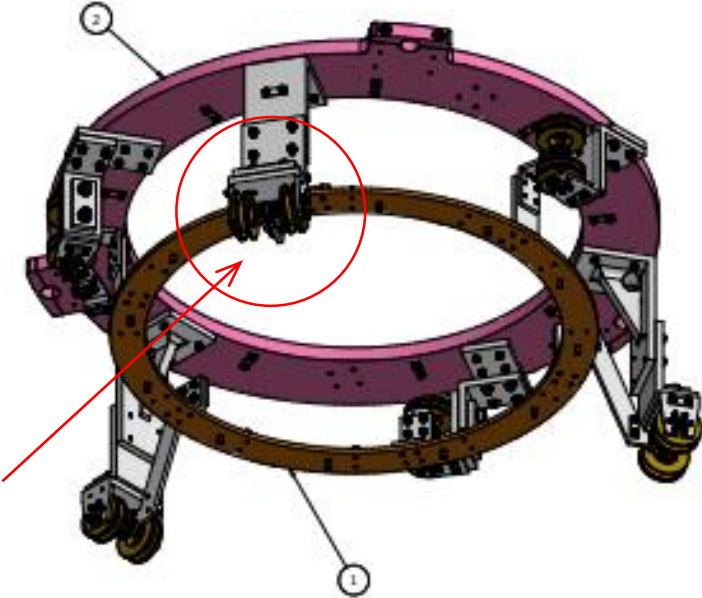
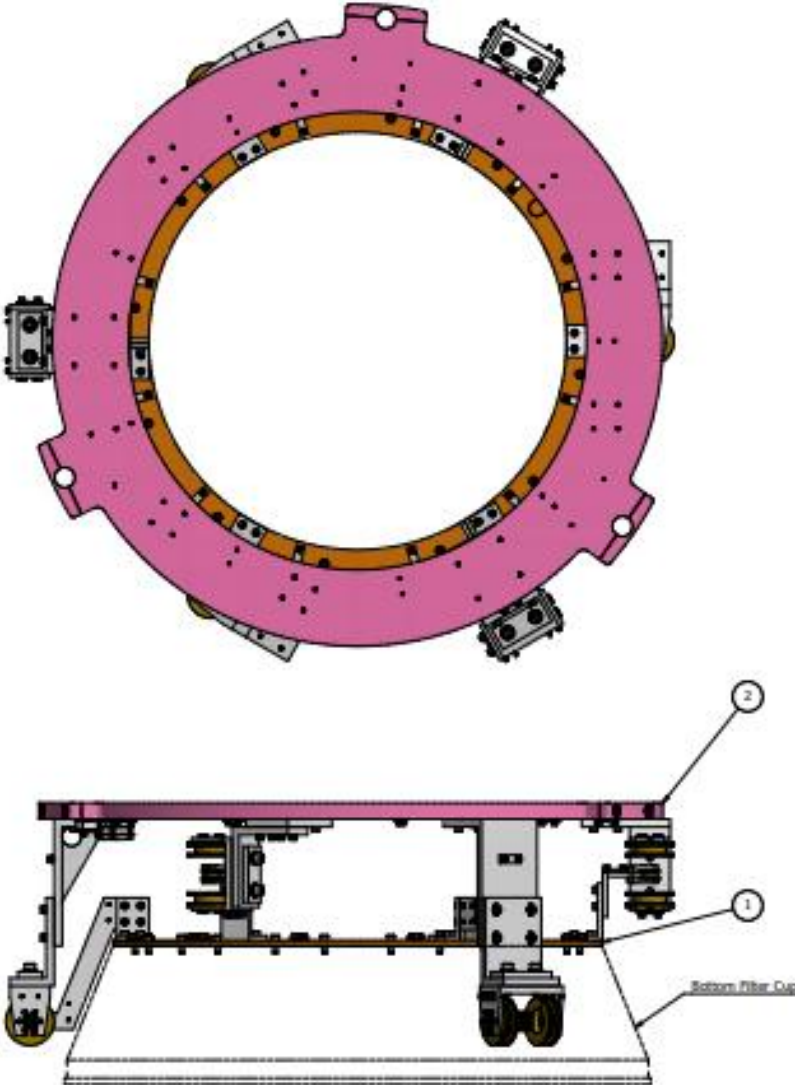
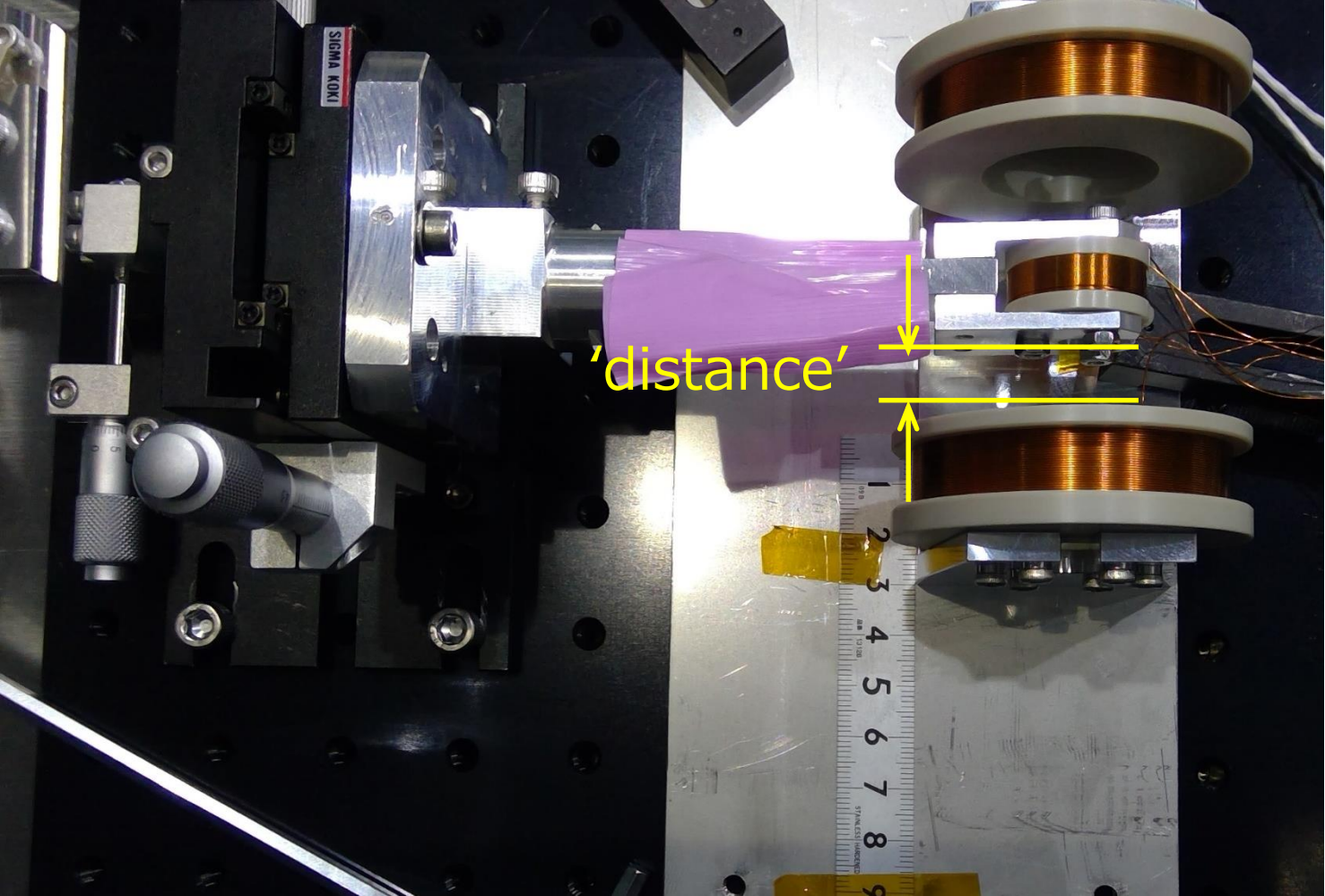


ITMX BF-LVDT:

