

Summary recent discussions
and trouble-shooting of various
beam problems originating at
injector

Hall A

- Intensity modulation that increases the distribution width of measured charge asymmetry, observed at the gun. <1% intensity modulation @ in the frequency range of 1 – 10 Hz. “charge asymmetry tail”
- During low current Moller measurement, using the chopper slit, beam current was very noisy, unstable

Hall B

- Current spikes, up to 80 nA, before FSD trip
- Current modulation, up to 10 nA out of ~ 17 nA, on a seconds time scale
- 120 kHz (240 kHz) intensity modulation
- No current after restoring from a trip

Halls B and D

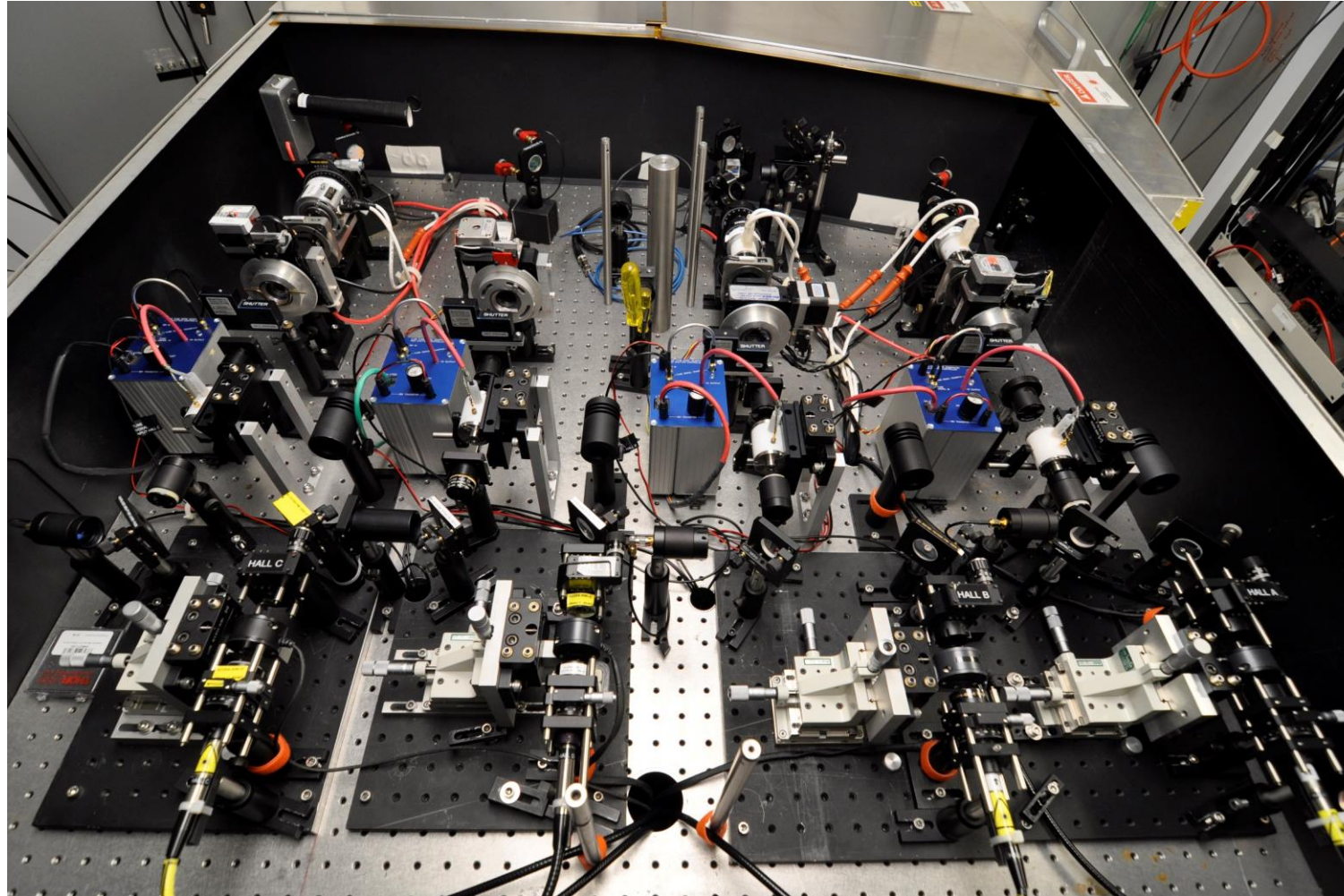
- No current after restoring from a trip
- Two laser attenuator values give the desired current

What have we looked at? Discussed as possible culprit(s)?

