

Run Coordinator Report

3/4/19-3/11/19

Run Group B

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Hall B meeting, 3/11/19

Monday, 3/4/19

Day: Beam off at 8:30 am for beam studies. Beam expected near midday, but not delivered until Swing shift. ABU=0.05.

Swing: Beam back at 17:42. Begin empty target run at 150 nA (run 6389). Several DAQ problems (lifetime=0, MVT ROC, MVT1 ROC) fixed by Sergey. Target is refilled and production running resumes at 22:46, but stopped because of DAQ problem again with MVT1 ROC. The ROC is eventually removed from the DAQ. It will be fixed at the next access. Run starts at 23:50. ABU = 0.29.

Tuesday, 3/5/19

Owl: No beam at shift start. Sergey comes in to make an access to change the cpu for MVT1 ROC. Beam delayed due to klystron problem (log entry 3663311). Production running resumes at 6:45 am. ABU = 0.12.

Day: Beam stopped at 9 am because of high trip rate and instability of beam. Experiment is temporarily halted until beam problems can be resolved. MCC decides to lower beam energy to improve stability.

Swing: No beam.

Wednesday, 3/6/19

No beam

Thursday, 3/7/19

Swing: Begin staffing shifts at 8 pm to monitor ramp-up of torus and solenoid. Beam at 10.2 GeV not expected until owl shift.

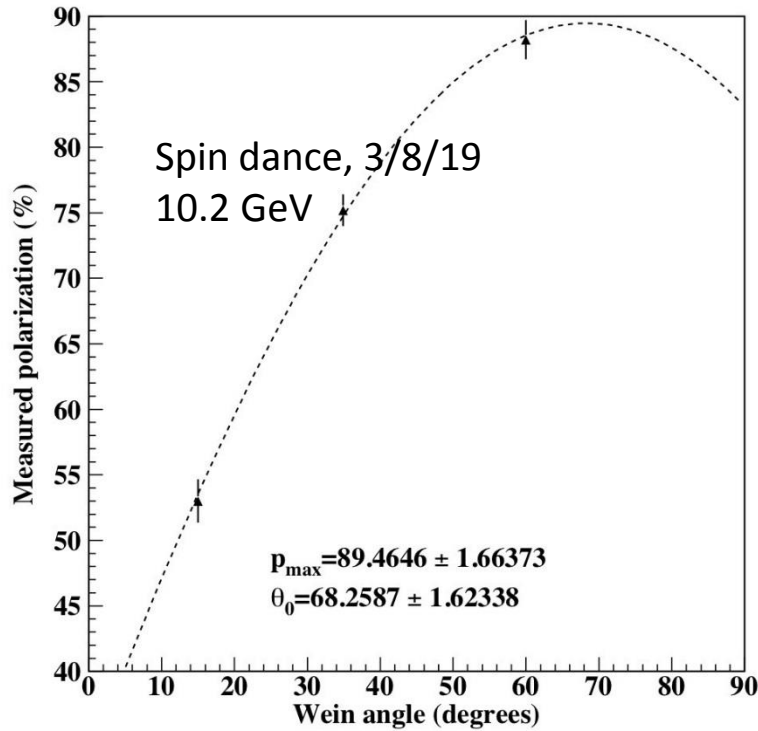
Friday, 3/8/19

Owl: No beam.

Day: First tuned beam to tagger dump. Harp scans are good (2C21: $\sigma_x=108 \mu\text{m}$, $\sigma_y=71 \mu\text{m}$; Tagger: $\sigma_x=303 \mu\text{m}$, $\sigma_y=205 \mu\text{m}$, $\sigma_{45}=262 \mu\text{m}$). Moller run measured polarization=75+/-2 %. After consulting with beamline expert (Stepan) and RGB coordinator (Silvia) we do the 'spin dance' to increase polarization. ABU=24%.

