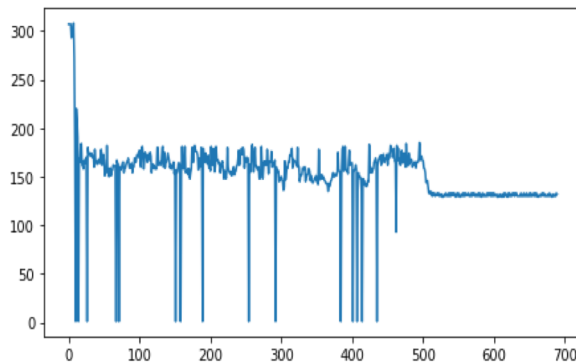# Sample Frequency of MEMS

- Summary:
  - The sample frequency of the NI 9251 doesn't seem to be stable and changes over time.
  - There are quite a lot mis-shots at saving MEMS data into *.jdt

- Testing condition:

→ AxelHub is set to remote and a sample frequency is chosen.

→ MotMaster in repeat mode. "quant", "temper" and "mems" signal should be all saved in *.jdt file
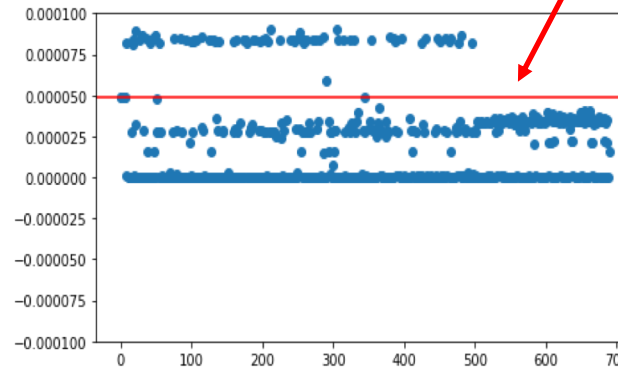
Test 1: Sample Rate @ 20480 Hz

Interferometer runs @ 2T=10ms

Number of MEMS data expected: > 205

Expected time stamp difference for 20480 Hz

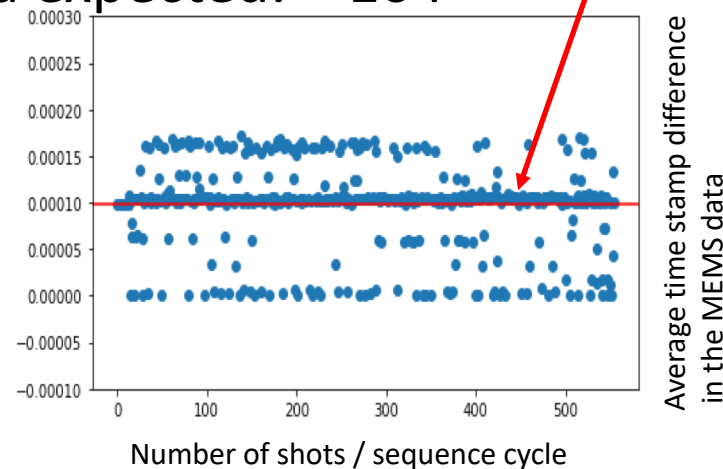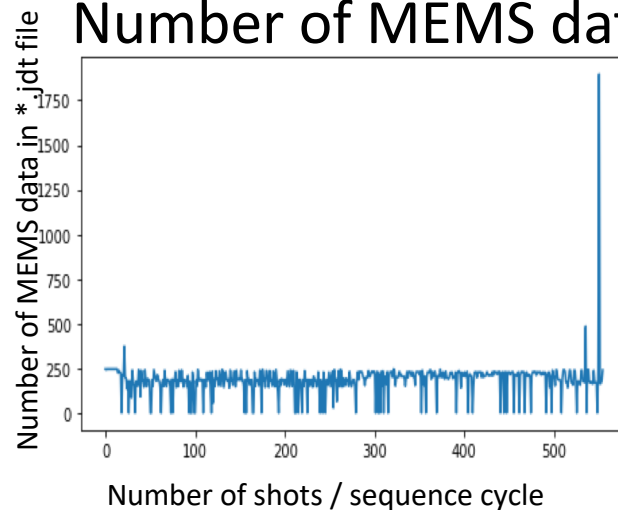Here, I plot the relative time stamps of the mems data for individual shots.
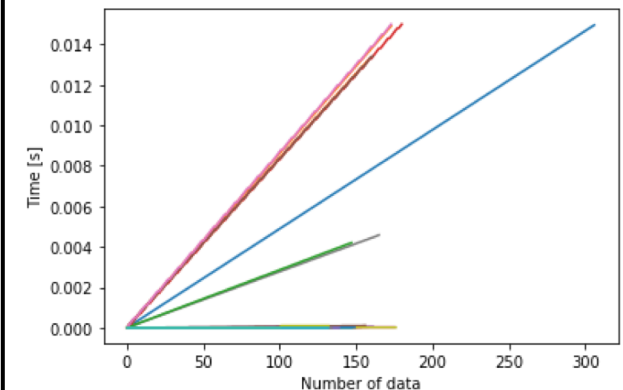
Different slopes indicates the sampling frequency is changing

