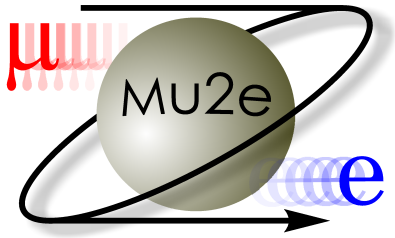
Tracker Update:

Leak Tests, Pulse Reflection Studies and New 2x4



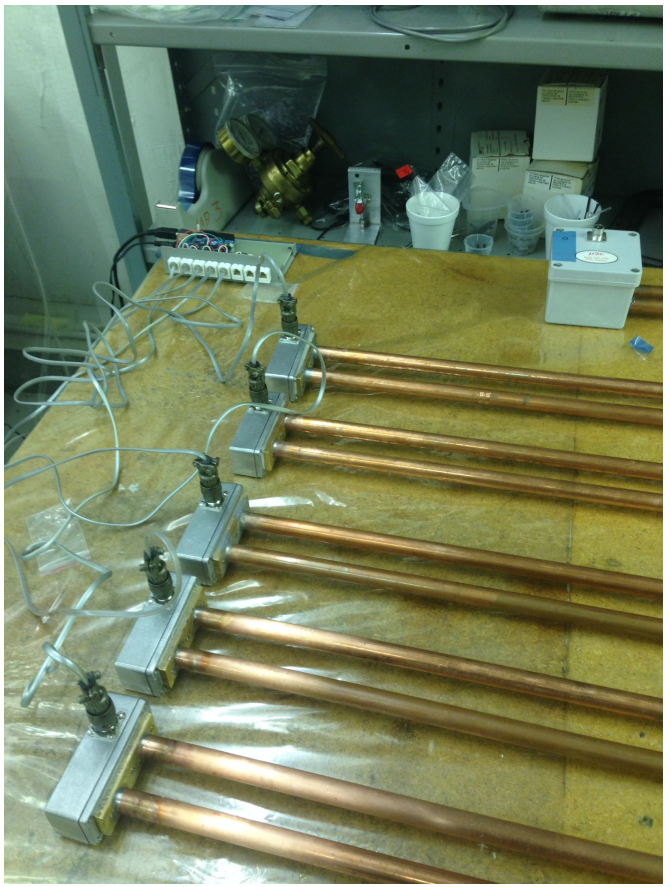
Jason Bono

March 2, 2015

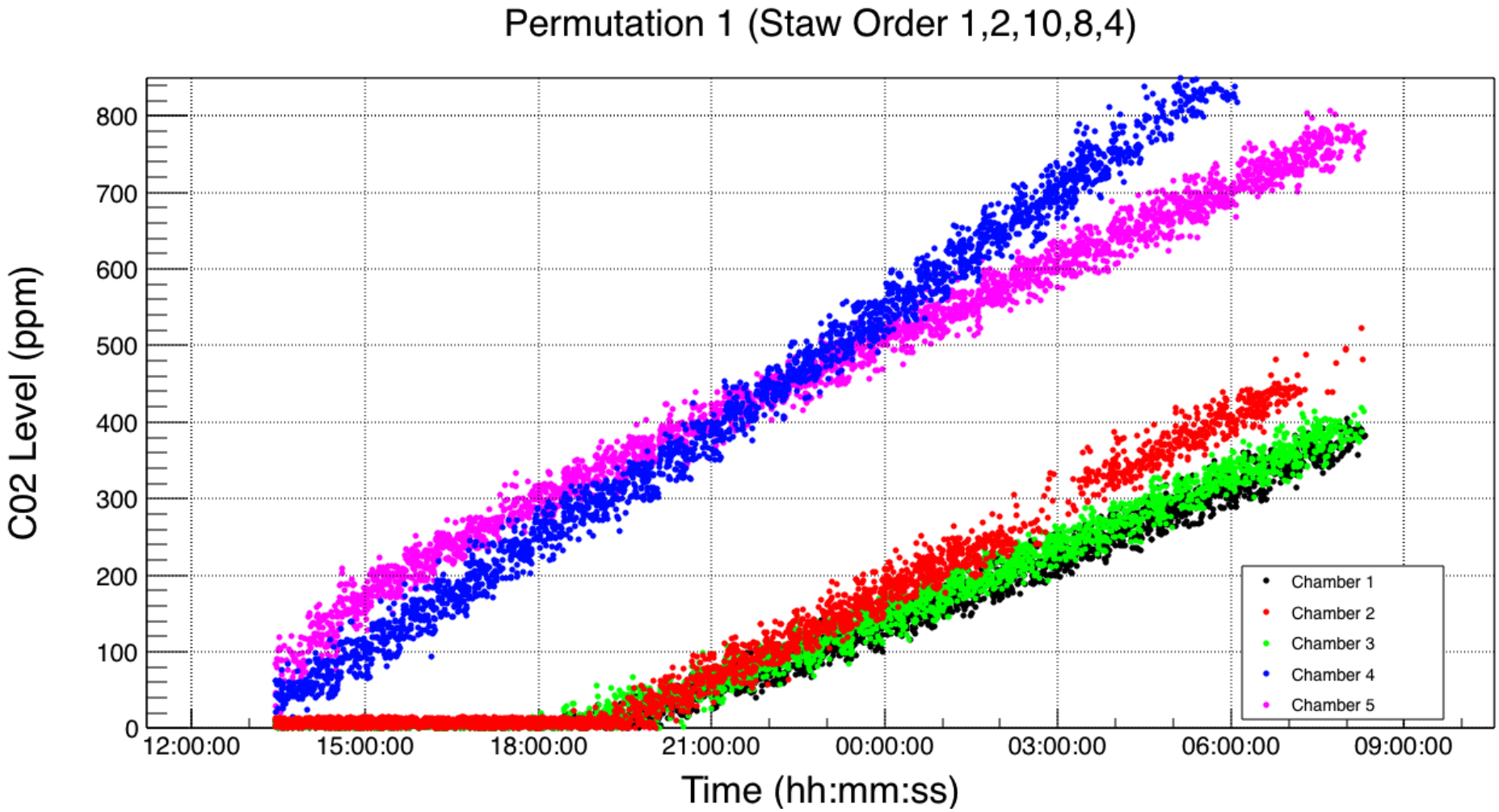
Leak Tests

