LTCC Commissioning

M. Ungaro

Refurbish Update, Plans

Sectors are in TED
Clean room to be build in November. Mirror Sagging Test, Mirrors Inspection and Position Survey.

LTCC Model
Engineering will define the box modifications needed to fit the LTCC in FC.

PMTs
18 New Quartz PMTs ordered in 8/8. 15 Quartz PMTs from Genoa CC.
Performance of PMTs in new magnetic field.

Gas System Refurbish
Install differential pressure transducer (DPT). Detector Box Internal Piping and fitting Replacement.

Mirrors Alignment
Align the mirrors to have the proper roll, yaw, and pitch to maximize the efficiency for electrons and pions with both positive and negative charge.

Window Attachment
Attach gas windows

Gas Checkout

Checkout of Gas System	
Description	Gas flow and leak checks
Special Equipment	Pressure, Leak-Testing
Manpower/Time requirements	2 expert-weeks 2 worker-weeks (2 expert 2 workers)

Location: TED

Personnel: G. Jacobs, M. Ungaro, Techs

Goal:
Pressure, Leak Test
Test remote monitoring

HV Checkout

Checkout of High-Voltage system	
Description	Match HV to produce same SPE peaks
Manpower/Time requirements	2 expert-week (1 expert)
Software for analysis of results	EVIO4 reader, ROOT
Computing resources	Laptop/Desktop
Dependencies from other systems	Epics
Information to be saved in the database	PMT HV

Location: TED

Personnel: M. Ungaro, Epics Experts

Goal:
High Voltage Check

Independent from refurbish work.

DAQ/Signal Checkout

Checkout of DAQ/Trigger	
Description	Verify Signal in all channels.
Special Equipment	May use light pulse inside Box
Goal	Check Cable Swaps, Verify PMTs and HV, FADC trigger
Manpower/Time requirements	3 expert weeks (1 expert)
Software for analysis of results	EVIO4 Reader, ROOT
Computing resources	laptop/desktop
Dependencies from other systems	DAQ

Location: TED

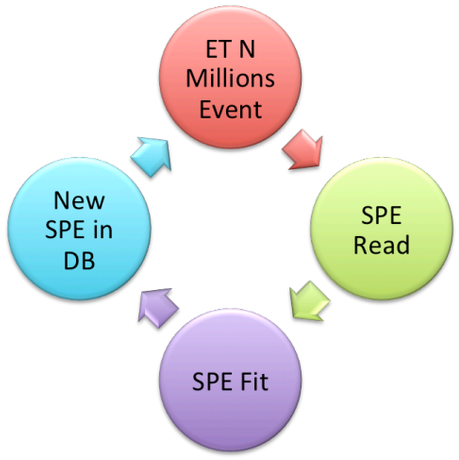
Personnel: S. Boyarinov, M. Ungaro, A. Vlassov

Goal:
Verify PMT signal (charge, timing) on FADC.
Procedure for cable swaps.

Independent from refurbish work.
Starting as soon as FADC board available (november).

SPE Online (no beam)

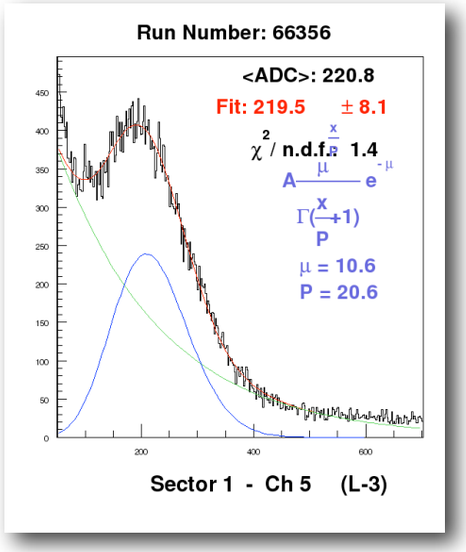
Special Run #2	**SPE Online Calibration**
Description	Software to automatically determine and monitor SPE
Goal	Measure and fit the online SPE distribution
DAQ configuration/Trigger	CLAS12 production trigger
Manpower/time requirement	5 expert weeks (1 expert)
Software for analysis of results	DAQ, ET Simulator, EVIO4 reader, ROOT
Computing resources	Laptop/Desktop
Information to be saved in the database	Mean, Sigma of SPE



Location: TED

Personnel: M. Ungaro, S. Boyarinov, A. Vlassov

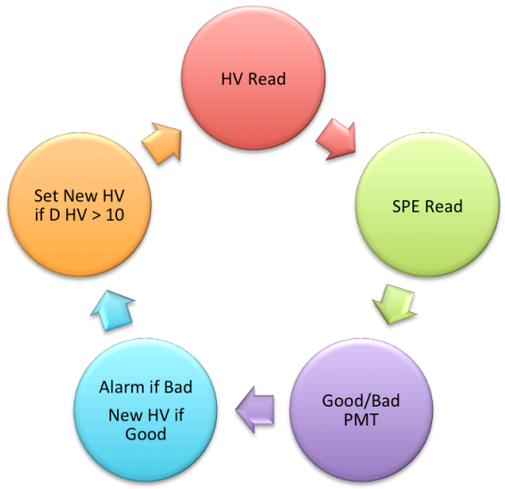
Goal:
Online SPE Calibration from ET System
Determine Trigger Parameters (clustering, etc)
Track Matching algorithms (from simulation)



Observables:
Digitized Spectrum
SPE Peak and Sigma
FADC profile
FPGA (clustering?)

