Update on the monitoring system

Magnetic shielding meeting

05/09/2019

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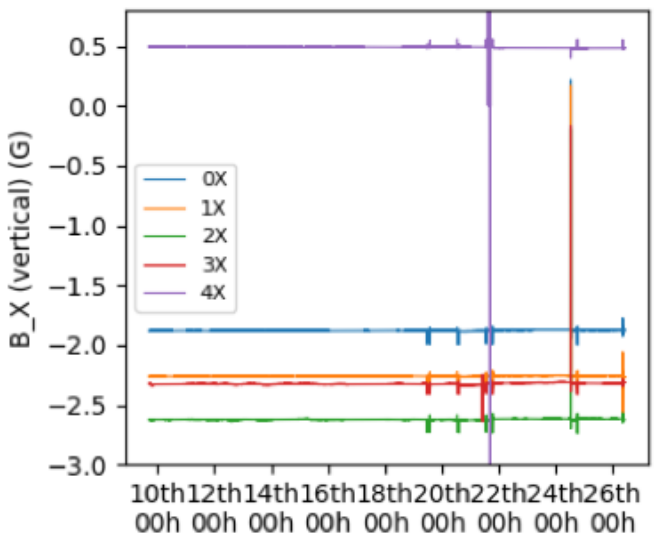
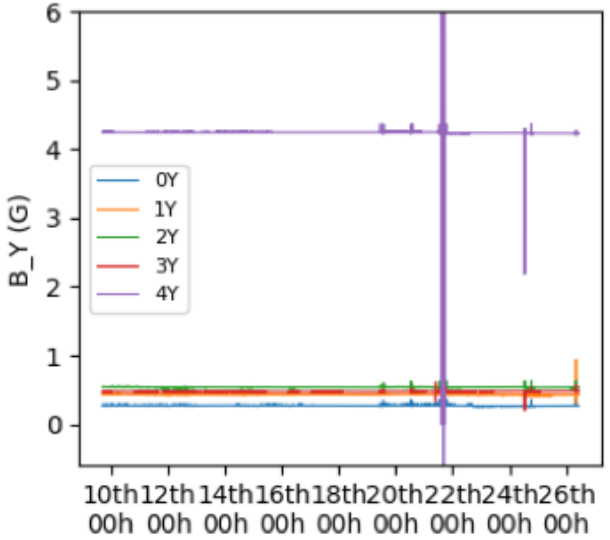
Summary of Xander's work

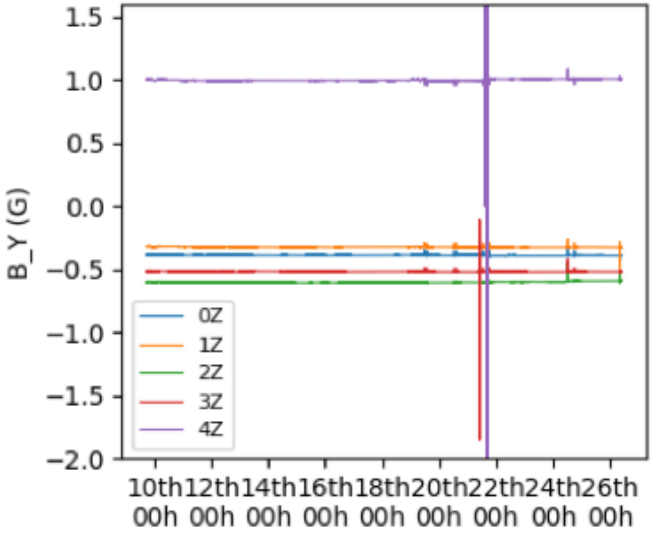
- Found that overflows of buffer causes problem in the labjack readout
  - Invalid readout "-9999"
  - Lags between measurement
- The two parameters need to be chosen appropriately: "ScanRate" and "ScanPerRead" (→ Measurement interval = SPR/SR)
- Checked the optimum balance between the two in case of SR=250 offline (without MIDAS):
  - The optimum corresponds **50 ms ≦ Interval ≦ 100 ms**
  - If the read is less frequent (longer interval), it causes the buffer to overflow
  - There is also a limit of the fastest access
- Implemented this to MIDAS with a multi-threaded code

Status

- Timing settings were SR=100, SPR=100
- Channel swapping hasn't happened
  - I suspect the mis-synchronization between the labjack loop and the MIDAS loop was the cause. Somehow we could not go back to the older code (the buffer overflows and stops