Ran Tests With York Straws 1,2,4,8 and 10:

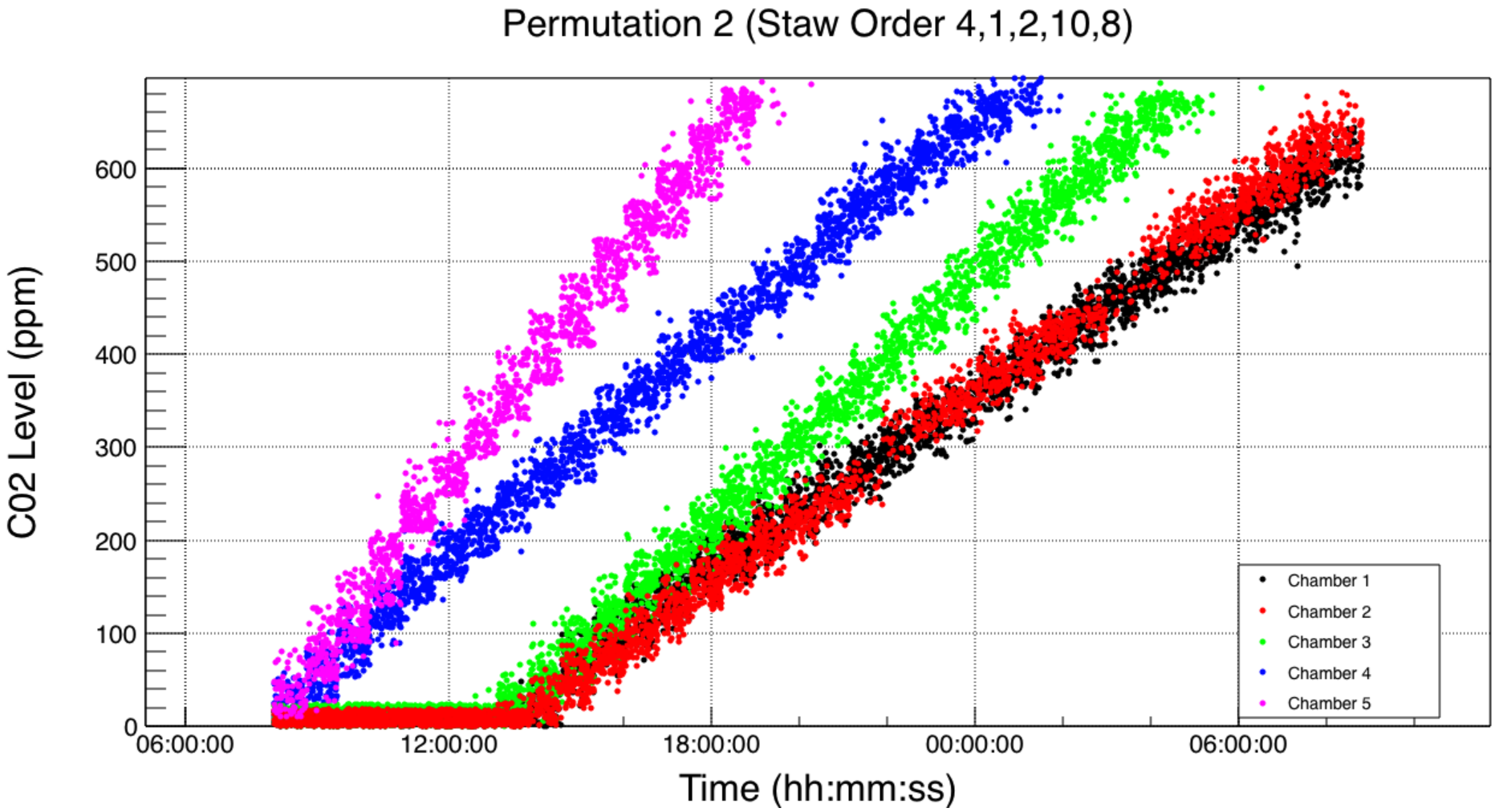
- Characterize performance of new chambers
- Compare York straw rates of past & present
- Identify changes needed before 2.0
- Provide data to develop new analyzer