HV Feedback (no beam)

Special Run #3	HV Matching Feedback System
Description	Online "live" automatic HV matching
Goal	Automatic System that provides live HV matching
DAQ configuration/Trigger	CLAS12 production trigger
Manpower/time requirement	5 expert weeks (1 expert)
Software for analysis of results	EVIO4 reader, ROOT
Computing resources	DAQ, Slow Control, Laptop/Desktop
Information to be saved in the database	Mean, Sigma of SPE, HV



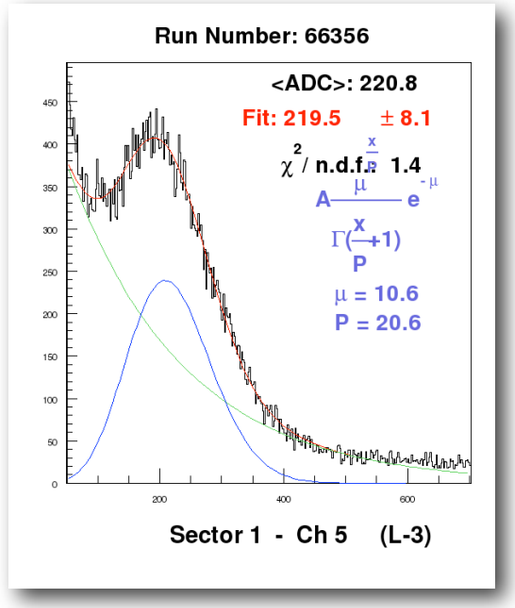
Location: TED

Personnel: M. Ungaro, Epics Experts

Goal:
Check feasibility of online HV matching
Automatic HV, Dead/Problematic PMT Detection Alarm System

Pedestal, SPE (beam)

Special Run #2	Single Photoelectron Measurement
Description	Determine the SPE
Goal	Measure and fit the SPE distribution
DAQ configuration/Trigger	CLAS12 production trigger / Threshold lowered
Manpower/time requirement	2 expert weeks (1 expert)
Software for analysis of results	EVIO4 reader, ROOT
Computing resources	Laptop/Desktop
Dependencies from other systems	DAQ, Torus Magnet
Information to be saved in the database	Mean, Sigma of SPE



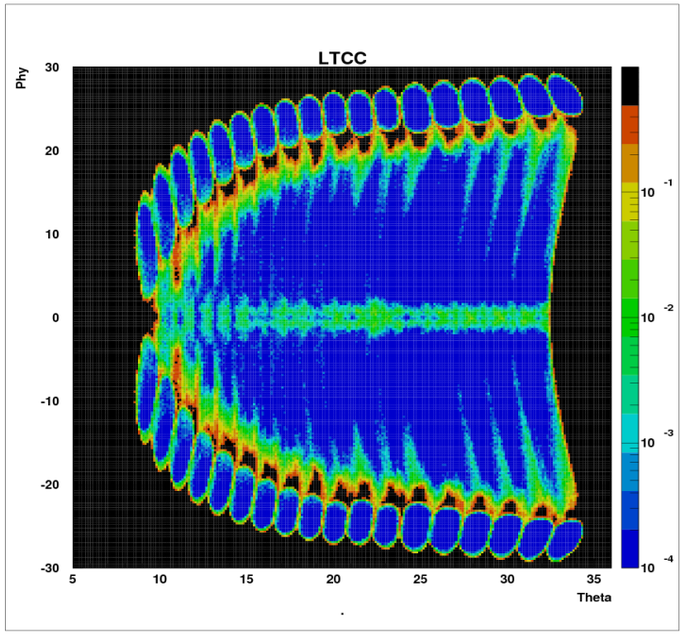
Location: Hall-B

Personnel: M. Ungaro, A. Vlassov

Goal:
Measure and fit Pedestals, SPE, nphe matched to tracks
Refine Trigger Parameters (clustering, etc)

LTCC Efficiency (beam)

Special Analysis #2	**LTCC Efficiency**
Description	Calculate LTCC Efficiency
Goal	LTCC Efficiency as a function of particles p, theta, phi
DAQ configuration/Trigger	CLAS12 production trigger
Manpower/time requirement	1 expert-week
Software for analysis of results	EVIO4, ROOT
Computing resources	DAQ, Laptop/Desktop
Dependencies from other systems	Torus



Location: Hall-B

Personnel: M. Ungaro, A. Vlassov

Goal:
Calculate and possibly monitor LTCC Efficiency

- electrons, pions w/o looking at LTCC signal
- (HTCC, elastic, pn reactions)
- kaons ($k\Lambda$ reactions)

Timing Calibration (beam)

Special Analysis #4	**LTCC Timing**
Description	Calibrate LTCC Timing
DAQ configuration/Trigger	CLAS12 production trigger
Manpower/time requirement	1 expert-week
Software for analysis of results	EVIO4, ROOT
Computing resources	DAQ, Laptop/Desktop
Dependencies from other systems	Torus, DC, FTOF, HTCC, reconstruction
Information to be saved in the database	T0, T1

Location: Hall-B

Personnel: M. Ungaro, A. Vlassov

Goal:
LTCC Timing Calibration

- match track,
- reconstruct time

Special Requirements

Data and epics access through C++ libraries
(already exists?)