- Test with small scale setup
- Simulation
- Discuss with DAQ group for particular features needed
 - Example : helicity gated deadtimes

L3 trigger 2c1

- Test on small scale L1 trigger
- L3 farm : collaborate with Hall D, try to test simulated data on their setup
- Need simulated digitized data and tracking algorithm to test online
- Need to figure out funding

Ressources 2c2

- Computing ressources needed for L3
- Tape SILO needs, network
- Manpower

L3 trigger 2c2

- Test on small scale L1 trigger
- L3 farm : collaborate with Hall D, try to test simulated data on their setup
- Need to figure out funding

Communication with other groups 2c3

- Try collaborate with Hall D
- Constant communication with JLAB DAQ and electronics group
- Hall C interested in using VETROC for logic and readout
- check experience with APV and FADC from HPS
 - Already planning to reuse HPS trigger scheme

Recommendation 2c4

- See software talk

Forgotten recommendation

- Bunker design
 - Radiation
 - Cooling of bunker to be evaluated / design

Pre R&D

- Test trigger rate capability (3 months + 1 JLAB)
- Test triggering schemes (implementation 3month / test 6 month + 1 person JLAB)
- GEM APV rate capability (before end of August : 3 months +1 person (UVA+Stony Brook)
- MRPC : high resolution timing
- L3 : performance tests and data reduction (6 months / 1 student or postdoc and JLAB staff)
 - Need simulated data (software)
 - Reconstruction algorithm to test (software)

Hardware

- FADC availables
- VXS crates and Intel CPU
- GTP borrowed
- VETROC available
- R&D need
 - Individual FADC reading
 - Trigger setup
 - Deadtime measurement for PVDIS
 - (High resolution TDC)

Manpower

- JLAB :
 - Alexandre Camsonne
 - Robert Michaels (Compton development)
 - Electronics group
 - DAQ group
- Stony Brook
 - Seamus Riordan
 - Krishna Kumar
 - Postdoc
 - Student
- Need to make detailed manpower and task schedule for R&D and experiment

Timeline

- Summer SBS projects
 - GTP : calorimeter
 - VETROC : used by Compton
 - FADC : FADC counting DAQ deployment
 - L3 farm test will Hall D
 - GEM : MPD test
- Development :
 - Deadtime measurement
 - FADC readout and trigger serialization (could be used by other experiments NPS, SBS)

Conclusion

- L3 needs addressed with Hall
- Slow controls being addressed
- Several tests this summer can address recommendation
- Working on detailed man power loaded schedule