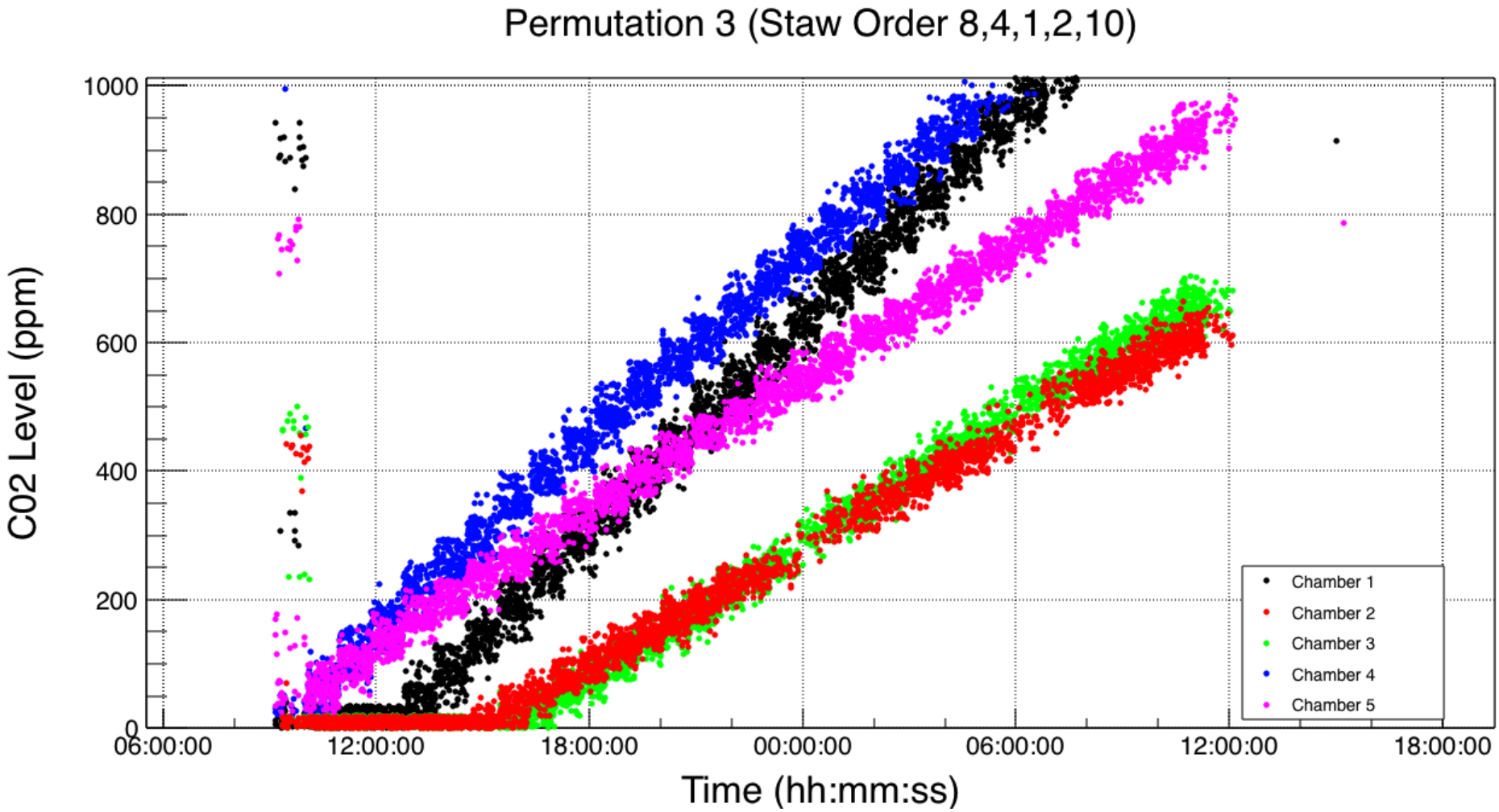
Leak Tests: High Pedestals and Resultant Delays