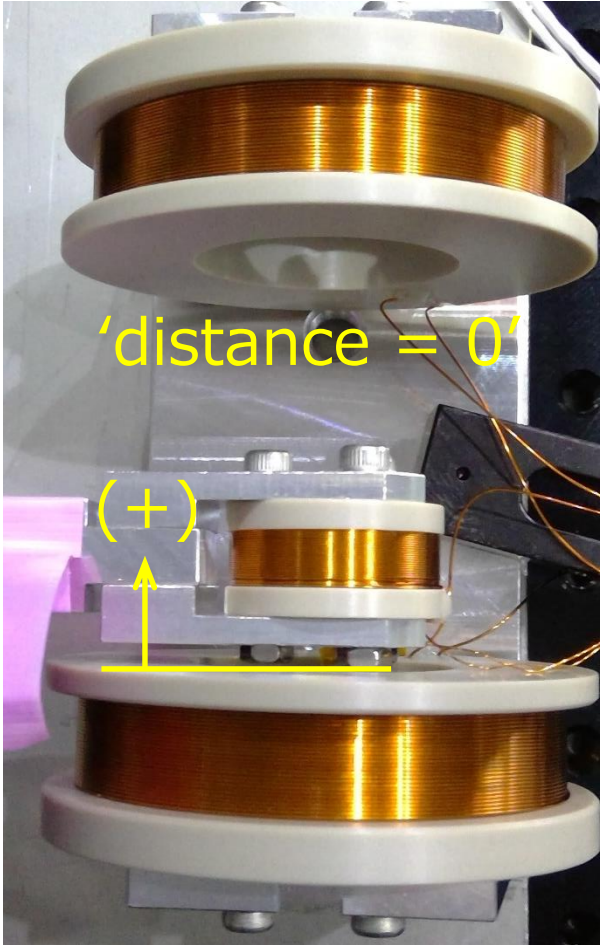
- Calibration
- Noise level



Calibration coordinate:



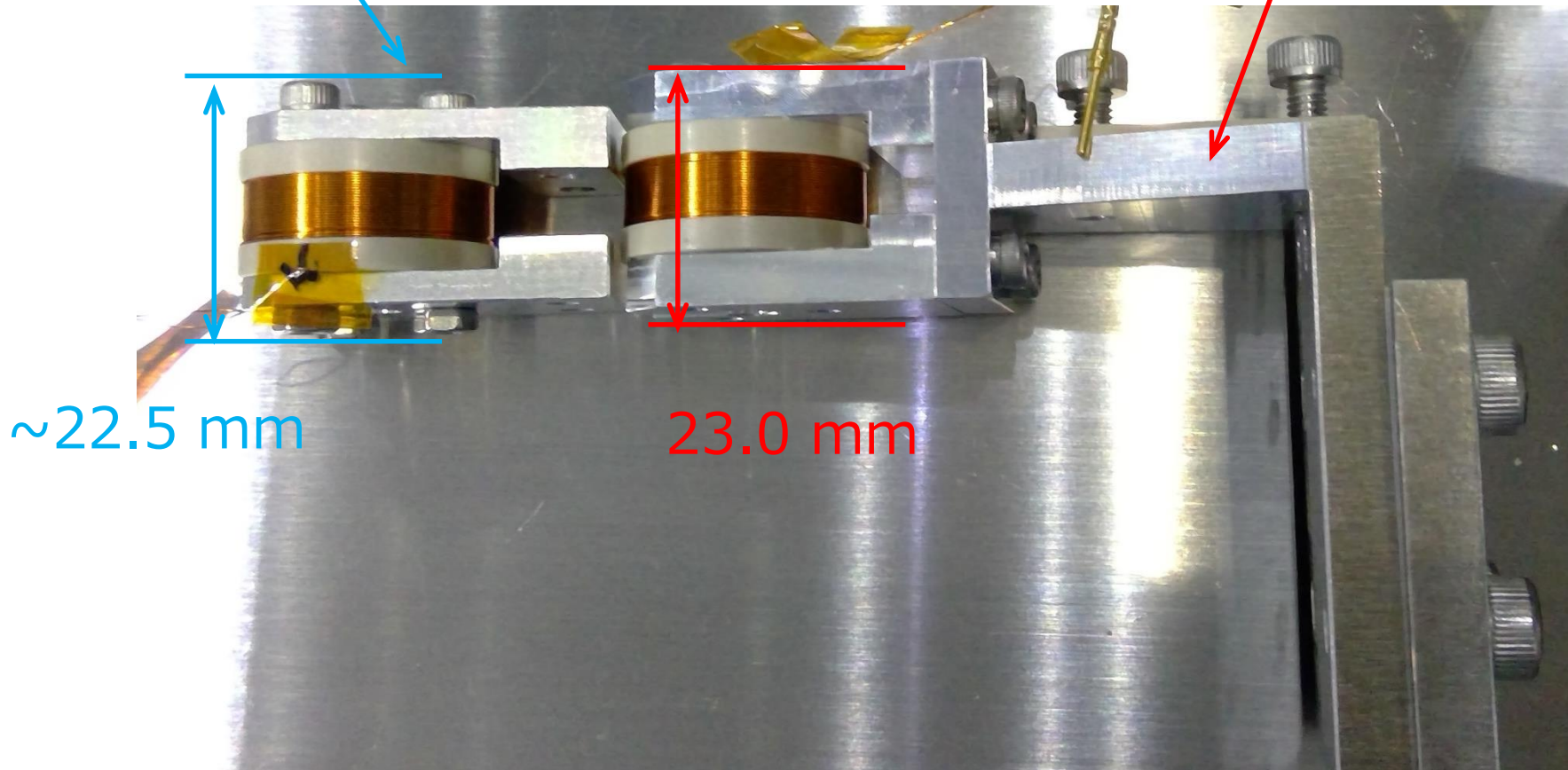