Test 2: Sample Rate @ 10240 Hz

Interferometer runs @ 2T=16ms

Number of MEMS data expected: > 164

Expected time stamp difference for 10240 Hz

Here, I plot the relative time stamps of the mems data for individual shots.

Different slopes indicates the sampling frequency is changing
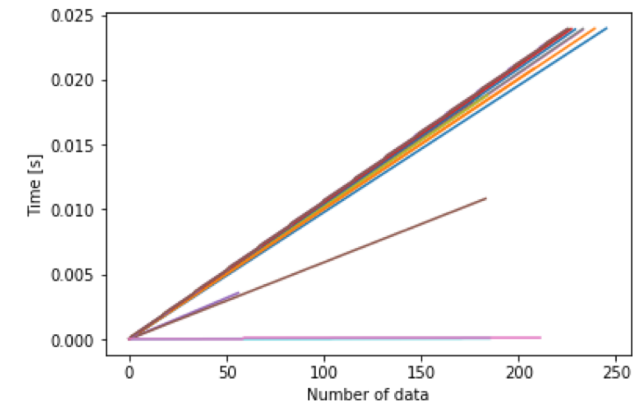
Test 3: Sample Rate @ 5120 Hz

Interferometer runs @ 2T=16ms

Number of MEMS data expected: > 82

Expected time stamp difference for 5120 Hz

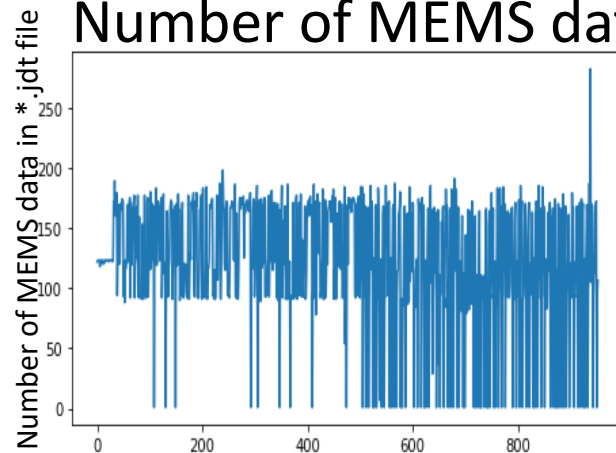Here, I plot the relative time stamps of the mems data for individual shots.