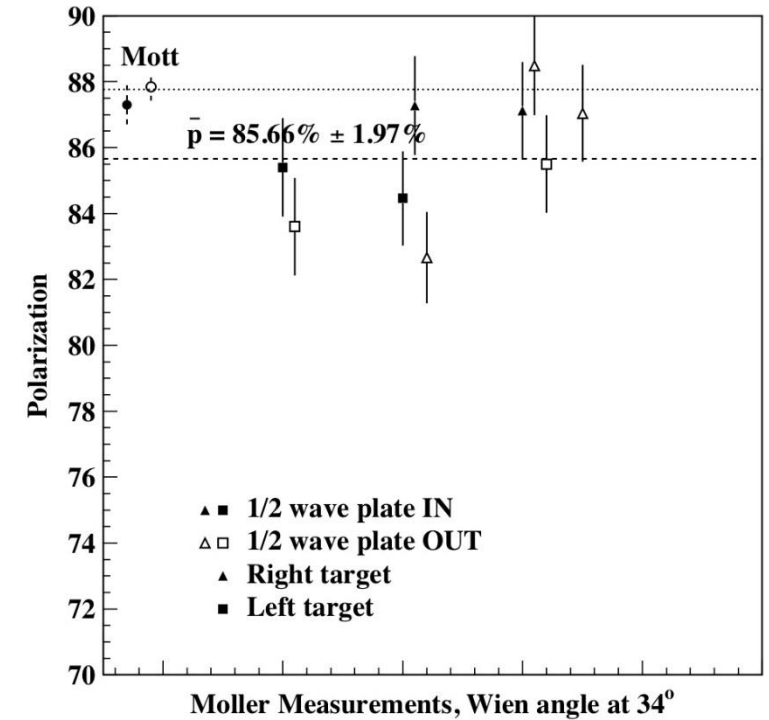
Swing: Performed spin dance and obtained polarization=88.2+/-1.5 %. See plots below. Began procedure to send beam to the hall. ABU=32%.

Friday, 3/8/19 (continued)



Left-hand plot show results of spin dance. Wien angle was chosen to be 60 deg because injector group required considerably more time to reach the peak polarization.

Right-hand plot shows previous results from CLAS12 Moller measurements and a Mott measurement made by accelerator group. They are consistent.



Saturday, 3/9/19

Owl: MCC completes tuning 5-nA beam to Faraday Cup, but harp scans have widths above recommended values. Other halls see the same effect so injector expert works on the source. Eventually get good widths on the harp scans (2H01: $\sigma_x = 234 \mu\text{m}$, $\sigma_y = 242 \mu\text{m}$, $\sigma_{45} = 214 \mu\text{m}$). FTC scalers show symmetric distributions. Started first production run with new beam energy. ABU=51%.

Day: Production running continues. Changes observed in FTT monitoring histograms; traced to communication problems. Procedure to fix it works. See entry 3665310. ABU=79%.

Saturday, 3/9/19 (continued)

Swing: Production running continues as do the communication problems with FTT front end. Saclay expert (Irakli Mandjavidze) found the slow control configuration file had been erased. He will investigate further. BAND HV alarm due to slow controls comm error. Required reboot from BAND HV gui. ABU=77%.

Sunday, 3/10/19

Owl: Production running continues. DAQ alarm due to disconnected ROC (adcpca3vtp) eventually requires intervention by DAQ expert (Sergey). ABU=83% (seven-hour shift due to time change).

Day: Production running continues. RICH PMT problem worked on by Marco Mirazita. It is likely related to a known hot channel. See entry 3665689. Bunch Frequency channel appeared in BTA on Scaler GUI in disconnected state. This quantity comes from MCC who restored it. BMT channel tripped (HV SEC1 L5 DRIFT) twice. Recycling the power restored in both times. ABU=87%.

Swing: Production running continues. BMT channel trips several times (sec1 L5 drift). Cycling the power restores it. Major DAQ alarm for low rate/lifetime for sector 6 of trigger (run 6434) - no electron triggers. Sergey re-establishes trigger connections to the DC, ECAL & PCAL crates in sector 6 to resolve problem. Later get another low lifetime warning from the DAQ. Requires cycling LV on the FTT followed by roc reboot of mmft1 which works. Running resumes for the rest of the shift. ABU=77%.

