

PQB Meeting

March 05, 2009

PQB Tasks

1. Task: Fast Helicity Reversal

- ❖ **Required by Qweak – Hall B knows.**
- ❖ **Does Hall A want Fast Reversal? Everyone needs to know.**

- Status:
 - ✓ 30 Hz Reversal: The standard PQB at 30 Hz Reversal was achieved.
 - ✓ 250 Hz Reversal: The PQB was similar to 30 Hz Reversal otherwise for the very large 60 Hz line noise in position differences.
 - ✓ 1 kHz Reversal: The PQB was very similar to 30 Hz Reversal (even better), less sensitive to 60 Hz line noise than at 250 Hz Reversal.

- Issues:
 - Parity DAQ did work at 1 kHz and 500, 100 and 60 μ s but partially with 10 μ s.
 - BPMs “Transport” style IF cards are affecting short T-Settle studies:
 - ✓ Changed iocse11 IF cards to “LINAC”– almost finished with analysis – once done, request to change:
 1. Injector iocse12 and iocse19.
 2. Hall C iocse18 and iocse14 (Hall C iocse17 has “LINAC” IF cards).
 3. Hall A? First, what about fast reversal?
 - Need to find the “right” T-Settle (ideally 50 μ s).

- Charge Feedback:
 - New feedback scheme needed: No slow controls (EPICS), zeroed the asymmetry for each of the 4-helicity sequences. Requires new hardware:
 - ✓ Use “Injector Net” for faster communications.
 - ✓ New IA Electronics.
 - ✓ New Helicity Board: 2 new outputs to the IA.

- Build new Helicity Board:
 - Goal: easy to program, more outputs (IA, Clock).
 - Will meet soon to write a spec sheet.

- *Check Helicity Magnets, Mott Polarimeters at 1 kHz:*
 - Checked fine at 250 Hz last year.
 - Need to check at 1 kHz – need new IF cards in the 5 MeV region.

- Eliminate 60 Hz Line Noise:
 - Found noise from 500 keV PSS Dipole Current Sensor – will be fixed.
 - More noise still there; Ion Pumps VIP0L02/3 local power supplies (ATLis Task submitted).

2. **Task:** Halls Crosstalk and the Effect on Parity Quality Beam

- Did Hall C current and laser phase scans and measured Hall A PQB in Injector – No crosstalk observed, repeat once QE is bad.
- Did Hall C IA scan and measured Hall A charge asymmetry in Injector (change charge asymmetry of one beam, measure effect on the other) – No crosstalk observed.
- Need to measure crosstalk in the Halls to look for RF beam loading (ATLis Task submitted).