Leak Tests: High Pedestals and Resultant Delays



Leak Tests: High Pedestals and Resultant Delays



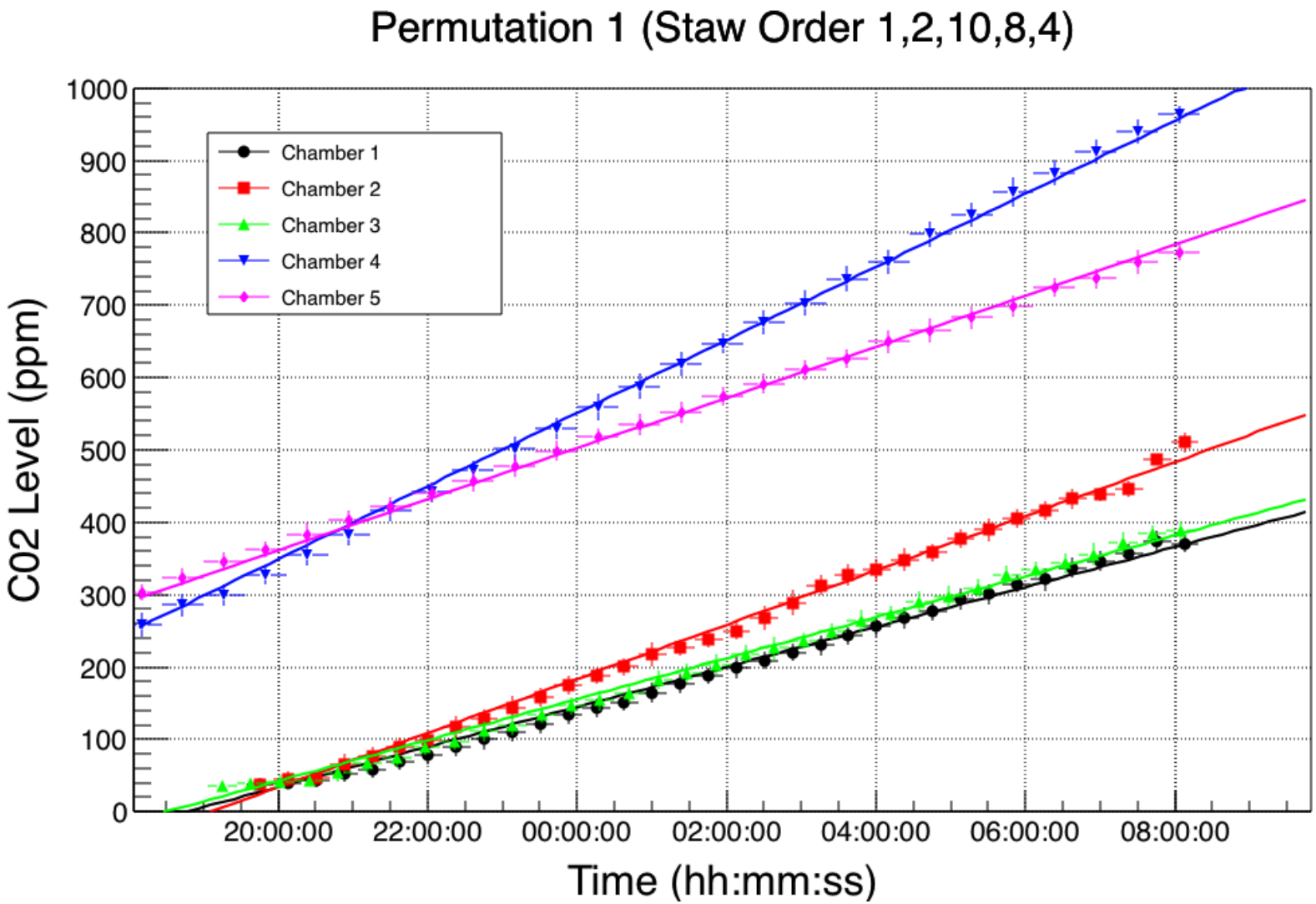
Leak Tests: Comments on Measurement Technique

