Supplement - On energy window drift in the Gamma-Gamma experiment

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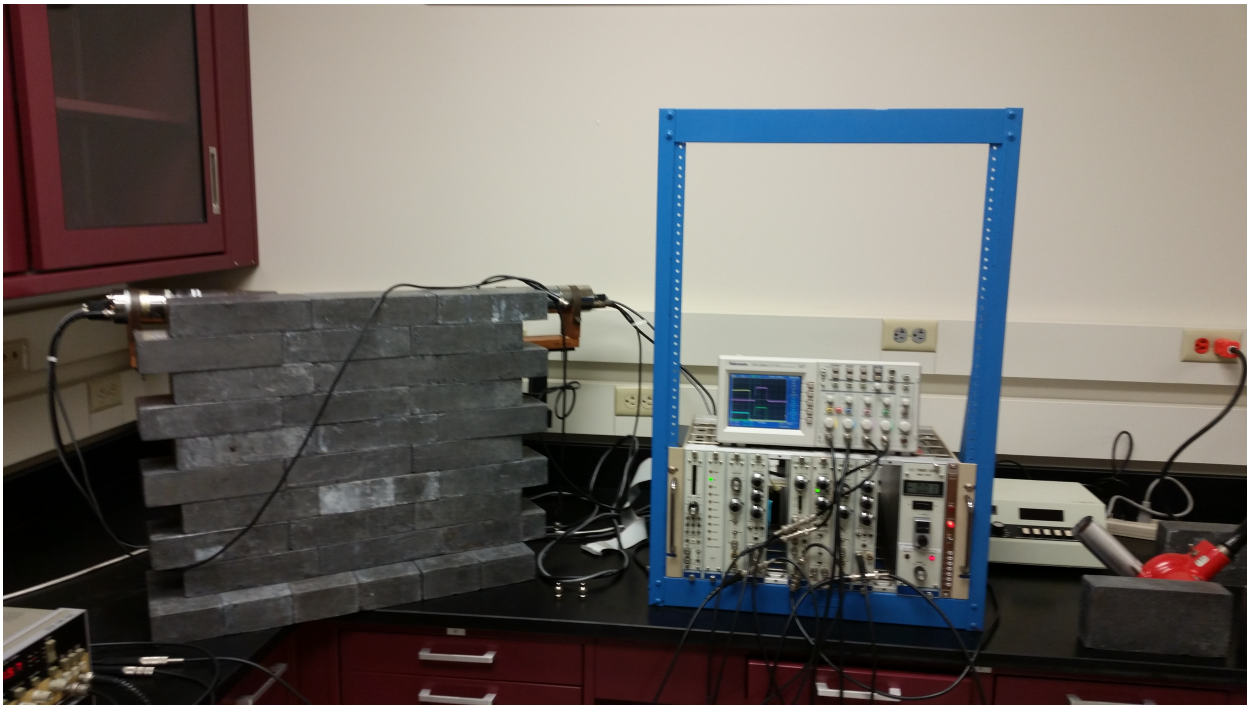

FIG. 1: Picture of the setup. Note how the heat gun is on the right only blowing on the structure rather than directly onto the SCAs. If it was directed more at the left SCA we saw the drop in coincident counts occur much faster.

I. TROUBLESHOOTING SETUP

We obtained two function generators from Bill Mohler and got them to output in sync using the trigger function. The minimum achievable frequency for these generators was 90 Hz so we used that so as not to push the SCAs too hard. We used a square wave like option (third type on the generators) as this allowed us to get pulse widths similar to that from the actual setup if we adjusted the duty cycle. Unfortunately this option also resulted in the voltage going negative which is unlike the normal setup so we had to be careful to readjust the DC offset if we changed the voltage of the function generators.