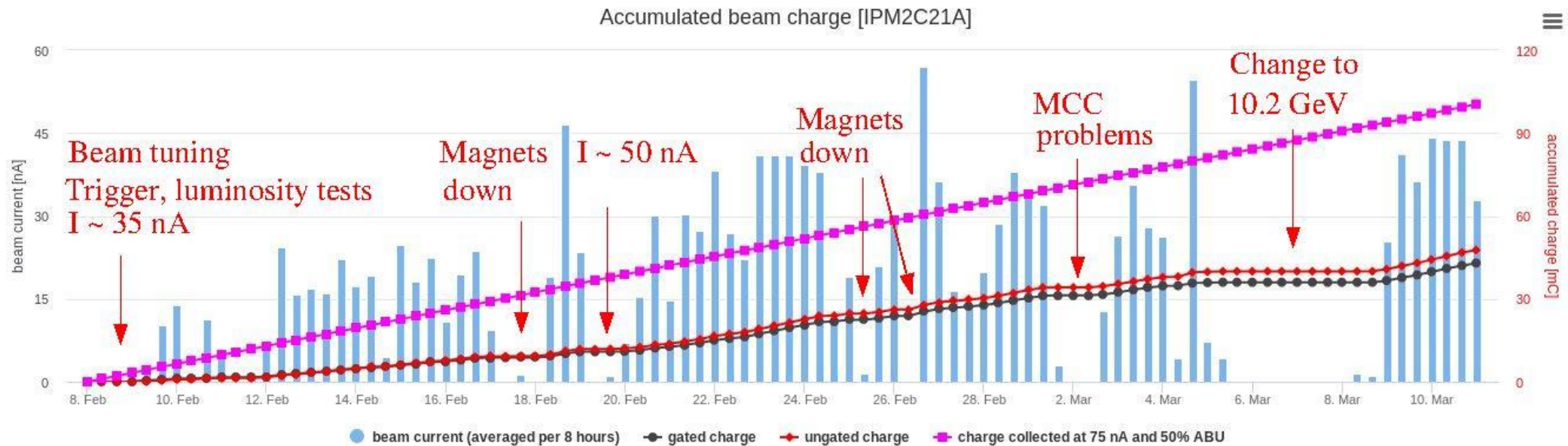
Monday, 3/11/19

Owl: Production running continues. Worker noticed some difference in EC occupancy distribution compared to the reference. Expert informed via email. At ~5:30 am MCC halts beam due to large number of BLM trips. Beam restored and next run (6445) starts ~6:30 am. ABU=71%.

Experiment Progress

start date: 02/08/2019

end date: 03/11/2019



Current run from Feb 8 to March 9 → 39 days.

75 nA at 0.50 ABU → 126.36 mC.

3/10/19 → 41.01 mC of accumulated charge (32.5% of planned amount).

We have now completed 30/39 days (77%).

Extracting run statistics from the run list spreadsheet.

- Sort the spreadsheet by column E (“Cook?”) and group rows with “prod” or “Reg” in column E.
- Count number of entries and sum number of events (column F).
- Results: 166 files and 11B events (~1B at 10.2 GeV).

Run Plan

- Beam studies have been cancelled and RF Recovery reduced and pushed back later in the week.
- Continue production running.
- Start low-luminosity run on Monday.
- Empty target run later in the week during Day shift.

Recent Results From RGB Analyzers

pDVCS analysis for run 6164 requiring: proton in Central Detector, γ in Forward Tracker, $Q^2 > 1$ GeV, $\theta_e > 5$ deg, $E_\gamma > 2$ GeV and cuts shown below. From SN talk.

BAND analysis requires understanding CLAS12 resolutions so use the $d(e, e'pp\pi^-)$ reaction where missing mass and momentum are ideally zero. Cuts: $\text{TOF}_e > 10$ ns, $2 \text{ GeV} < p_e < E_{\text{beam}}$, $E_{\text{PCAL}} > 60$ MeV, and proper topology.