- Chambers 1, 2 & 3 take over six hours!
  - This is due to high pedestal values
  - Flush with Nitrogen/CO2 Mix?
  - Similarly tuned sensors?
  - Want a universal background procedure

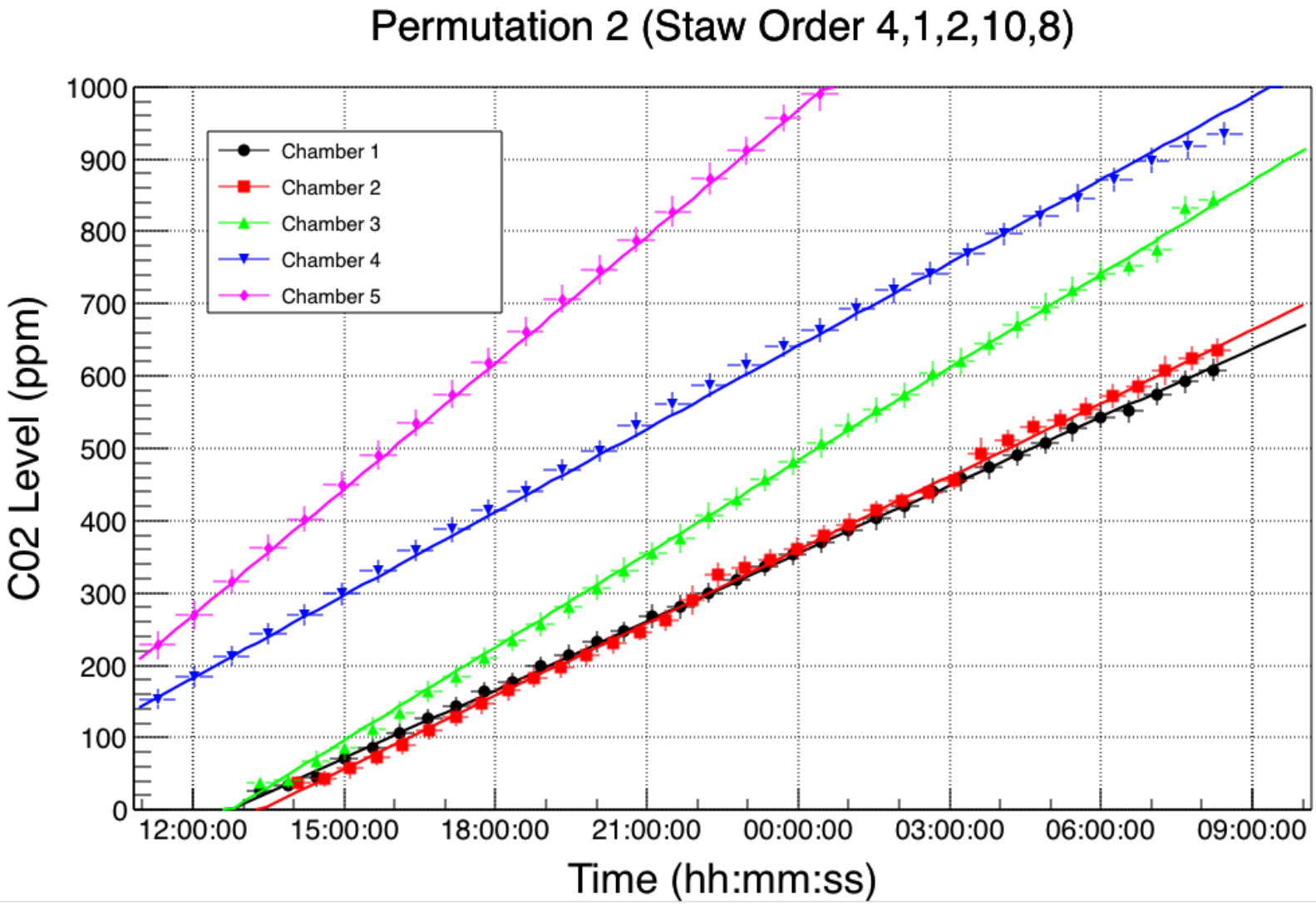
And some statistics:

