# PQB meeting

11/08/2018

# Scheduling (if not yet already discussed)?

- Q: Any December window to install items on inj. laser table?

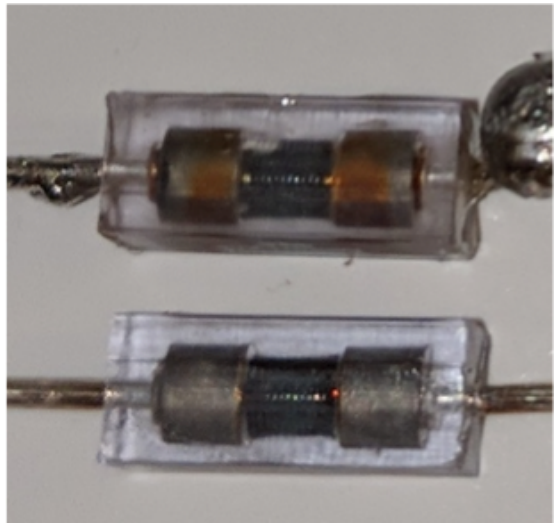
Currently: ONLY Jan2-9?

Previous possibility:

- Jan3,4: Laser start
- Jan16- 1st e-beam, (must do mott meas.)
- Restoration starts 1 week b4 physics Jan23ish
- Opportunity for beam studies 16-22?
- When does e-beam get past chopper?
- When is beam all the way down injector?
- Can we run ‘tests’ after beam get all the way down inj? i.e. measurement with just halla laser, RHWP angle, feedback
- 8-10wk break b4 PREX March-June

# RTP driver – solid state or opto-driver?

- Opto-driver



**Old**

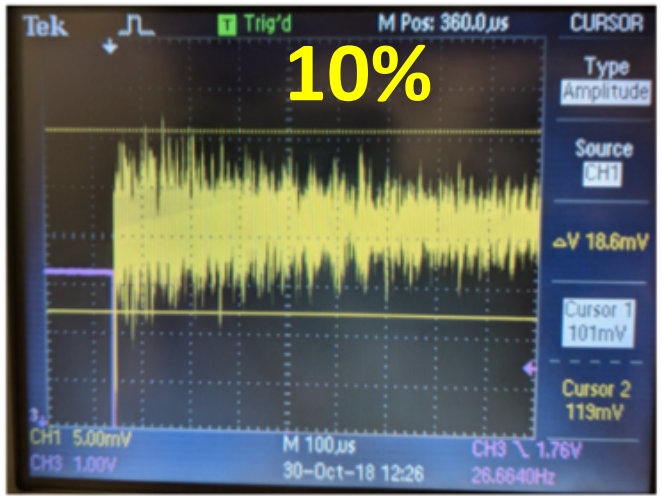
**vs**

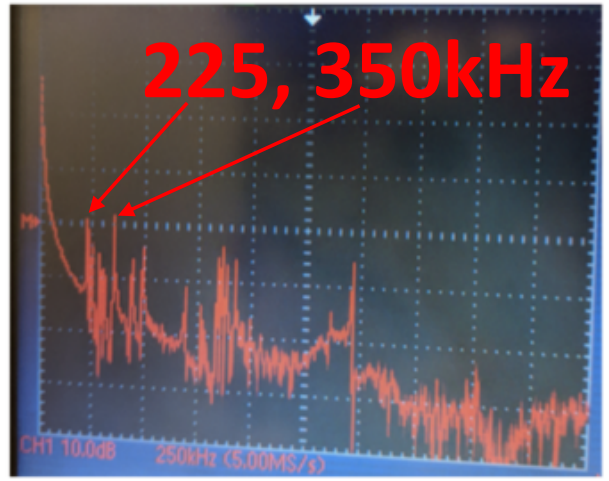
**New**

(example)

