PQB Meeting

Caryn 5/22/2018

Modeling Feedback RTP



Simulated feedback, Aq converges as rms/N. Will perform beam test in April.

Stage 1 – return to this setup



Laser Table Setup – for RTP



- PPLN lenses: 1st lens f=40mm (John's), 2nd lens f=35mm (UVa's Thorlabs)
- Extra lens: ~1m upstream of the PC, a f=50cm lens (UVa's Thorlabs) was inserted
- Measured spot sizes, 2sigma: w=0.825mm Horizontal, w=0.94mm Vertical at PC center
- Measured divergences: dw/dz 0.51mrad horizontal, 0.66mrad vertical at PC center
- Measured M2: ~1.0, no observed tails
- cathode analyzing power was measured to be ~6%
- steering lens is 2m, cathode 4sigma 2.9mm Horiz, 3.1mm Vert, distance to cathode ~3.1m 1/19/17, distance to steering lens ~1.067m, effective throw from PC to cathode ~2.015m
- Note: Qweak laser spot size on cathode was 0.5mm for run1, 1mm for run2
 - Implies 4sigma = sqrt(2/In2) FWHM = 1.7mm for 2nd half of run,
 - Qweak run2 had 2X smaller laser spot-size than what we have now
 - Want: Steering lens change from 2m -> 0.75m lens, so cathode 4sigma is ~1.7mm

Tests in order of priority – What to cut? - Time?

- Setup RTP on the laser table, feedback on Aq, minimize pos diffs, laser spot
- 1. Setup inj beamline, FC1, RTP feedback+minimize pos diffs
 - e-beam at 25uA/70uA up through 0I05 region, current calibration run, PITA pos scans, feedback on, iterate PITApos voltages to minimize pos diffs in 0I05....(FC2 iterate PITApos voltages to minimize pos diffs in a select 0L region bpm)
- 2. Joe Wein flip test: 3 configs (off, right, left) with 130 keV gun
- 3. Joe SPOT moves on cathode -> map injector bpm sensitivities, anal. power
 - Compare to RTP steering control -> map injector bpm sensitivities.
- 4. Spot size asymmetry test helicity magnets
- 5. Joe- Solenoid e-beam rotation-> obsv. spot size asymmetry on one bpm vs θ Later
- 1. FC2 RTP
- 2. Joe Wein flip test: 3 configs (off, right, left) with NEW gun
- 3. New bpms study position differences with RTP