Note:



Calibration jig:

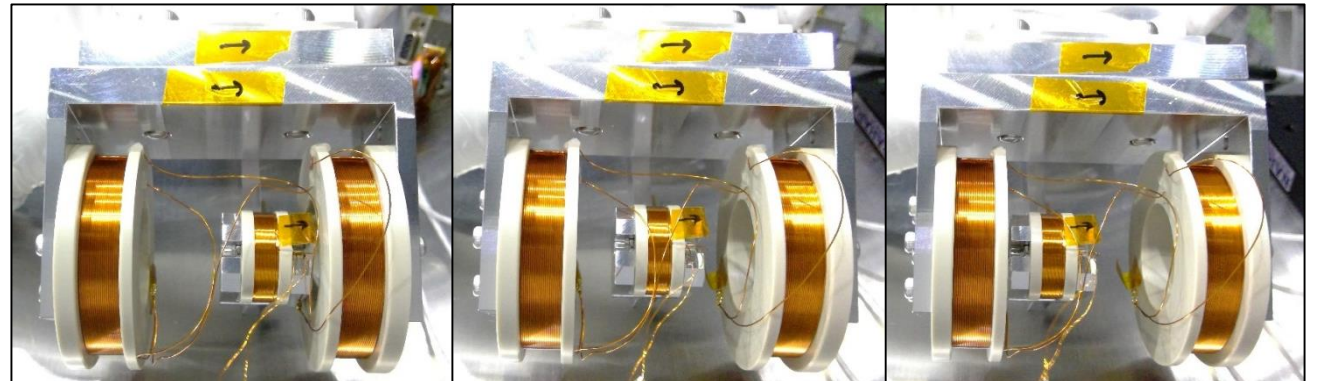
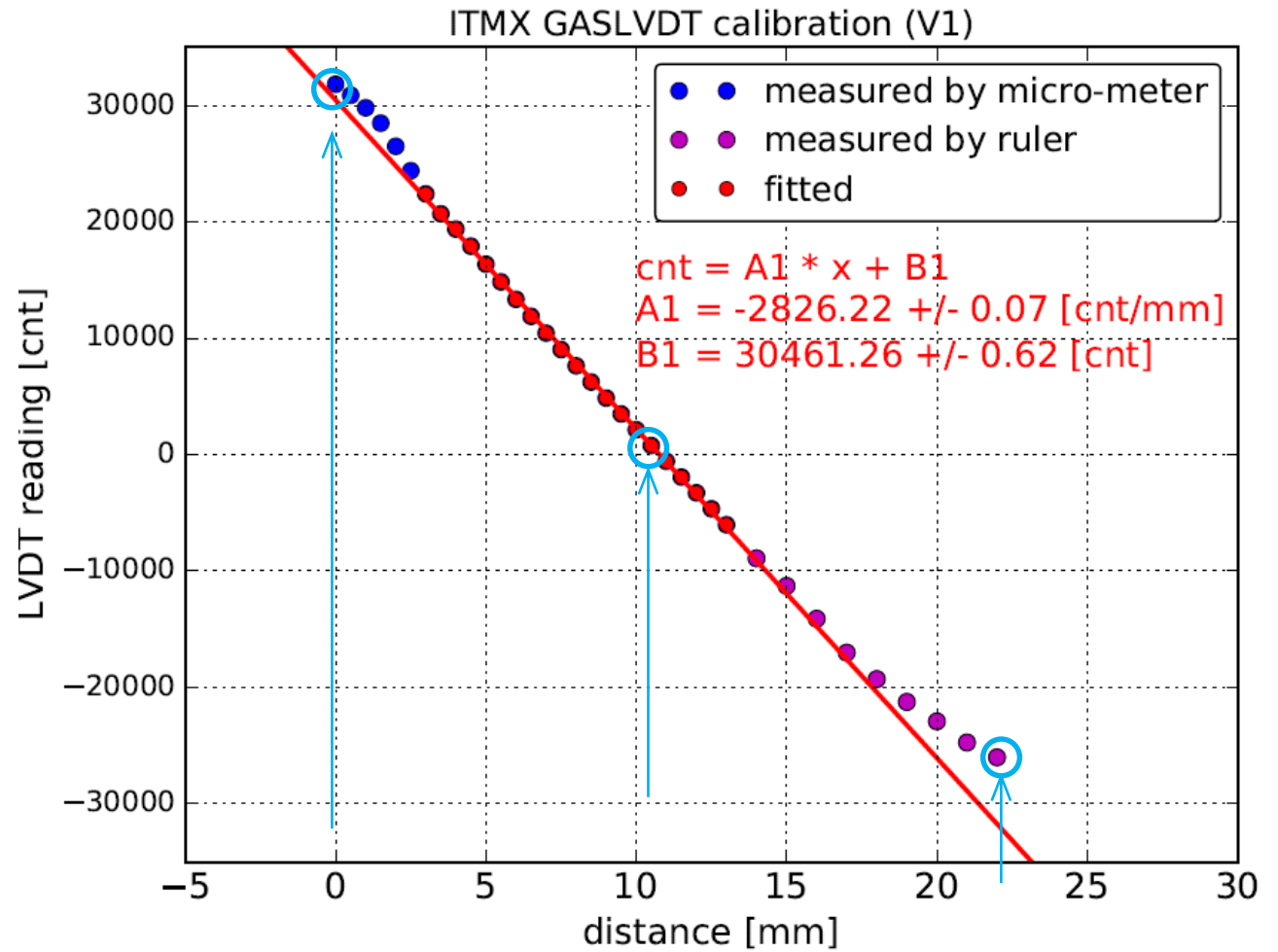
Calibration jig

Suspension parts

