Parity Quality Beam (PQB)

April 07, 2009

	Chan 1	Chan 2	Chan 3	Chan 4	Chan 5	Chan 6	Chan 7	Chan 8
ADC1	QPD pm	QPD pp	QPD mm	QPD mp			Battery 1	Battery 2
ADC2	1I02				1I04			
ADC3	1I06				0I02			
ADC4	0I02A				0I05			
ADC5	0I07				0L01			
ADC6	0L02				0L03			
ADC7	0L04				0L05			
ADC8	0L06				0L07			
ADC9	0L08				0L09			
ADC10	0L10				0R03			
ADC11	0R04				0R05			
ADC12	0R06				BCM 0L02	Battery 3	Battery 4	Phase Monitor

Notes:

1. For each BPM, the wires are: +X+, +X-, +Y+, +Y-
2. There are only two injector BPMs we are not reading: 0R01 and 0R02

Injector Parity DAQ

- **<u>Both Hall A Parity Experiments and Qweak will readout the same DAQ</u>**

- **<u>Issues:</u>**

  - Parity DAQ did work at 1 kHz and 500 and 100 μs but was able to read only 6 ADCs with 60 and 10 μs:

    - ✓ This week, Paul King will upgrade the Parity DAQ ioc to be able to read all ADCs

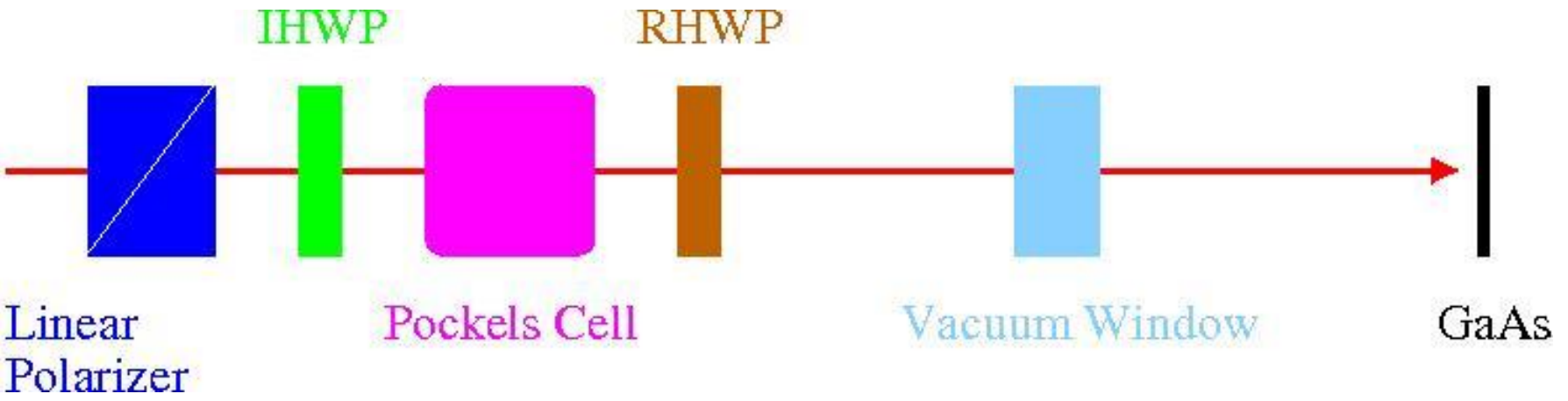
  - BPMs “Transport” style IF cards are affecting short T-Settle studies:

    - ✓ Requests are submitted to change IF cards to “Linac” style in Injector and Hall C

PQB Hardware

- **New Hardware:**
  - New Helicity Board:
    - ✓ Design is completed
    - ✓ Request is submitted
    - ✓ Ready by July 01, 2009
  - New IA Electronics:
    - ✓ Design is completed, parts ordered, prototyping
    - ✓ Ready by August 01, 2009
  - Revive the Injector Net:
    - X Nothing …
- **Eliminate 60 Hz Line Noise**:
  - 500 keV PSS Dipole Current Sensor
    - ✓ New Sensor
    - ✓ Ready by August 15, 2009
  - Ion Pumps VIP0L02/3 local power supplies:
    - ✓ Modified power supplies
    - ✓ Ready by April 23, 2009

Laser Table



This week:

1. Add a cleanup Insertable Linear Polarizer (ILP) to the laser table just before IHWP

2. Align Pockels Cell

PQB Tasks

1. **Task:** *Fast Helicity Reversal*

   - **Hall C Qweak: 1 kHz**
   - **Hall A PREx: 240 Hz (Line-Locked)**

     - Establish 30 Hz Reversal PQB *(8 hours)*
       - ✓ Pockels Cell OFF
       - ✓ T-Settle Study
       - ✓ RHWP Scans
       - ✓ IHWP and ILP Studies

     - Study 1 kHz Reversal *(8 hours)*
       - ✓ Pockels Cell OFF
       - ✓ T-Settle Study
       - ✓ RHWP Scans
       - ✓ IHWP and ILP Studies

     - Find the “right” T-Settle (ideally 50 μs)

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

     - Tried once. Repeat again? *(8 hours)*

3. **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 *(4 hours)*
   - 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. Repeat *(4 hours)*
   - Need to measure crosstalk in the Halls to look for RF beam loading. Need BSY Dump or Hall C and Hall A *(4 hours)*

4. **Task:** *Check Helicity Magnets, Mott Polarimeters at 1 kHz:*

   - Both Checked fine at 250 Hz last year
   - Need Linac IF cards in the 5 MeV region to check Helicity Magnets
   - Check Mott Polarimeters at 1 kHz *(8 hours)*

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

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