Compton Polarimeter
Status and Timeline

LPC, 19 March 2008

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M. Magne, C. F. Daudon

AGENDA:

- Status and Schedule: Electronics & Mechanical
  - Si Detectors & mounting
  - Front End Electronics: Critical Path Item
  - Cables
  - Trigger/DAQ + Pwr supply + crate
- A. Camsonne Visit (June?) CODA & EPICS
- Requests to JLab
  - Length of Cable run
  - Slot(s) in VME rack + Space for Trigger
  - Mechanical Support & Lifting mechanism
- Installation / Commissioning Schedule
  - Missions

Minutes, C. Hyde; 26 March 2008

Technical Web Page:
clrwww.in2p3.fr/meca/plans/Site-web/Cebaf/TJN-DetE/TJN-DetE-P2.html

Si-strip Detectors

All 5 Si detectors (4 + spare) received at LPC (M. Brossard)

- Spare fully tested: OK
- 4 principal detectors dark current OK
- 4 principal detectors mounted.
    - Tests in process with ^{90}Sr source and Scint trigger

Si-Strip mounting hardware completed (modification to 11 mm spacing)

- F. Daudon

Motion Control (M. Crouau)

- VME Control card (FPGA) and Stepper motor card complete.
    - LabView/VME tests in process .
    - EPICS specification (for Sue Witherspoon?) expected April
    - Accelerator Interlock interface card in design, expected May. (M. Brossard)

Full Assembly Test Projected (F. Daudon): Labview/VME, 2 days total

Front End Electronics: Critical Path Item

Redesign complete—eliminate cross-talk (M. Brossard)

Each Front End Board = ¼ of one Si-strip detector.

- First Front End board received and assembled. Tested OK
- All 20 “mother boards” received
- 50% of “daughter boards” received , remaining expected in 1 week
- 10 weeks for installation and testing of components (C. Fayard)
- All Front End electronics expected completion: end of June.
    - Danger of schedule slippage if any interference with LHC projects

Modification required to mounting hardware for daughter cards and EM shielding (F. Daudon, 1 week).

Cables

Specification of Cables & Connectors must be done (M. Brossard).

- Cables are heavy: Suggest purchase for delivery in US.
    - JLab purchase?
- 2+ days at JLab to install connectors and labels.
    - Pull cables first and then install connectors *in situ*?
    - Cables must be identical to +/- 25 cm.

- Can JLab pre-install labeled cables with 1m extra at each end?

Trigger (DAQ-Hardware)

Trigger/DAQ conceptual design 70% complete (M. Brossard).

- Circuit board layout: April (M-L. Mercier)
- Circuit board fabrication: May (10 days, commercial)
- Component installation: Early June (C Fayard, 1 week).
- Testing: 2 weeks.
- Trigger is a "virtual" VME card
  - Trigger board and all cable connections requires volume equal to a VME crate at a distance of 1-2 m maximum from VME.
  - Cable connections to Front End in rear
  - Interface cable (1-2m) to VME card in front
- Total Trigger/DAQ is double-module VME 6U in Compton Polarimeter VME Crate (same as present electron detector DAQ).
- Coincidence input and output from/to Photon Detector
  - Timing unchanged from previous version.
  - Timing adjustable.

Need to verify connection and license requirements for re-programming Trigger, Front End, Motion control FPGAs *in situ* at JLab.

- Quartus (Altera) & Sinplify-PRO

Alexandre Camsonne visit to LPC in June

Prefer to focus on Compton Polarimeter

- Exact specifications for CODA/DAQ and EPICS/Control.
  - Installation of CODA at LPC for Compton Polarimeter Electron Detector DAQ is not obligatory.
  - With a little luck, Trigger VME card will be ready in June.
    - Useful for Alex to bring necessary hardware for CODA.
- Testing of new ARS is secondary.
  - Installation of Hall A CODA for ARS testing is difficult:
    - Custom JLAB Trigger Supervisor (TS) board in VMU 9U format
    - Training of LPC personnel (grad student?) in use of CODA.
  - Testing can be done with custom commercial 64X VME bus analyzer/interface already purchased at LPC (M. Magne, D. Abbott recommendation)
    - www.vystems.fr VG-VME –VP –VE

Questions / Requests to JLab

1. What is the length of the Cable run from the Electron Detector to the Compton Polarimeter DAQ rack?
    a. P. Bertin claims this information was communicated in 2007.
    b. M. Brossard will check email, but requests verification.
2. The electron detector requires the existing 2 VME 6U slots in the DAQ crate plus the one existing slow control VME 6U slot in the control crate. Do not "give away" these slots.
3. The Trigger/DAQ board requires a space equivalent to 1 VME 6U crate within 1 m of DAQ VME crate (see above, Trigger/DAQ). This is larger than the existing cable interface box atop the DAQ rack.
4. What is the status of the mechanical support design/fabrication for the vacuum chamber holding the electron detector (note there are beam line bellows on both the upstream and downstream connections)?
    a. P. Bertin claims this was in process in 2007.
5. We request a lifting mechanism:
    a. Maintenance of the detector requires an *in situ* lifting mechanism for the Detector/Front-End assembly (40 cm).
    b. See technical drawing TJN-DetE-D100 (F. Daudon)
6. Survey
    a. We request a stand to support the Detector/Front-End assembly prior to installation and mounting of external fiducials by Survey Group on designated positions (consult F. Daudon).
    b. Just prior to installation (preferably in Hall A?) we require a survey of the harp wire and/or Si-Strips relative to external fiducials.
    c. After installation, External fiducials should be surveyed to beam-line fiducials prior to beam commissioning.
7. Is there protection in place from water infiltration?
8. Will JLab personnel be available for Installation (see below)
9. If there is a problem with software licenses (Europe vs US), does JLab have a USB-dongle for Quartus (Altera) and Sinplify-PRO?

Installation

LPC personnel required: (available 18 August+)

- Electronics: M. Brossard, M. Magne, C. Fayard
  - 3 weeks at JLab for installation, tests
- Mechanical: F. Daudon + technician
  - 2 weeks at JLab for installation.

JLab personnel required (availability?)

- Survey crew
- Hall A technical staff (E. Folts, etc?)
- EPICS support (S. Witherspoon?)
- CODA support (A. Camsonne, R. Michaels)

In-Beam Commissioning

10 - 19 Oct. 2008:

- Beam in Hall A for commissioning
  E06-010/E07-013

M. Brossard, M. Magne,

- Two(+) week (8-22 Oct.) trip to JLab for commissioning

Projected TimeLine

3-Mar	10-Mar	17-Mar	24-Mar	31-Mar	7-Apr	14-Apr	21-Apr	28-Apr	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun	23-Jun
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Fab CI Front End																
			C‰blage Front-End & Test													
conception et r˜alisation trigger Hard & Soft & Test																
C‰blage Test Contr™le FE									M˜canique & C‰blage Trigger							
				Moteur 4S									Test Global & Ajustements & Emballage & exp˜dition			
											S˜curit˜					
Tenir compte du fait qu'il y a d'autre manips au labo et que, peut-□tre, le c‰blage Front-End peut glisser de qq semaines																
C‰bles ???																