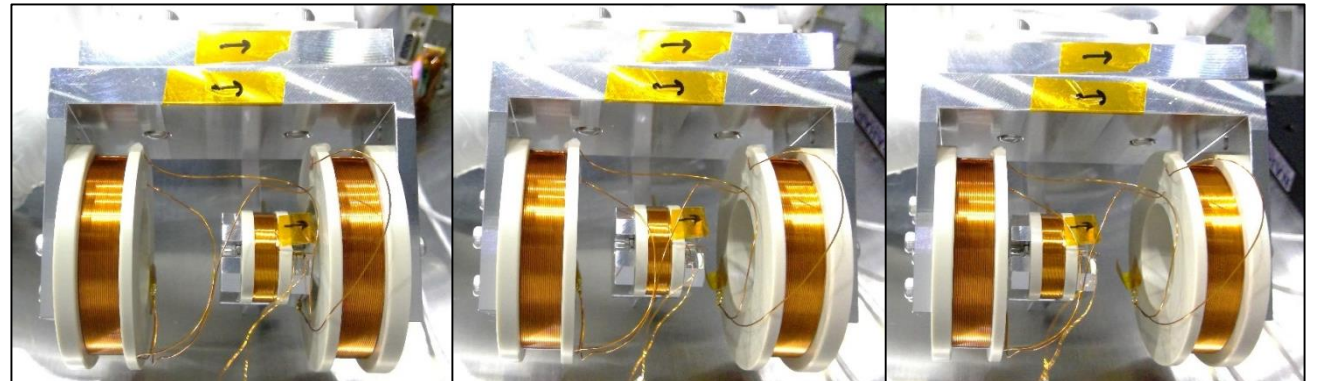
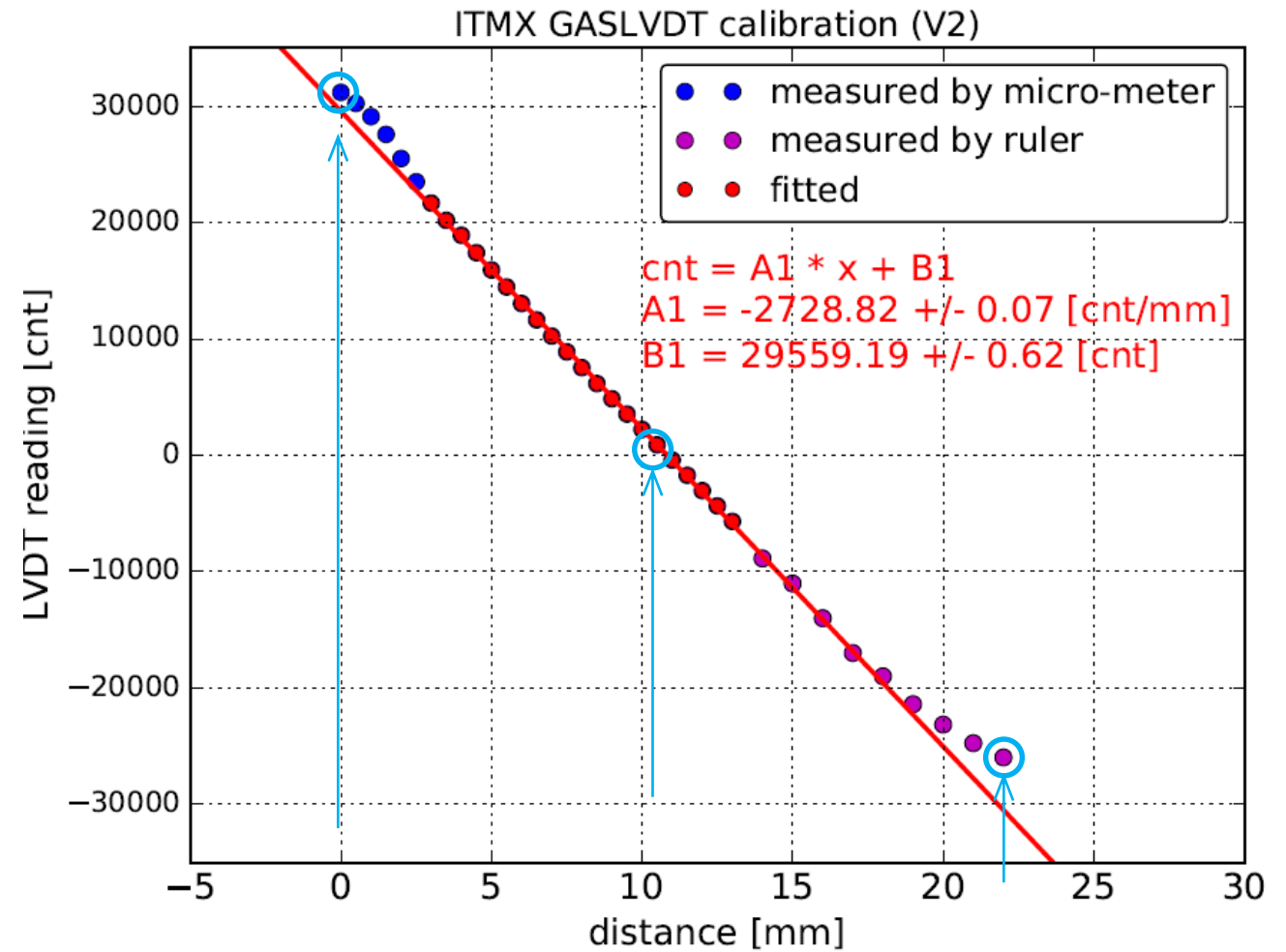


*Mostly same configuration with the actual system.