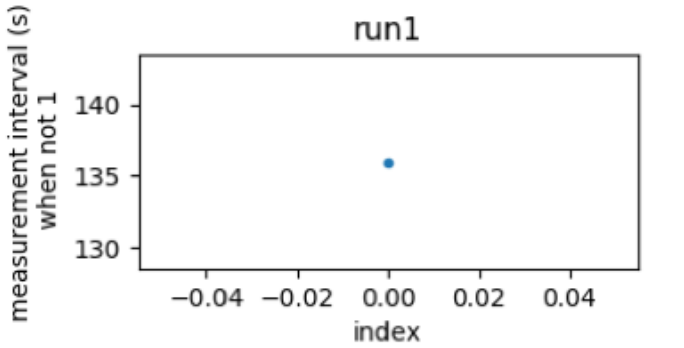


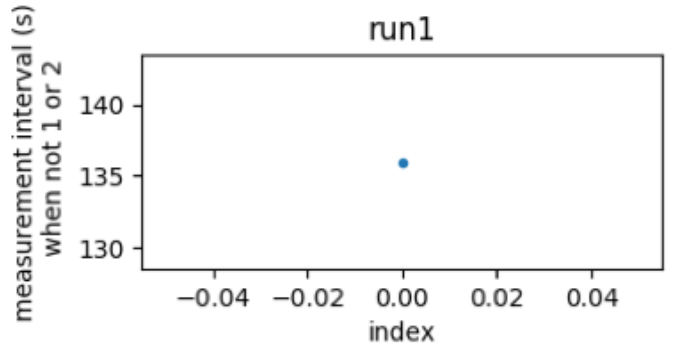


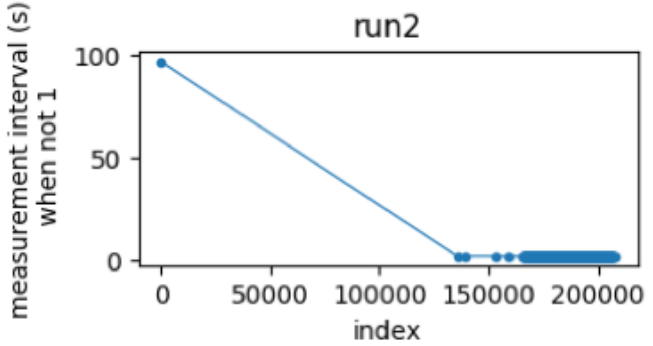


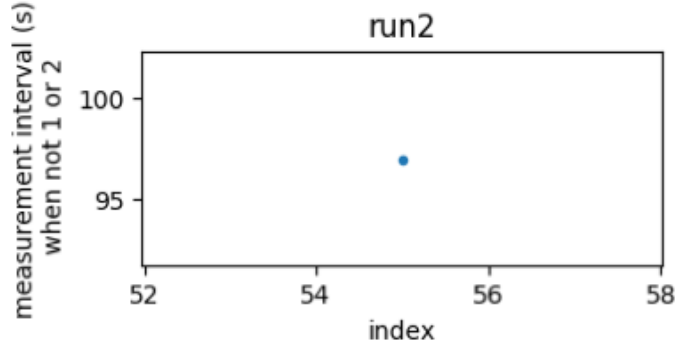
Status – timing

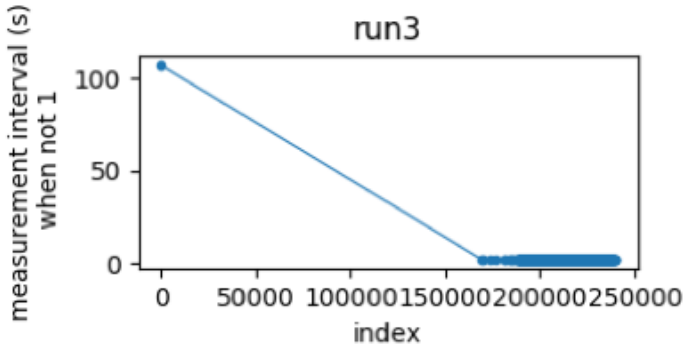
- Sometimes not 1s interval (either ~100s or 2s)
- Reproducibility between different runs

