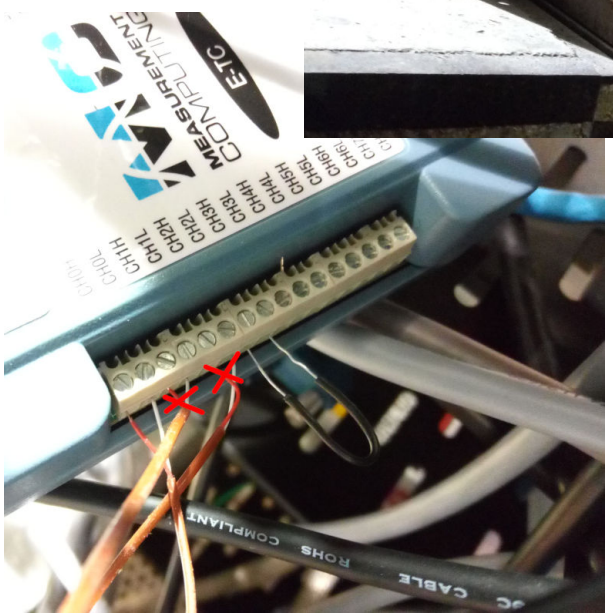
General Settings for Slow Control Monitoring

- Aim: Set up and start the continuous slow-control monitoring
  - Configure VIs and target computer to meet the general scheme
  - Check how readings and alarms appear on the monitor
- Slow control data monitor
  - `https://confluence.its.virginia.edu/display/General/Subsystems+Page`
  - For not only the target system but also the beam, the detectors, etc.
- Updates
  - The server processes were moved from `e1039gat1` to `e1039scrun` on Tuesday
  - One of the processes (`fill_epics_vars.cc`?) was found not running
  - The target computer was reconfigured to communicate with `e1039scrun`
- Plans
  - Make all processes run fine (by Paul?)
  - Set up a dedicated computer+display in the control room
  - Try to launch the data-monitor GUI

Test of Temperature Measurements

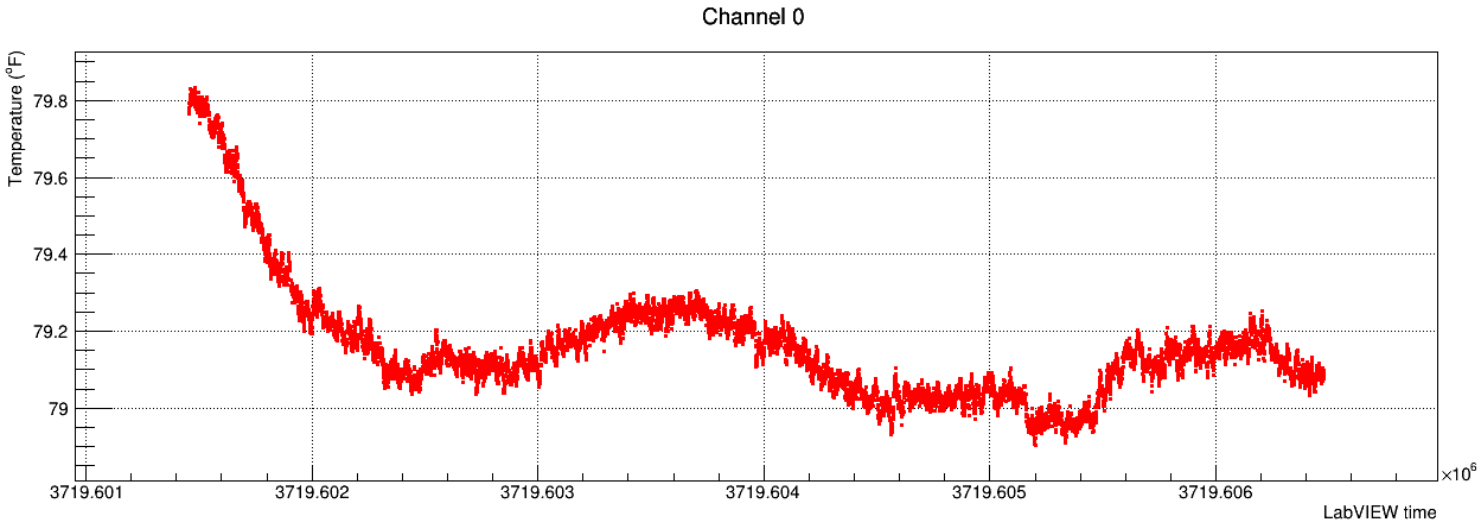
- Aim: Evaluate the measurement accuracy when TC is long, between cave & slow-control rack
  - Good enough for the measurement of magnet temperature?
- Setup
  - MCC E-TC
    (accurate & expensive than USB-202)
  - Channel 0 = TC
    - A short (7 ft) TC sensor +
    - One of three existing extension cables (50 ft?)
  - Channel 1 = Short loop
    - For reference