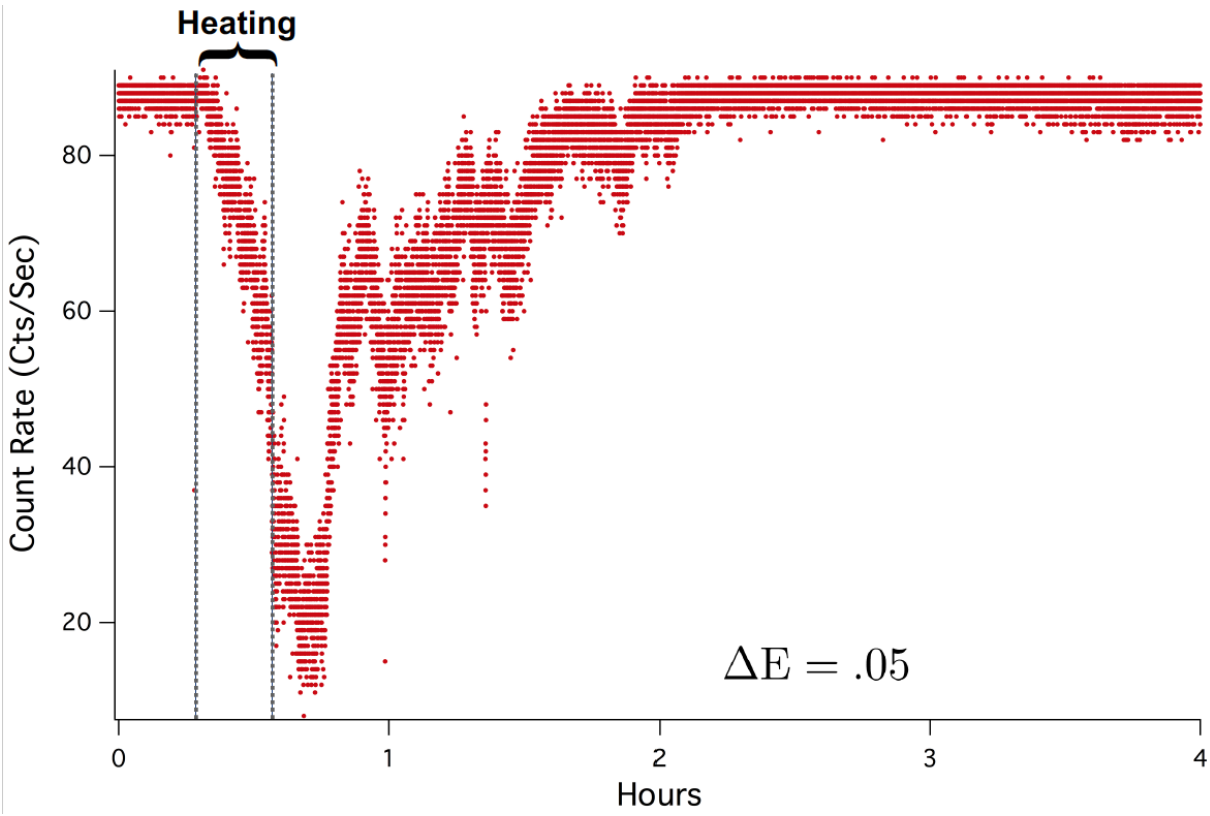

FIG. 2: Complete graph of count rate vs time with the heat gun applied for the first run of troubleshooting. $\Delta E = .05$ V

