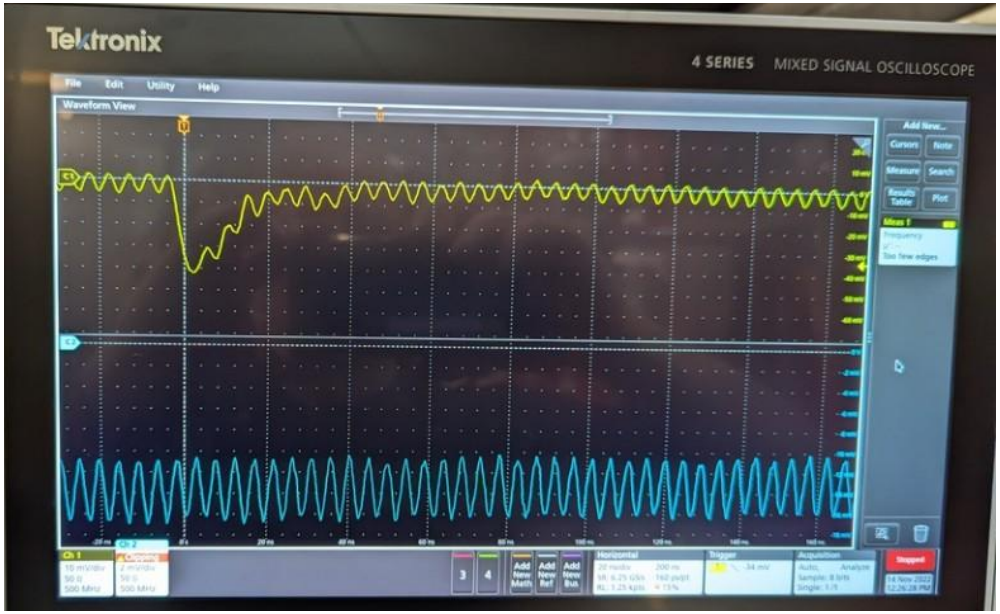
“Noise” on NPS calorimeter

coherent oscillations.

https://logbooks.jlab.org/entry/4092527

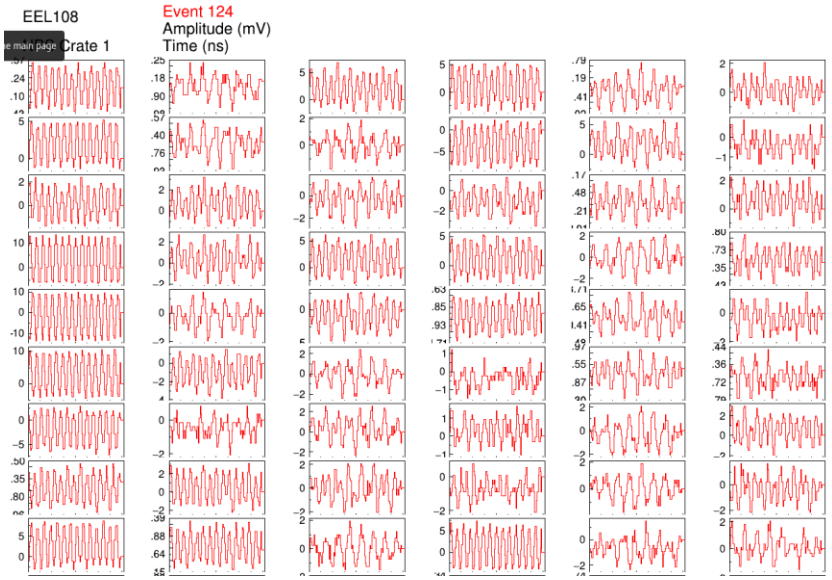
Two different signals paths shown.



The noise is 210 MHz that varies in amplitude, usually 5 - 20 mV, but have been observed to be 1 V. It's not understood. The noise is highly correlated across all the electronics. The noise goes away if we turn off the low-voltage to the amplifiers. One concern is that the noise would overwhelm the VTP-based trigger. Another concern is that if we need to modify the bases we'd need to do that before trying to finish the assembly.

Signals in the FADCs from the calorimeter PMTs.

Coherent oscillations



1. Connect a good ground ? (heavy braid).
   Brad said it was tried. But we will try some more.

2. Measure EMI in the room. Spectrum analyzer with an antenna

3. Modified amplifier ?
   Brad et al. tested low-pass filter modified bases. They reduced but did not eliminate the oscillations.

4. Try aluminum foil covering the front to make a more hermetic Faraday cage.

5. Would be nice to examine the scintillator area. Might be a grounding issue.

Circuit for one channel: 8-stage PMT with amplifier