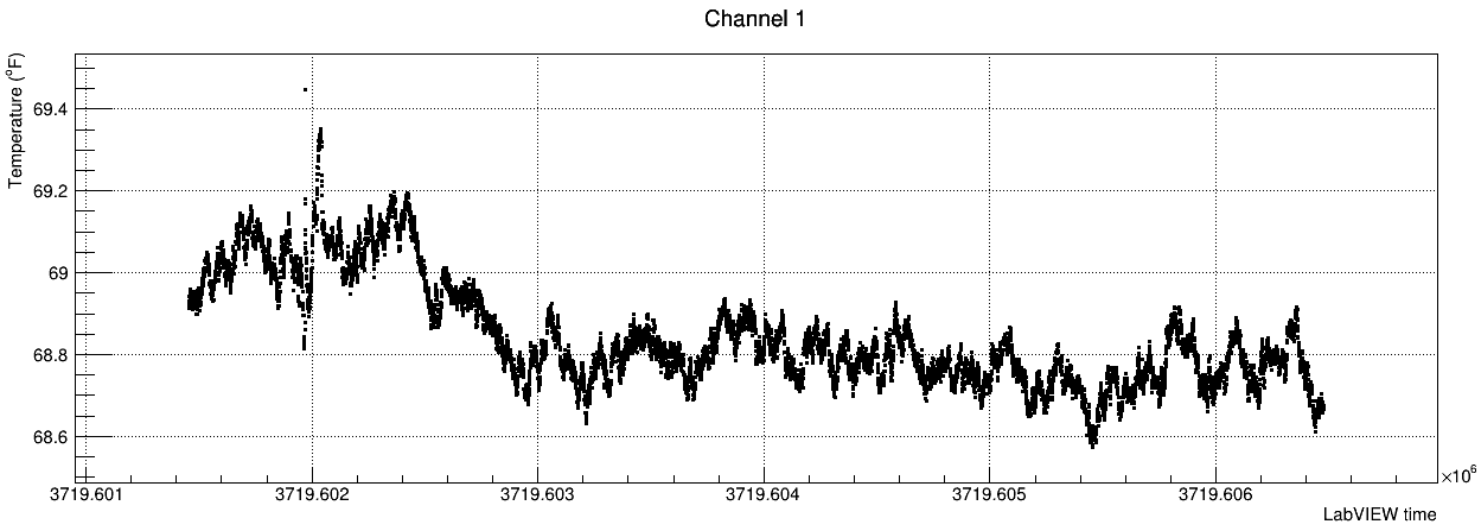


- Measurement
  - 2 Hz (cf. 4 Hz at max)
  - 60 hours from 12th (Fr) to 15th (Mo)
- Results ... *next pages*
- Observations
  - Point-to-point deviation is 0.013 °F
  - Same size on both channels and correlated
- Interpretations
  - External noise along the long TC cable should be of high frequency and thus be averaged out by MCC E-TC
  - Major noise arises on MCC E-TC, which is common to channels
  - $\delta_T = 0.013$ °F at room temperature $\Longleftrightarrow \delta_V = 0.3$ μV (using $dV/dT = 40$ μV/K)
  - $\delta_V = 0.3$ μV $\Longrightarrow \delta_T = 0.2$ K at $T = 4$ K ... too good?? (using $dV/dT = 1.5$ μV/K)
- Plans
  - Consider the effects of absolute scale and long-term deviation
  - Evalute the voltage attenuation along the long TC cable
  - Test MCC USB-202 also?
  - Test with LHe in small dewar?