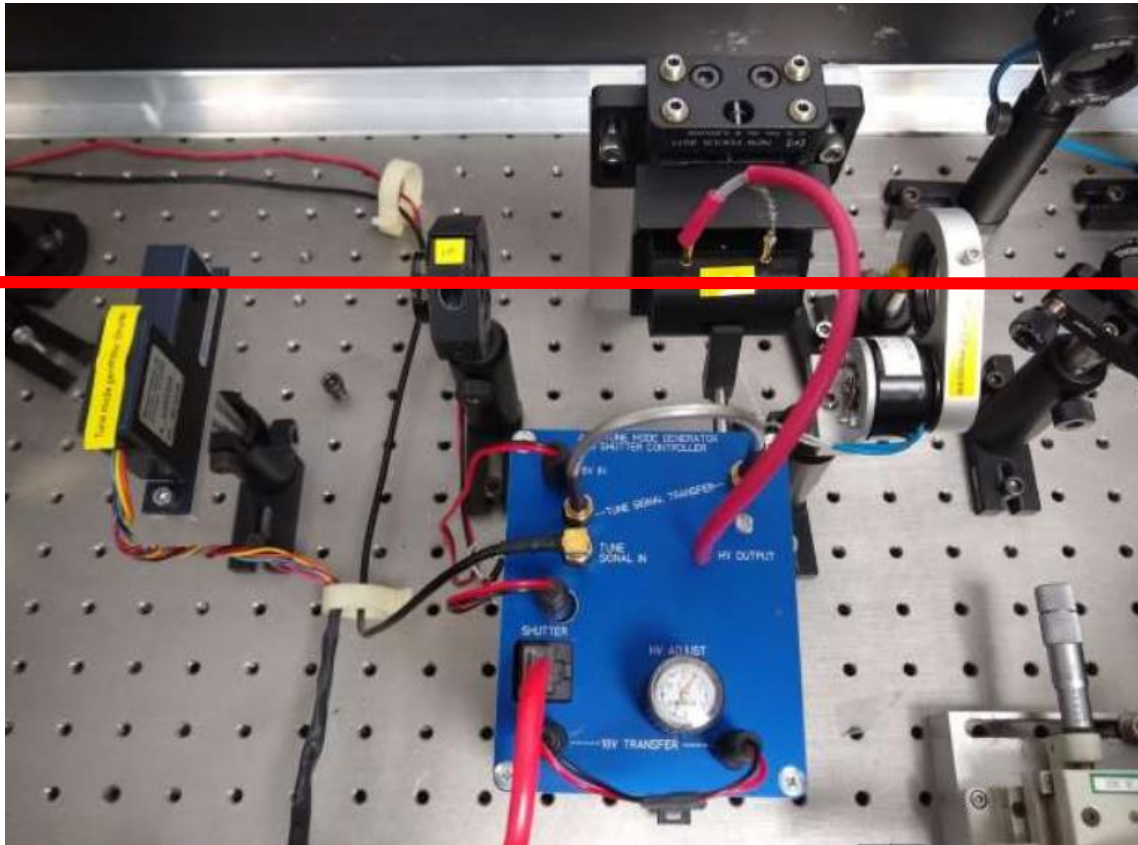
- “Easy Button”
- The “tune mode generator”, individual components and control chassis
- laser attenuators (specifically, the stepper motors)
- Current lock software
- Settings of the fiber amplifier: power control versus current control
- Injector orbit and rf phase settings, drift from “good setup”
- Injector RF chopper cavities
- What is the current monitor used at Hall B for current lock?

“Tune Mode Generator” is more than a Tune Mode Generator

- Creates machine-safe viewer and tune modes
- Also part of our fast-shutdown system/machine protection



Beam Mode	Pockels cell High Voltage	half wave plate	Shutter
Beam OFF	OFF	Inserted	Closed
Viewer-Limited	Pulsing	Inserted	Open
Tune	Pulsing	Inserted	Open
CW	OFF	Retracted	Open



Halfwave plate and/or shutter might not be responding as requested when the common power supply is asked to perform multiple tasks simultaneously

“Easy Button” now configured to implement steps consecutively

Hall A

Fiber amp setting?

- Intensity modulation that increases the distribution width of measured charge asymmetry, observed at the gun. <1% intensity modulation @ in the frequency range of 1 – 10 Hz. “charge asymmetry tail”

Chopper RF

- During low current Moller measurement, using the chopper slit, beam current was very noisy, unstable

Hall B

Not physical

- Current spikes, up to 80 nA, before FSD trip

Wrong current monitor?

- Current modulation, up to 10 nA out of ~ 17 nA, on a seconds time scale

Chopper RF

- 120 kHz (240 kHz) intensity modulation

Tune Mode Generator

- No current after restoring from a trip

Halls B and D

Tune Mode Generator

- No current after restoring from a trip

Tune Mode Generator

- Two laser attenuator values give the desired current