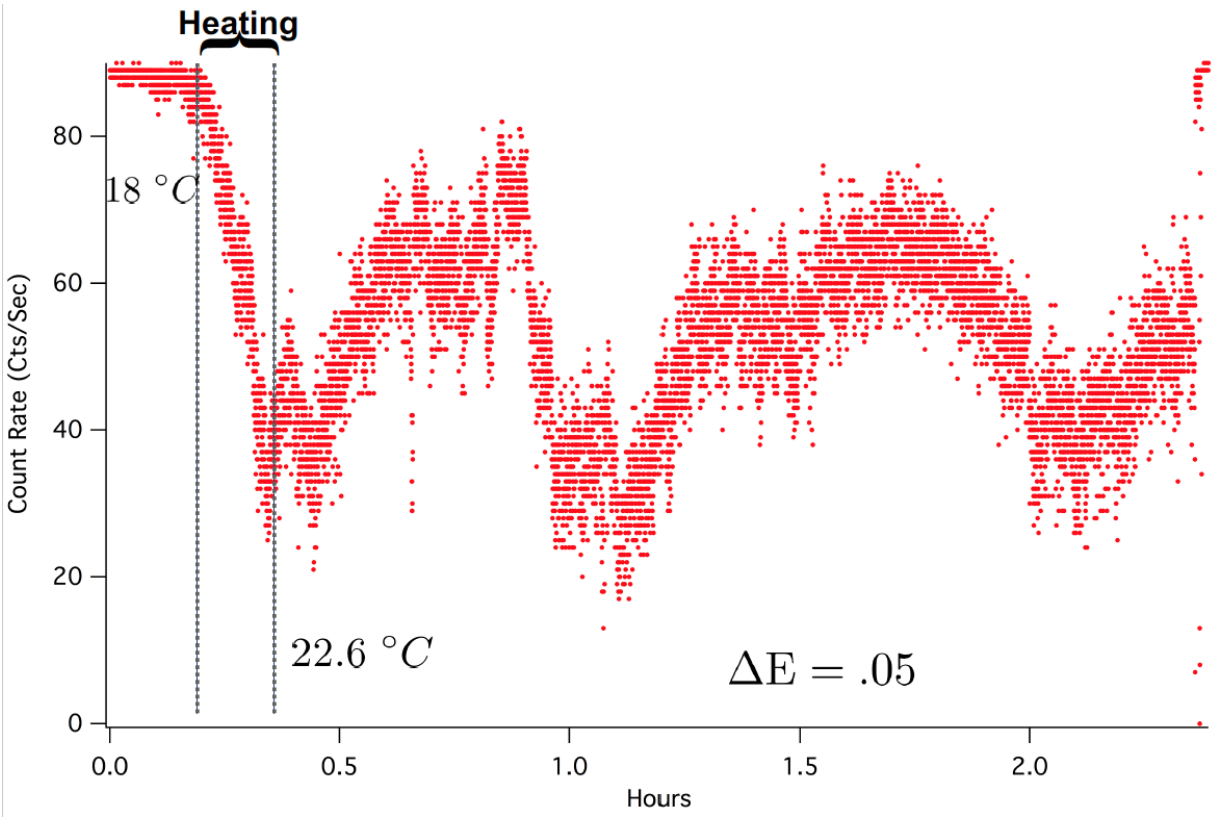

FIG. 3: Complete graph of count rate vs time with the heat gun applied for the second run of troubleshooting. At approximately .75 hours we began heating again causing the second dip. However the drop around 1.75 hours was not due to direct heating with the heat gun rather it seems due to the warming of the room form teh 18 ° C at which the room had been when we first entered. $\Delta E = .05$ V

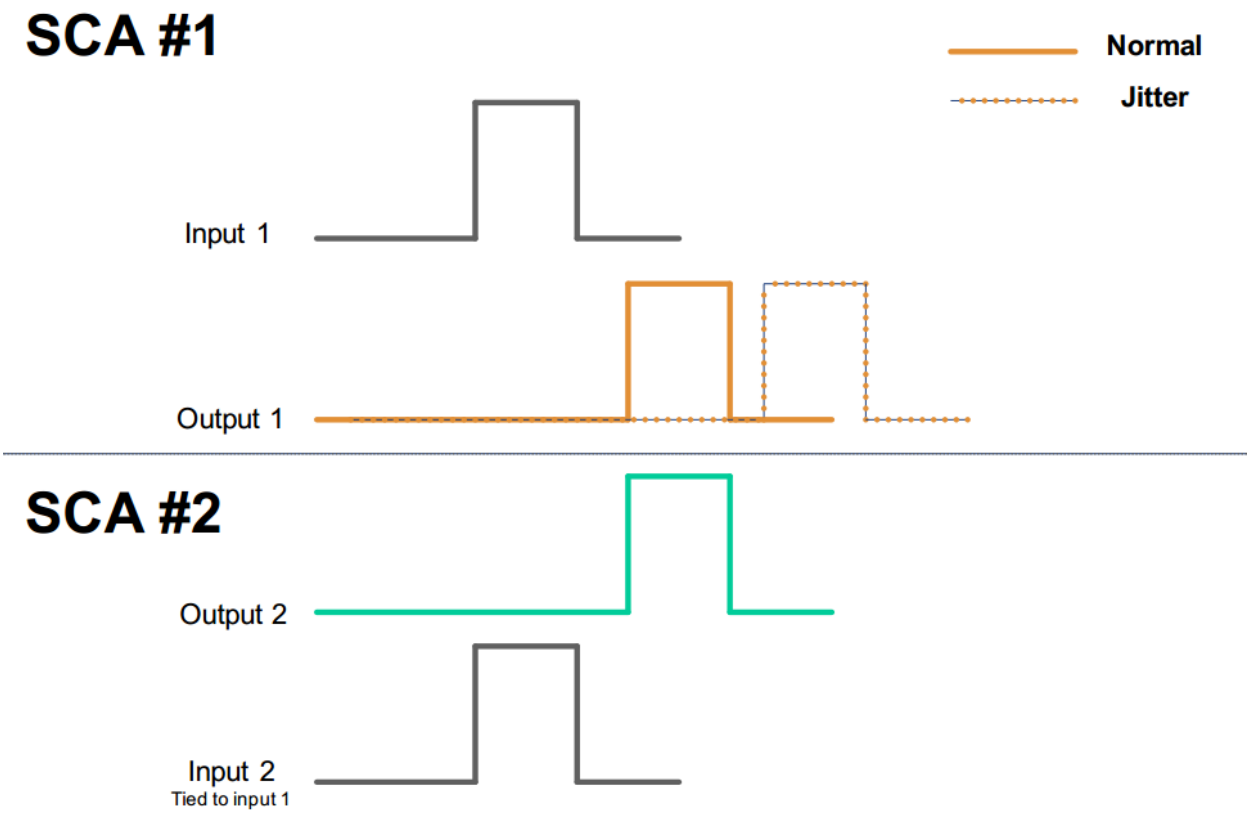

FIG. 4: Illustration of the jitter we observed in the timing of the left SCAs output. The jitter was a consistent amount and we also found that sometimes flipping the mode switch back and forth could alleviate some of the jitter. This flipping the switch did not always help however.