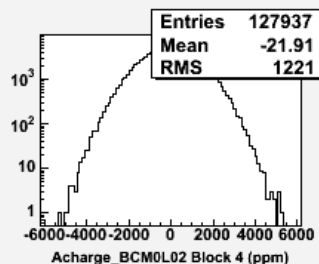
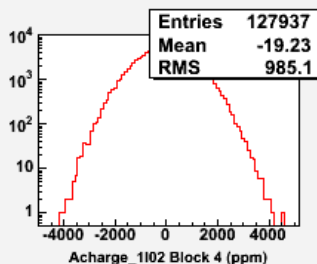
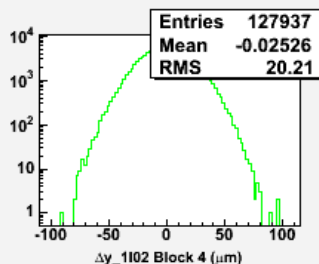
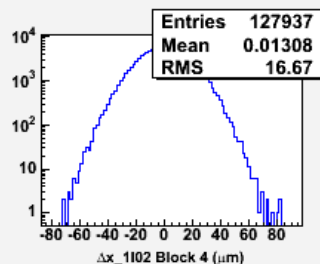
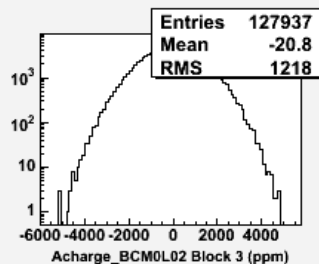
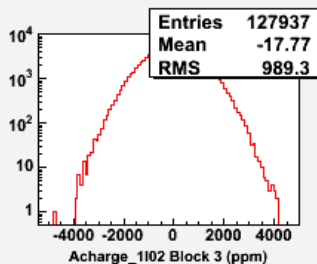
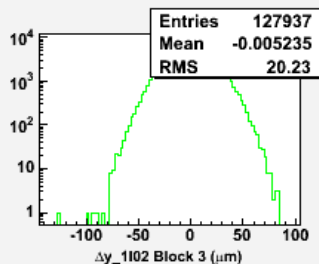
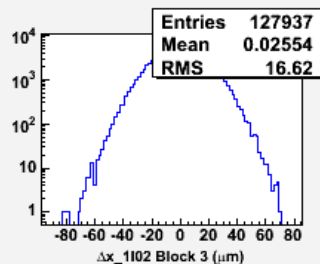
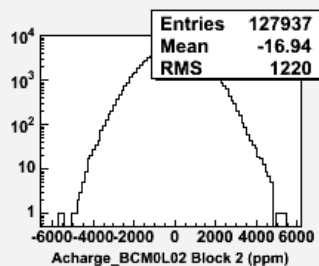
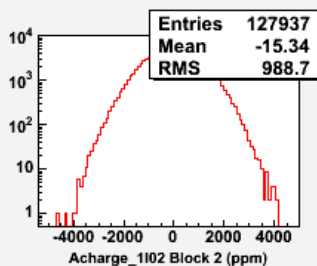
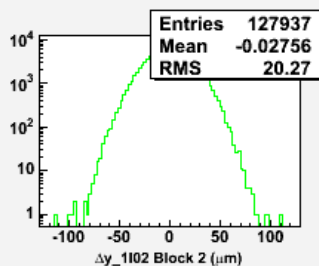
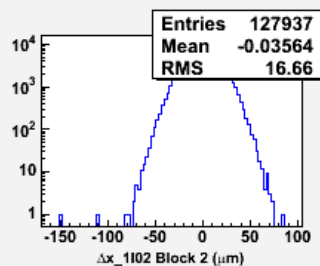
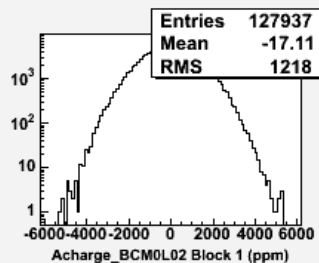
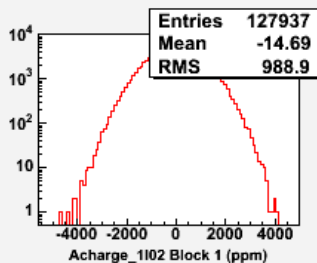
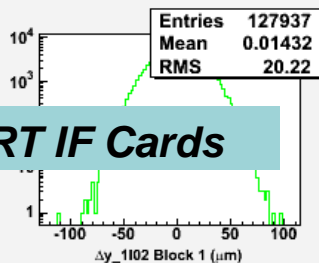
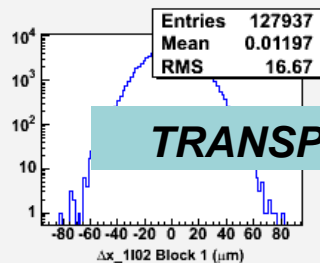
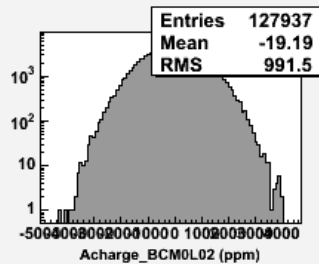
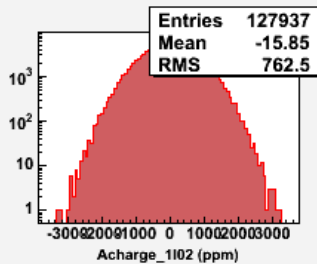
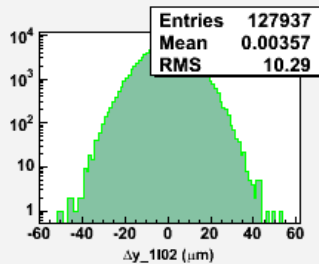
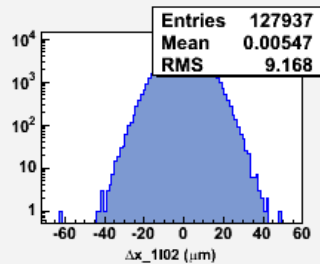
3. **Task:** Eliminate the Vacuum Window Birefringence by Rotating the LLGun2 Photocathode

- Tried once (see plot on next slide).
- Repeat again before photocathode activation.