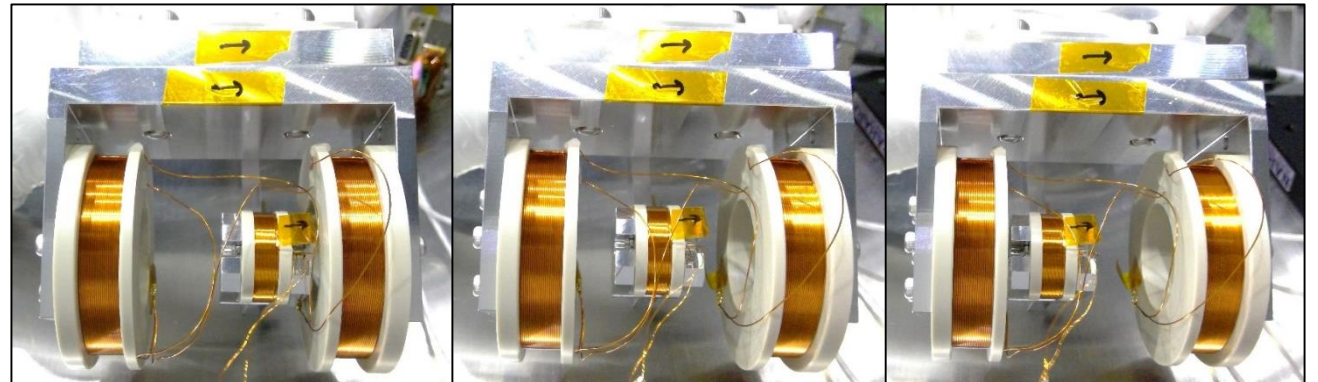
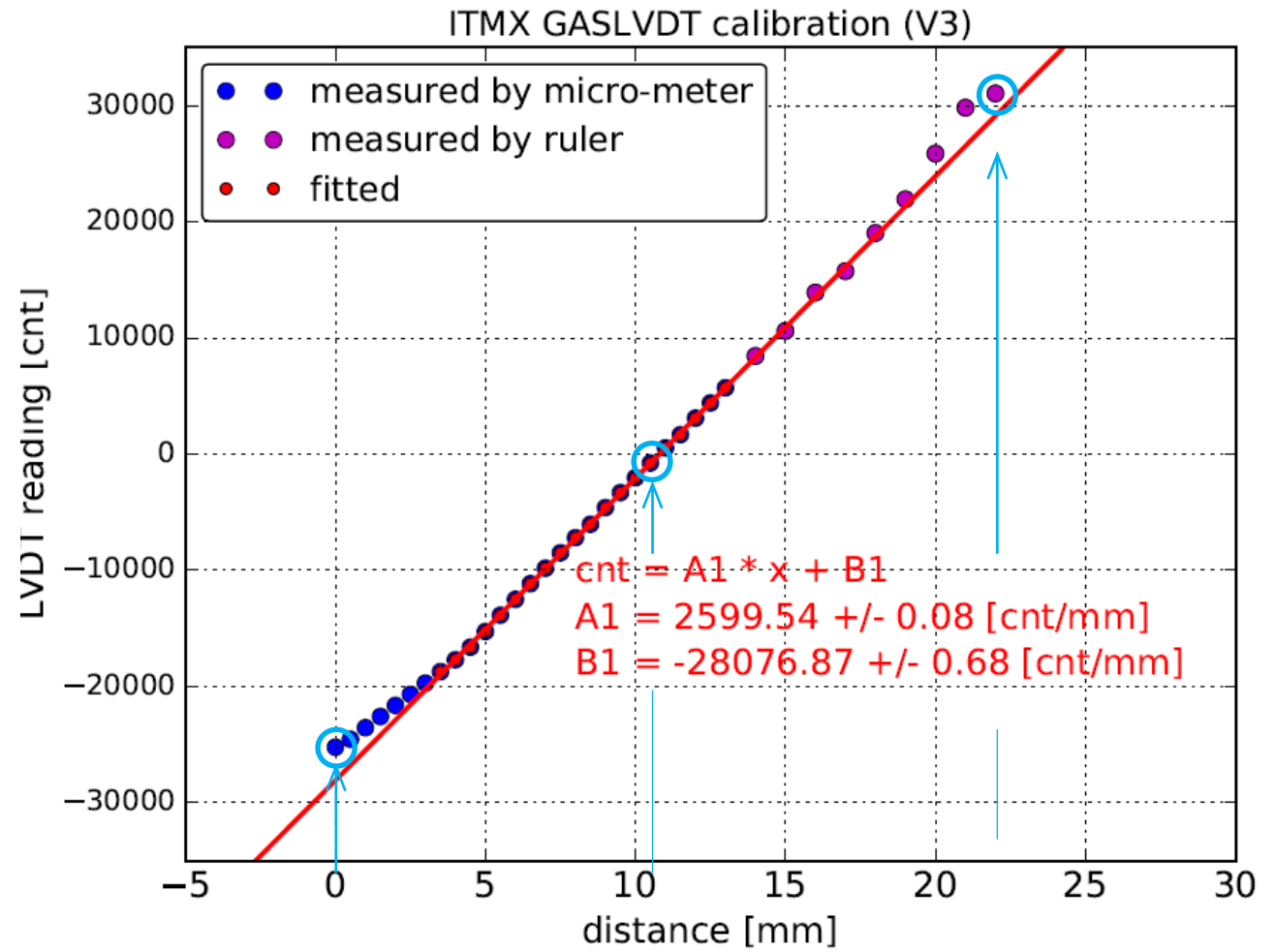
ITMX BF-LVDT: V1