- Chamber 2's output is -1 about 95% on certain intervals
  - Roughly at 280-380 ppm then again around 480-580 ppm
- Chambers 4 and 5: around 10% of the time for levels below 150 ppm
- Serial Communication fails only 3% of the time
  - This will be monitored

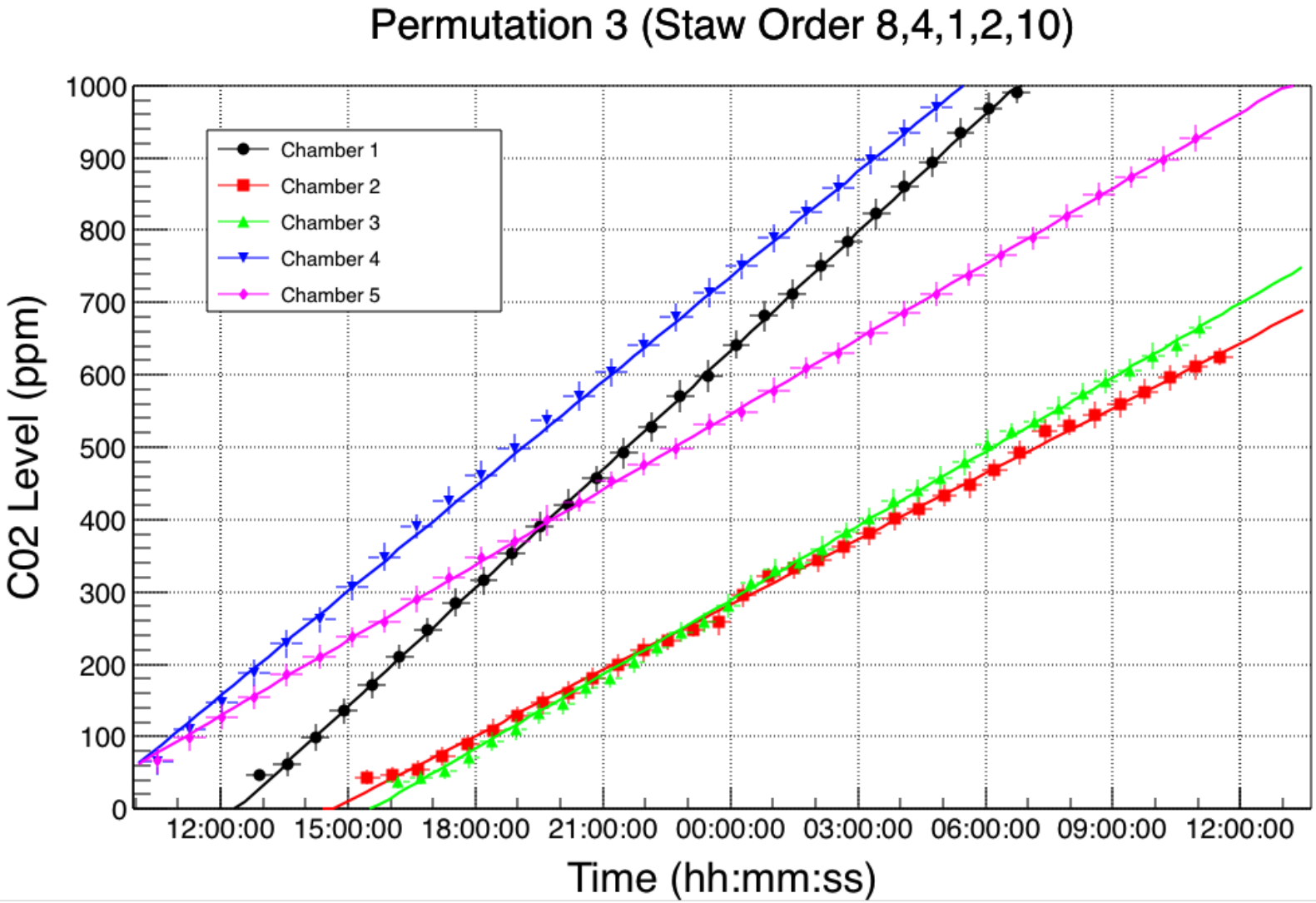
Leak Tests: York Straws (Cont)