4. **Task:** Accelerator FFB Measurement of PQB:

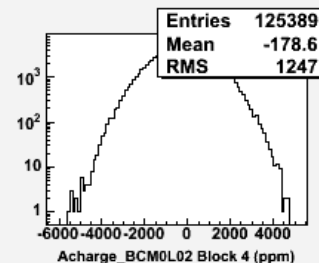
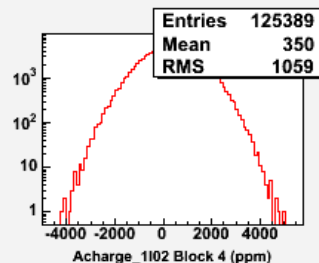
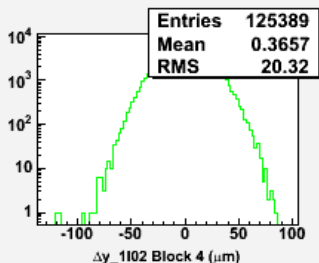
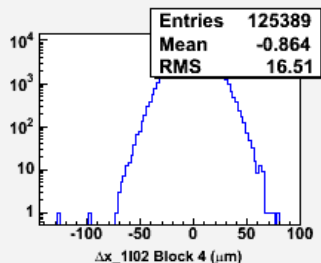
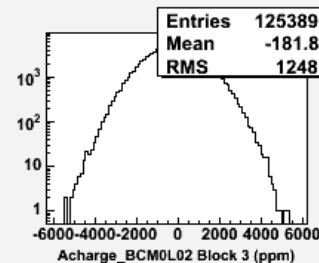
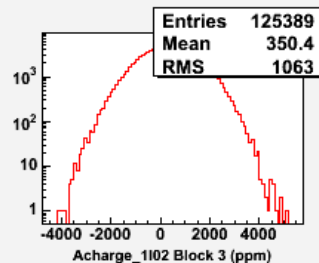
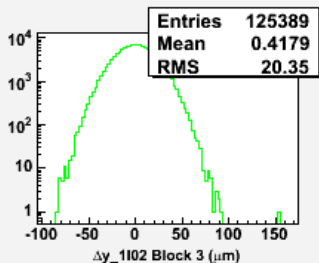
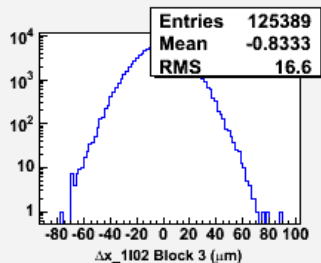
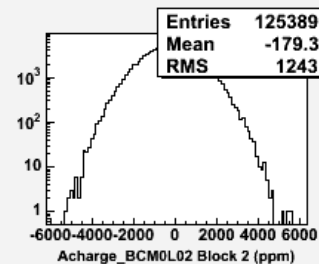
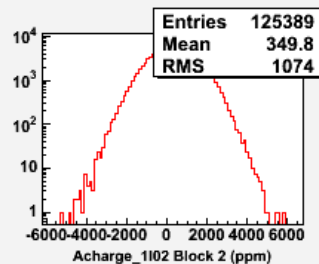
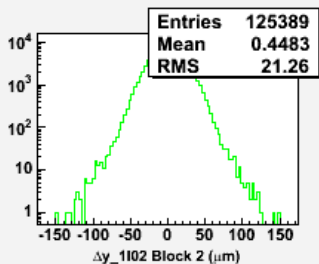
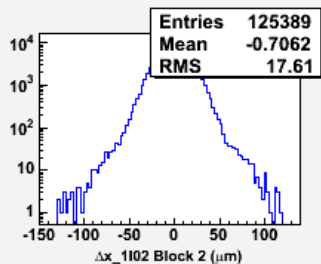
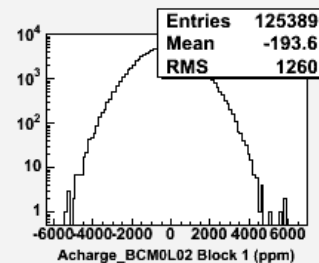
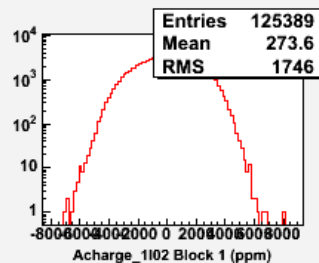
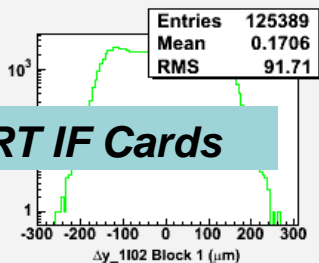
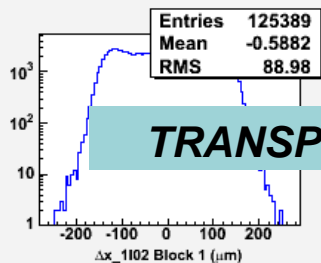
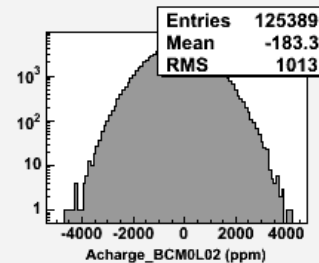
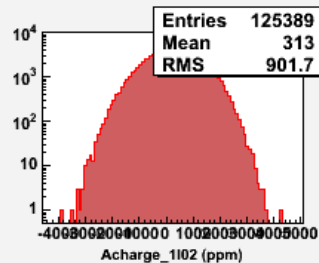
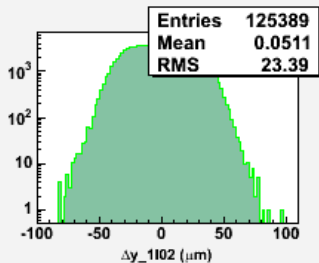
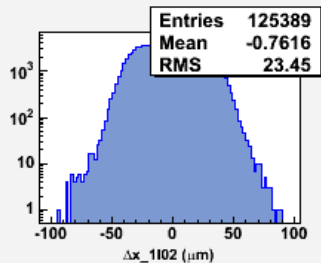
- Runs fine on Hall A iocse9 and Hall C iocse14.
- Need to implement in Injector iocs.