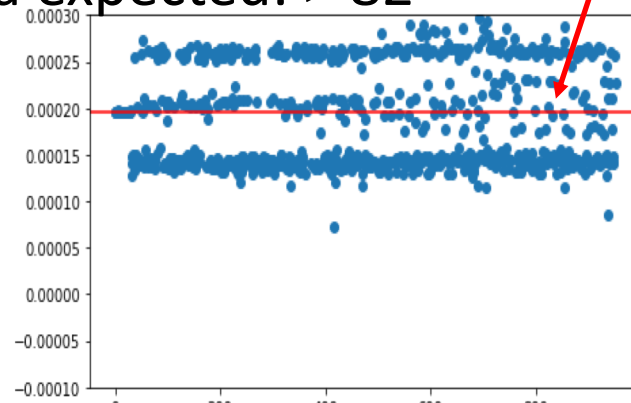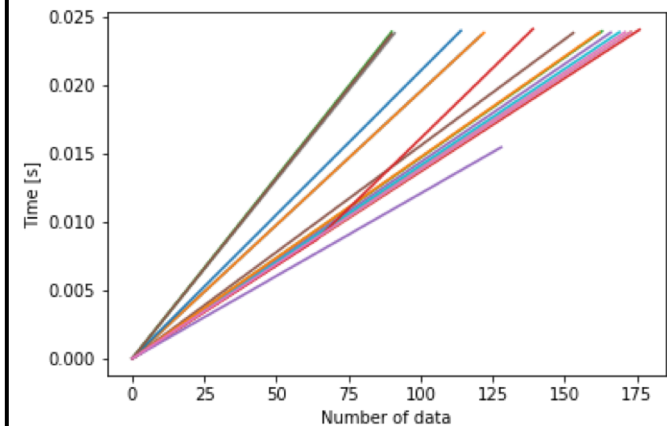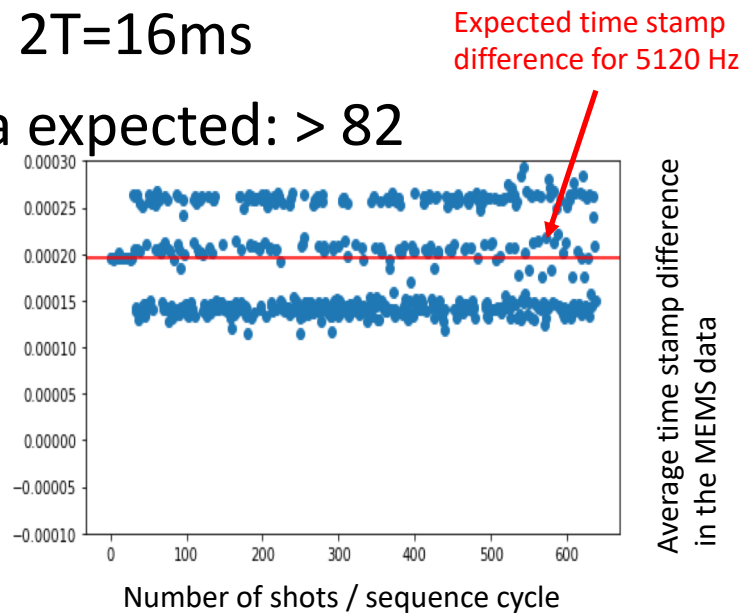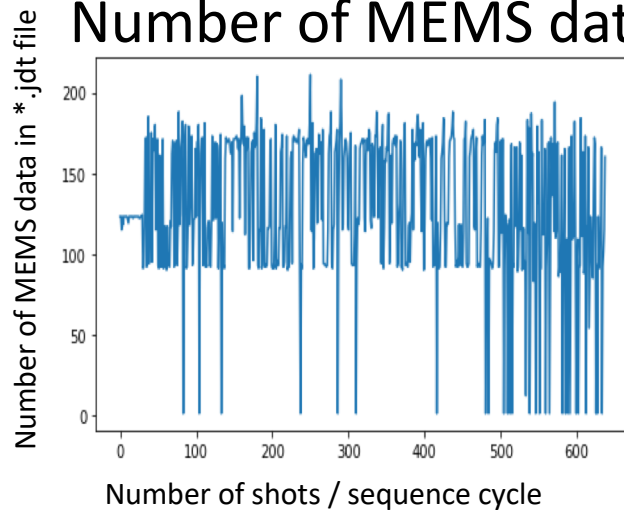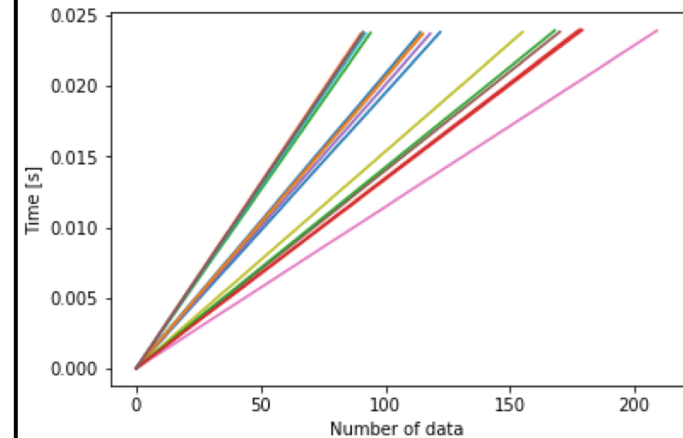Different slopes indicates the sampling frequency is changing

Test 4: Sample Rate @ 5120 Hz with 1s waiting time at the end of the sequence

Interferometer runs @ 2T=16ms

Number of MEMS data expected: > 82

Expected time stamp difference for 5120 Hz

Here, I plot the relative time stamps of the mems data for individual shots.

Number of MEMS data in * .jdt file

Number of shots / sequence cycle

Average time stamp difference in the MEMS data

Number of shots / sequence cycle

Time [s]

Number of data

Different slopes indicates the sampling frequency is changing