Leak Tests: York Straws (Cont)



Leak Tests: York Straws (Cont)



Leak Tests: Comments on York Straws

All straws have a CO2 leak rate within 0.0004 - 0.0008 $\frac{cm^3}{min}$ assuming a 850 cm^3 chamber:

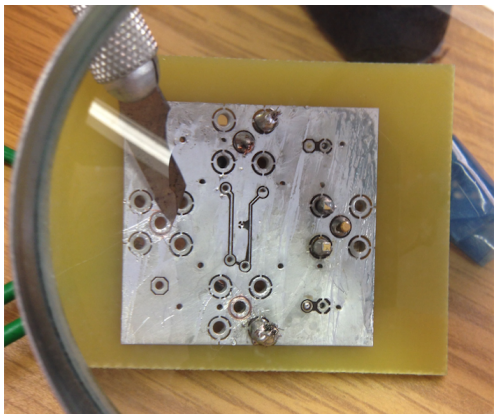
- Around a factor of 10-20 greater than last summer's measurment!
- Also above the per straw limit of $33x10^{-5}$
  - Maybe due to end pieces: Redo with ethanol as lubricant?
  - No background subtraction, but this is a minimal effect
- Consistent measurements for each (but the first cycle was mixed up)
- Leak rate reduces with pressure, but not proportionally
- The York straws were prepared initially at 14psi

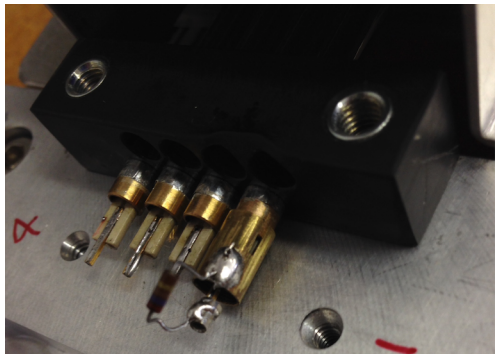
Pulse Tests

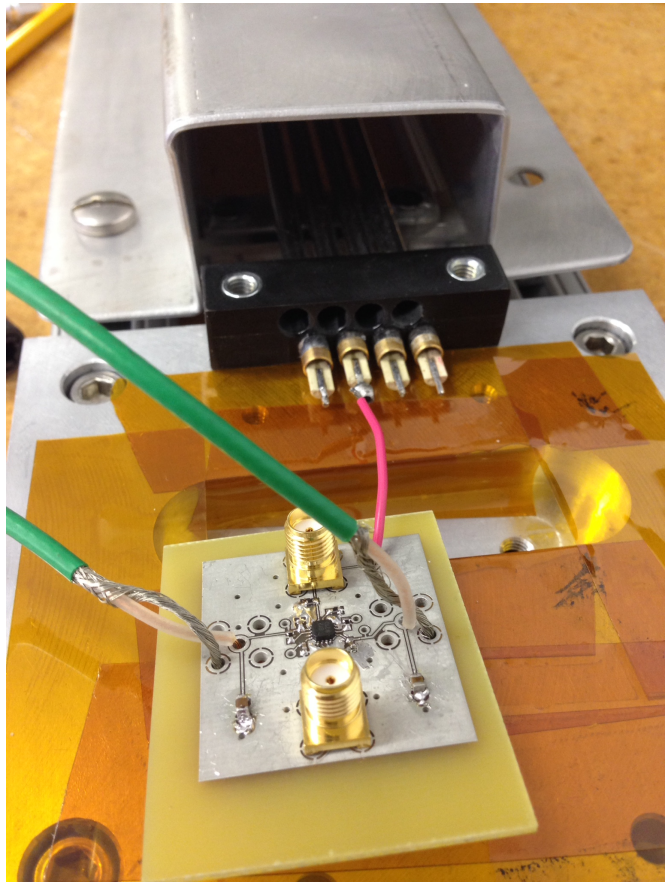
Must inner & outer layers of straw be electrically connected?