PC OFF
1 kHz
100 μ s



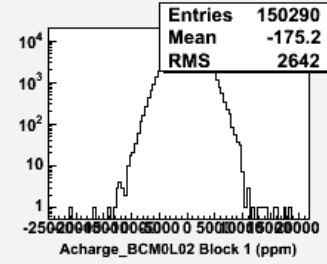
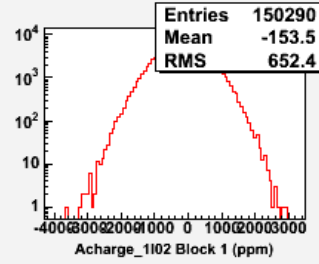
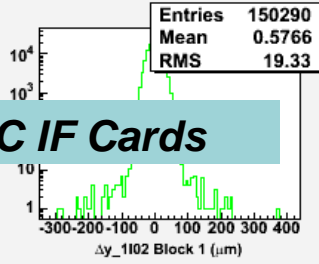
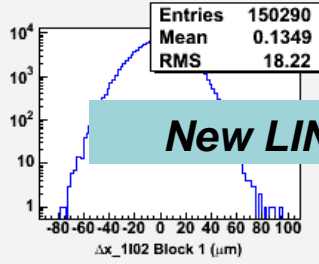
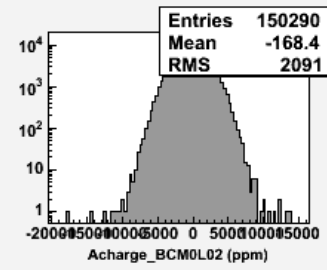
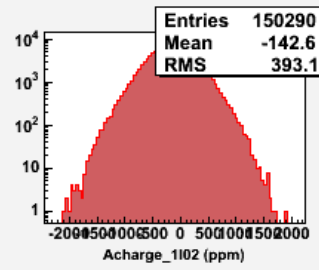
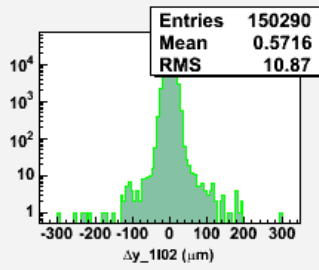
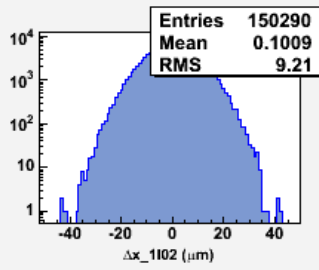
TRANSPORT IF Cards