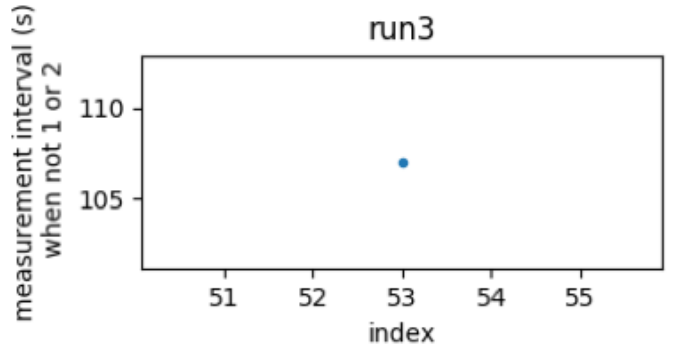


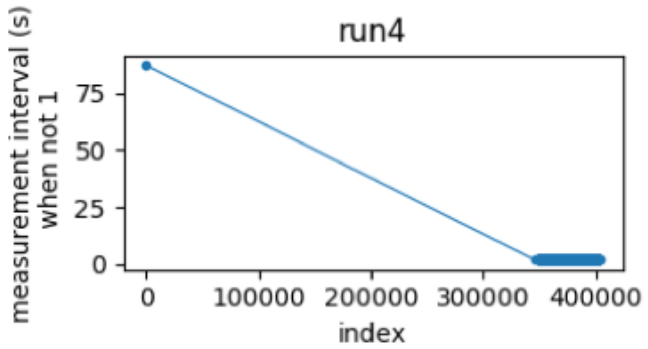


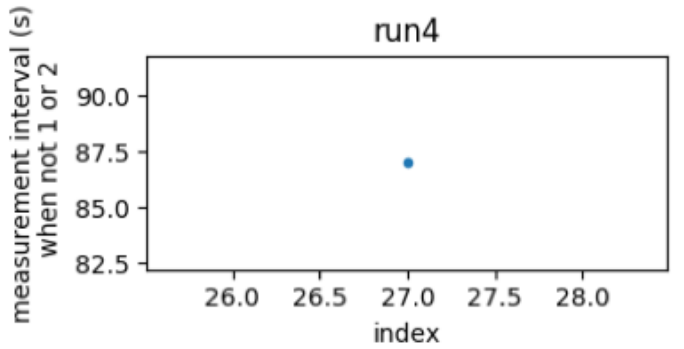










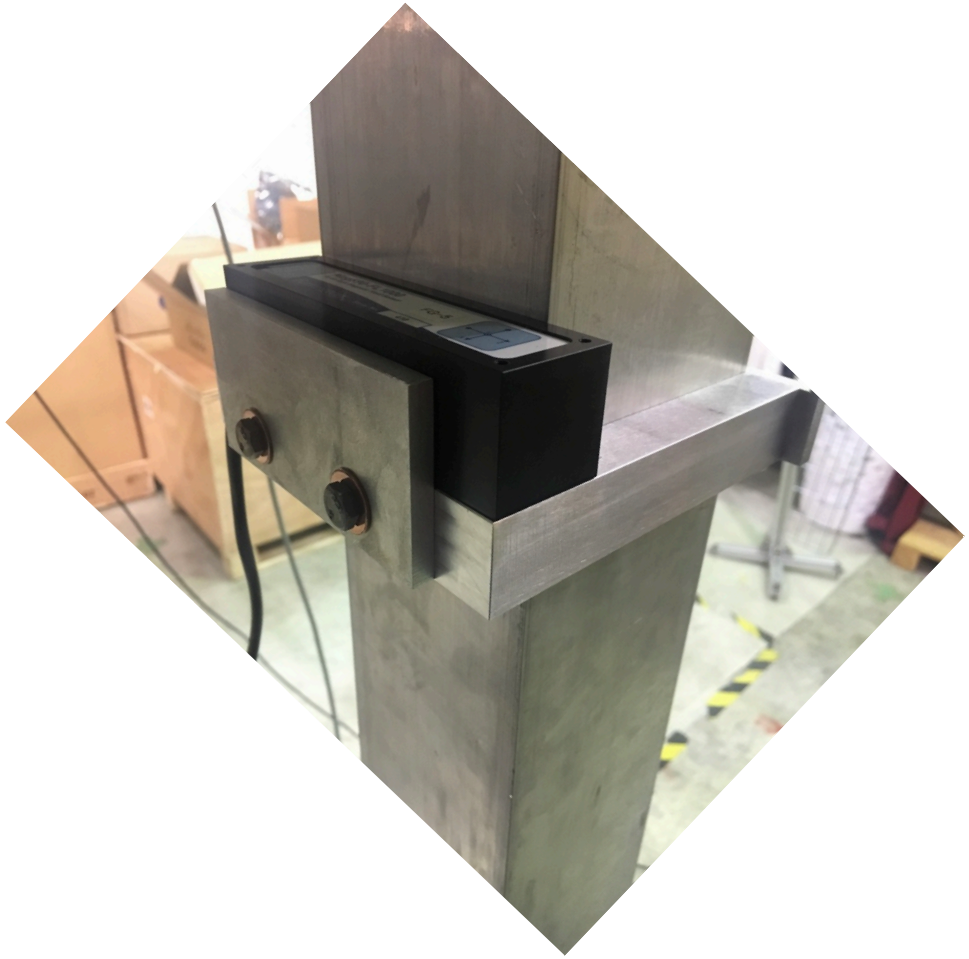


Status

- Stopped on the 2nd(?) September
- Not sure of the cause. The error was unfamiliar “cm_not executed(?)”
- Since this abrupt stop, it couldn’t start up

Upgrade of the system

- Fixed the fluxgates in a more defined way
- Thanks to Cam, Sean, Fabian & Dennis
- Axis definition changed



Plans

- I suspect that the timing parameters were not optimized for 1s interval
  (Xander did a detailed study for SR=250, but not for SR=100)
- As I tested again the offline, it did produce '-9999'
  - So made a code to filter this value
- Should test the timing offline for different SRs

- We are doing crane tests this morning