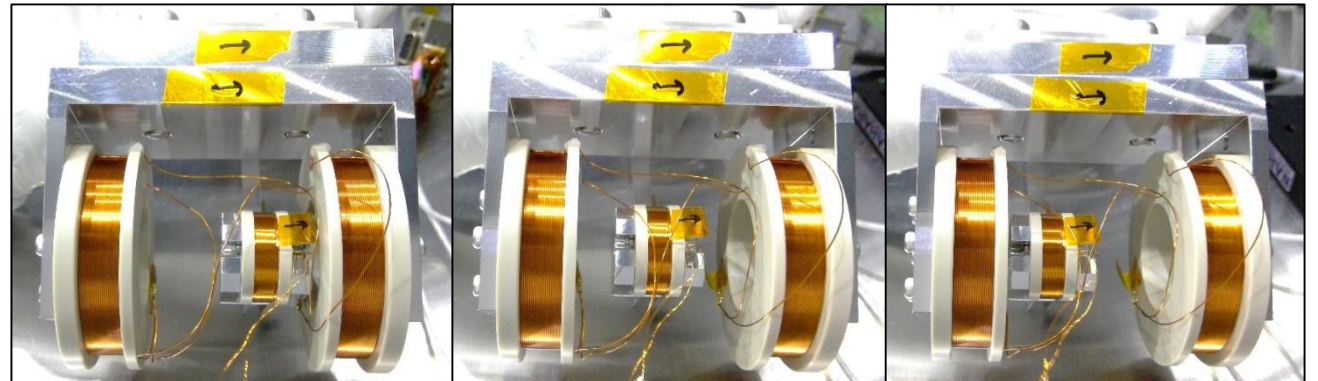
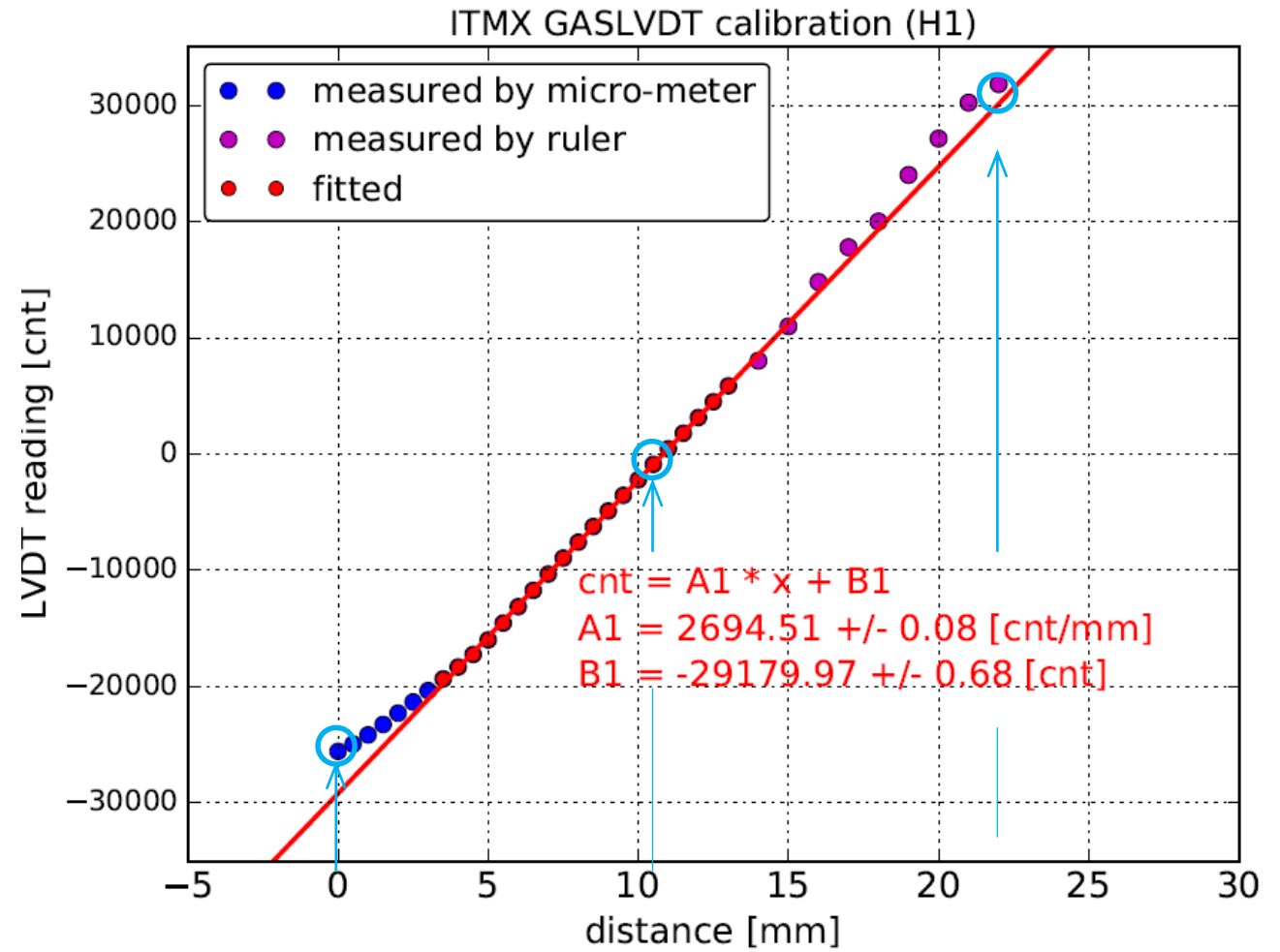
ITMX BF-LVDT: V2