PC ON
1 kHz
100 μ s

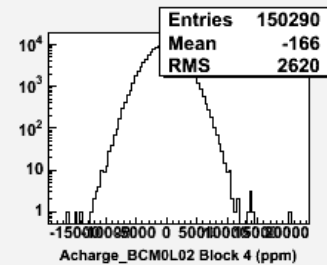
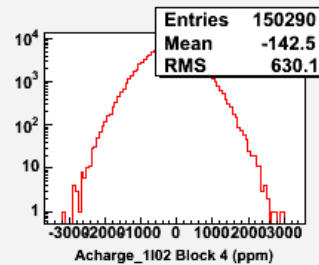
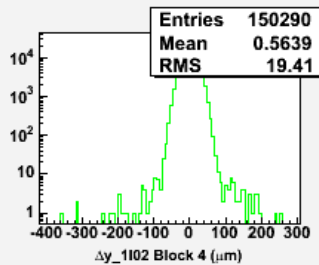
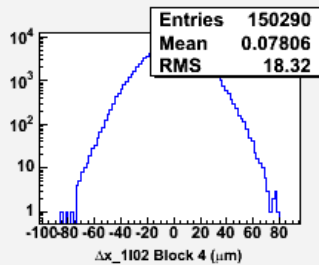
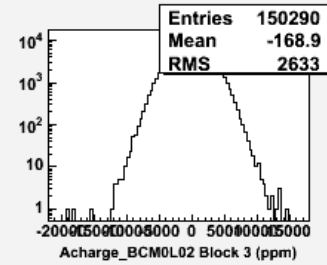
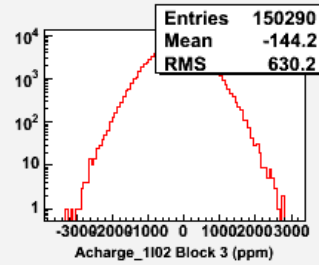
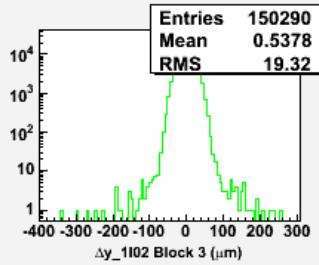
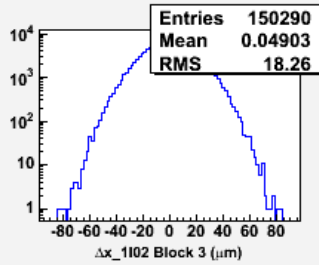
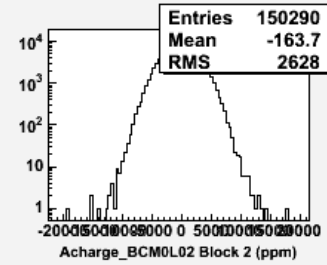
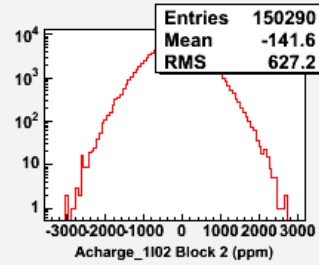
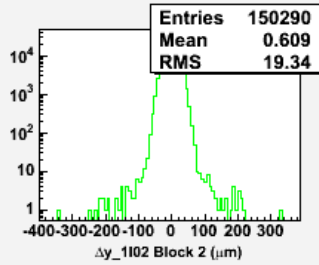
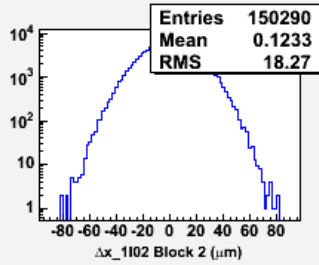


TRANSPORT IF Cards

PC ON
1 kHz
100 μ s



New LINAC IF Cards



The Photocathode Rotation