Run pulse tests and look for reflections

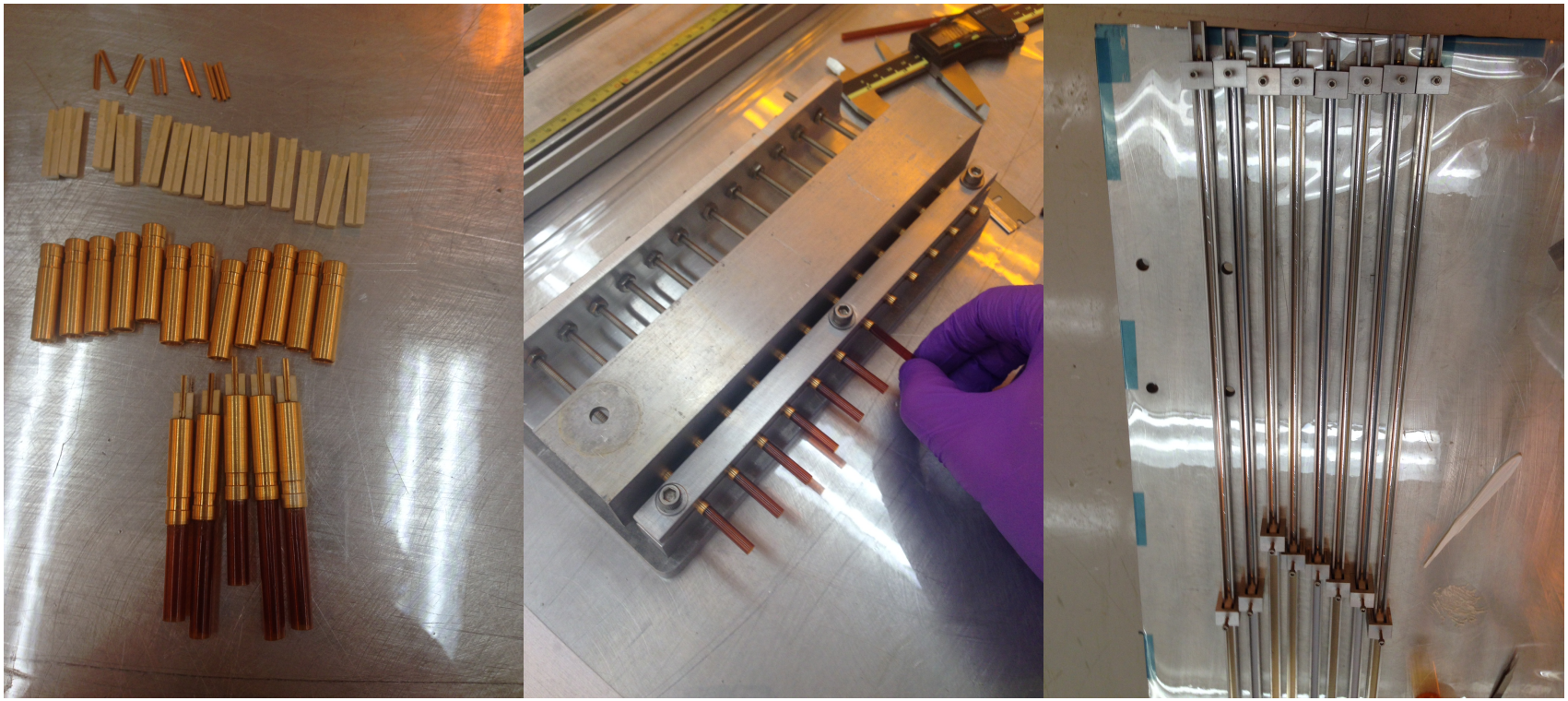
- Restrung and epoxied the single test straw
- Epoxied Otto's 2x4
  - Else the pins pop off
- Prepared Vadim's comparator circuit board
  - Originally an ADCMP580, but it shorted
  - Still have rise time of 1.3ns and 4ns width







New 2x4



Finished silver epoxy ready to mount and string this week

Thanks to Dan and Vadim who have familiarize me with the work in Labs 3 and 5.