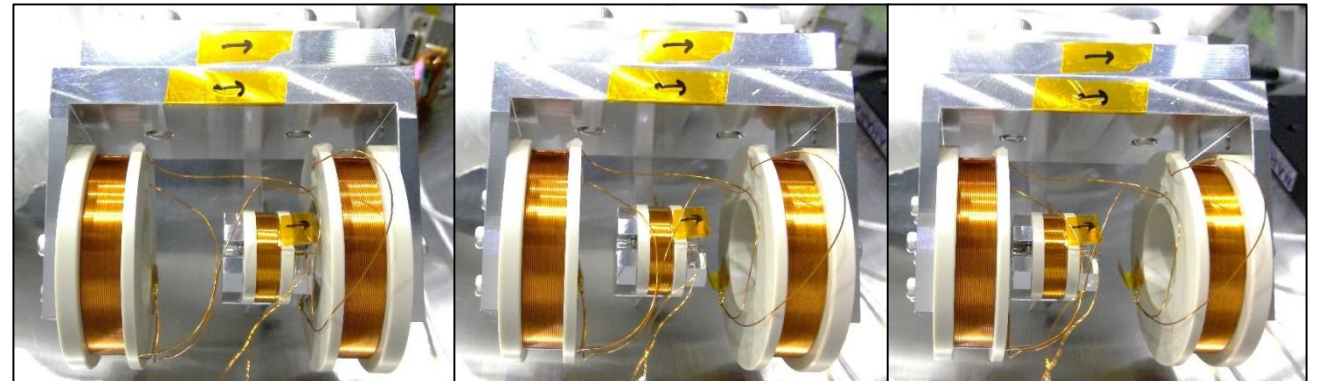
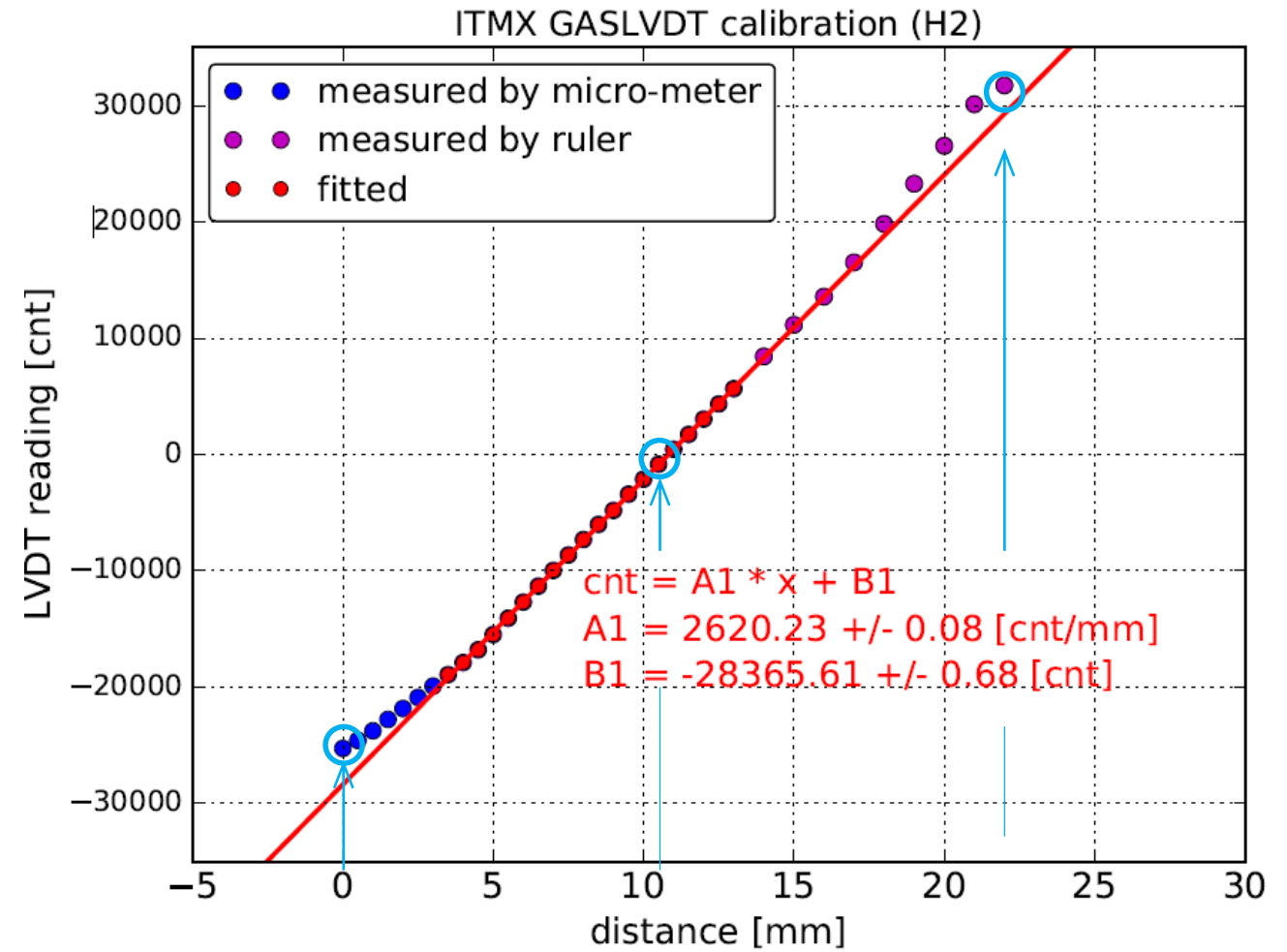
ITMX BF-LVDT: V3