Temperature vs Time

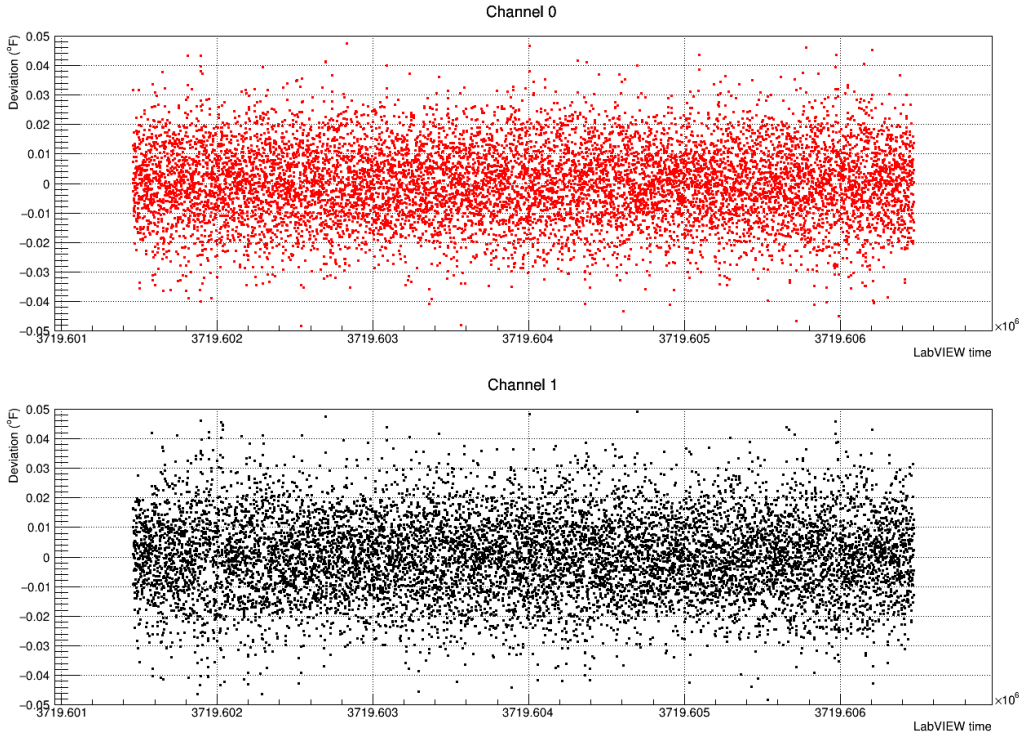
- Channel 0 = TC
- Channel 1 = Short loop = Surrounding temperature (with CJC sensor)
- For 60 hours at 2 Hz

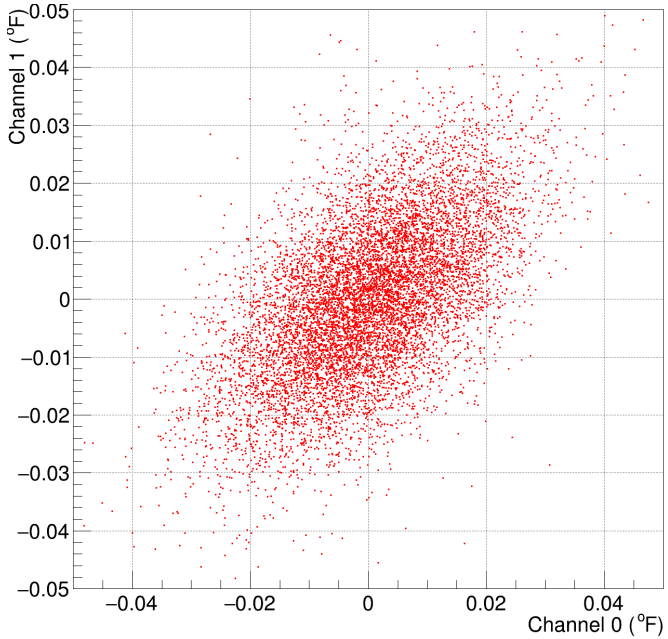




Short-Term Deviation & Correlation

- Deviation $\delta_i^T \equiv T_i - \sum_j^{i-10\cdots i-1,i+1\cdots i+10} T_j/20$





- Standard deviation $= 0.013$ °F on both channels
- Correlated