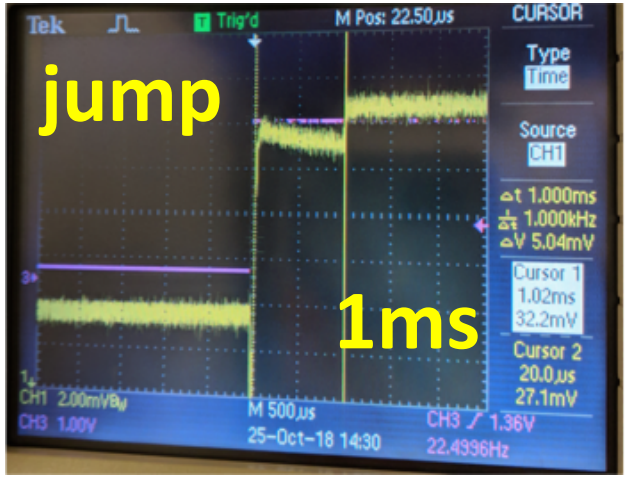
- Solid-State driver

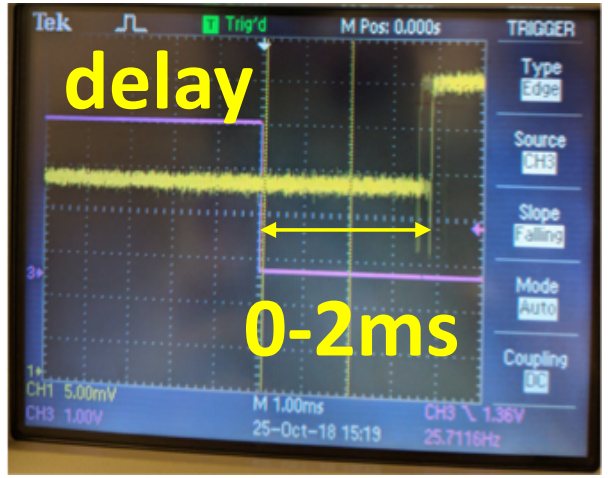
**Without resistors, transition as fast as possible:**


**With 50kOhm resistors – 4us transition:**



# RTP driver – solid state or opto-driver?

Opto-driver

- Pro: Used in the past
- Con: Optocoupler degradation over time
- Running 3mo with >1year old switches t=7,15us -> t=16,27us. Should start with/order fresh switches. For PREX, need <100us transitions

Spares

- John made a spare LED circuit – good enough
- I will order spare optocouplers and make spare dragon/opto/HV switches (need 4 more of John's dragon boards)

Solid-State driver

- Pro: As fast as you want.
- Con: Too fast, needs softening.
- Test: All 4 switches worked when allowed to switch fast, with no resistor. Only 1 switch out of 4 worked when a resistor softened transition to 4us.

To do

- John reverse polarity/helicity on 4 of the 8 outputs
- John try to make switches #1,2,3 work like switch #4 with 50-100kOhm R's

# Installation and Test Plans

- Laser: 50cm lens in b4 cell in usual place, keep 1-2m steering lens for 1-2m effective throw distance, either solid-state or opto-driver (will see). Find hallB,C,D sizes of beam (or put 50cm all the way past the combiner so all halls), check all hall beam not clipping
- Mark KD*P current position so reinsertable. Remove but keep connections.
- RTP on table, HV connections, DAC channels, driver, lid, (laptop from upstairs).
- Laser table alignment – RHWP scans
- e-beam: Spring running conditions (# uA, #MHz), set RHWP angle to S2 for Aq stability without feedback. Send beam ALL the way down injector.
- set up for PREX conditions (70 uA, 500MHz), slight RHWP angle off S2. Send beam ALL the way down injector. run pos diff feedback and Aq feedback.
- Chopper scans for RTP – check longitudinal structure, exploration (other hall beams)
- Try for Moller conditions : run feedback for longer on different bpms, try using PC angle d.o.f
- Other:
  - Linear array measurements
  - Helicity pickup assessments
  - Mott measurement

# Tests during SPRING 2019

- ***Transition times: leave photodiode and polarizer on inj table. Periodic (weekly? Biweekly?) insertion of qpd mirror, scope upstairs, check transitions
- **Aq: Measure Aq in one of the halls (check weekly? Biweekly?)
- For PREX: Aq feedback with new DAQ system – may wish to try out feedback in Spring.

Other considerations:

- Shielded cables
- Configure feedback software to work with new DAC channels
- Modify HV supply (R1b relay , switch 115V easily), to allow for remote off, 24 V up to relay could install internally
- PITAV – script to change 8V's on EDM screen – possibly EDM screen allows for PITA setting that automaps….Can do mapping
- PC on off for KD*P reused on off switch for RTP
- Try to make PC shorter, email John regarding lid.
- Send Joe definitions of PITA V, alphaposV, alphaposU, alphaV
- Build extra opto-driver with dragons
- Shield John's new electrical driver - shielding for solid state switch?
- Add angle control on 4 axis mount
- Basic RTP alignment procedure – align back reflection
- Send joe list of parts
- Dig up specs on crystals Raicol – uniformity, angle cuts, AR coating - send quote
- Send list of all Newport/thorlabs compontents on RTP mount
- HVps electronics diagram/pics of inside (specs of power on supply for transition times/2kHz)