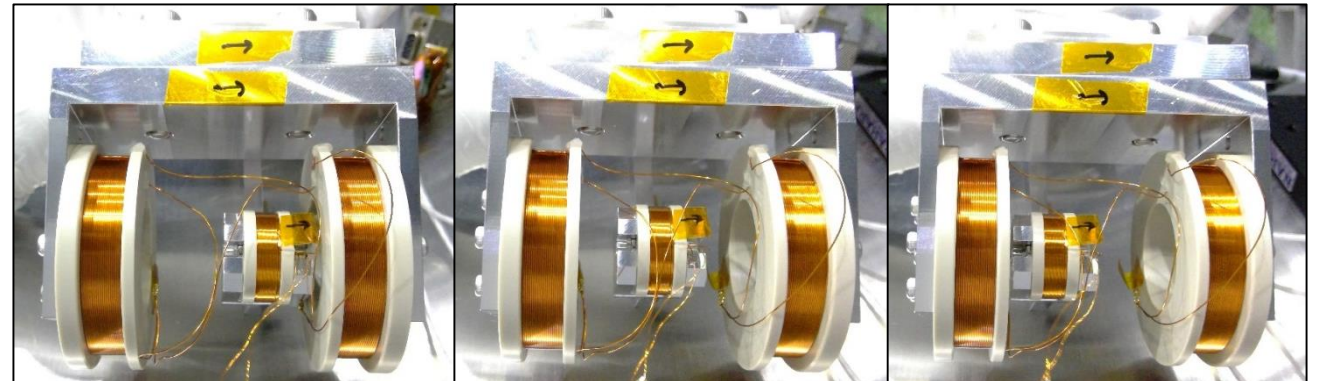
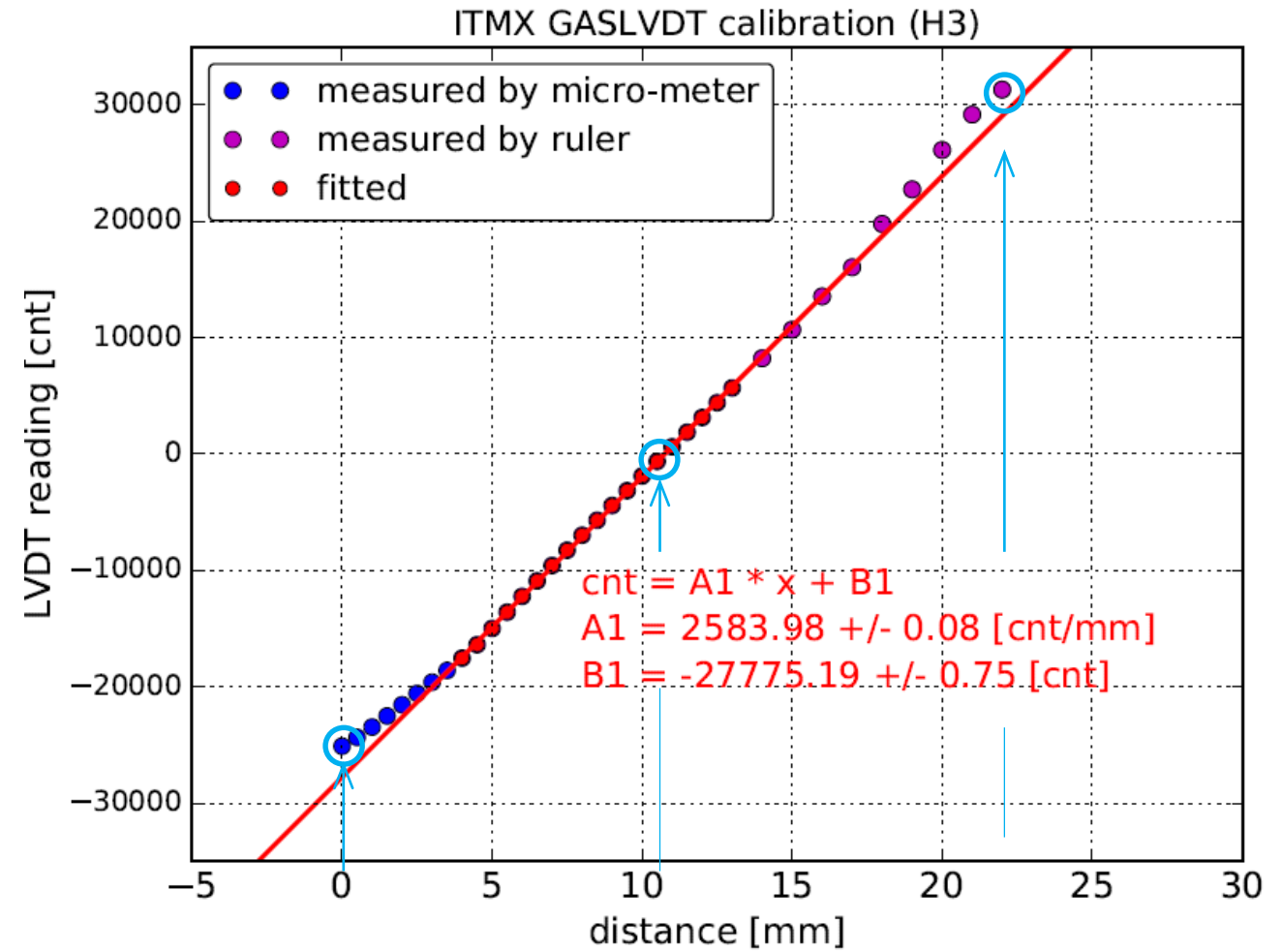
ITMX BF-LVDT: H1



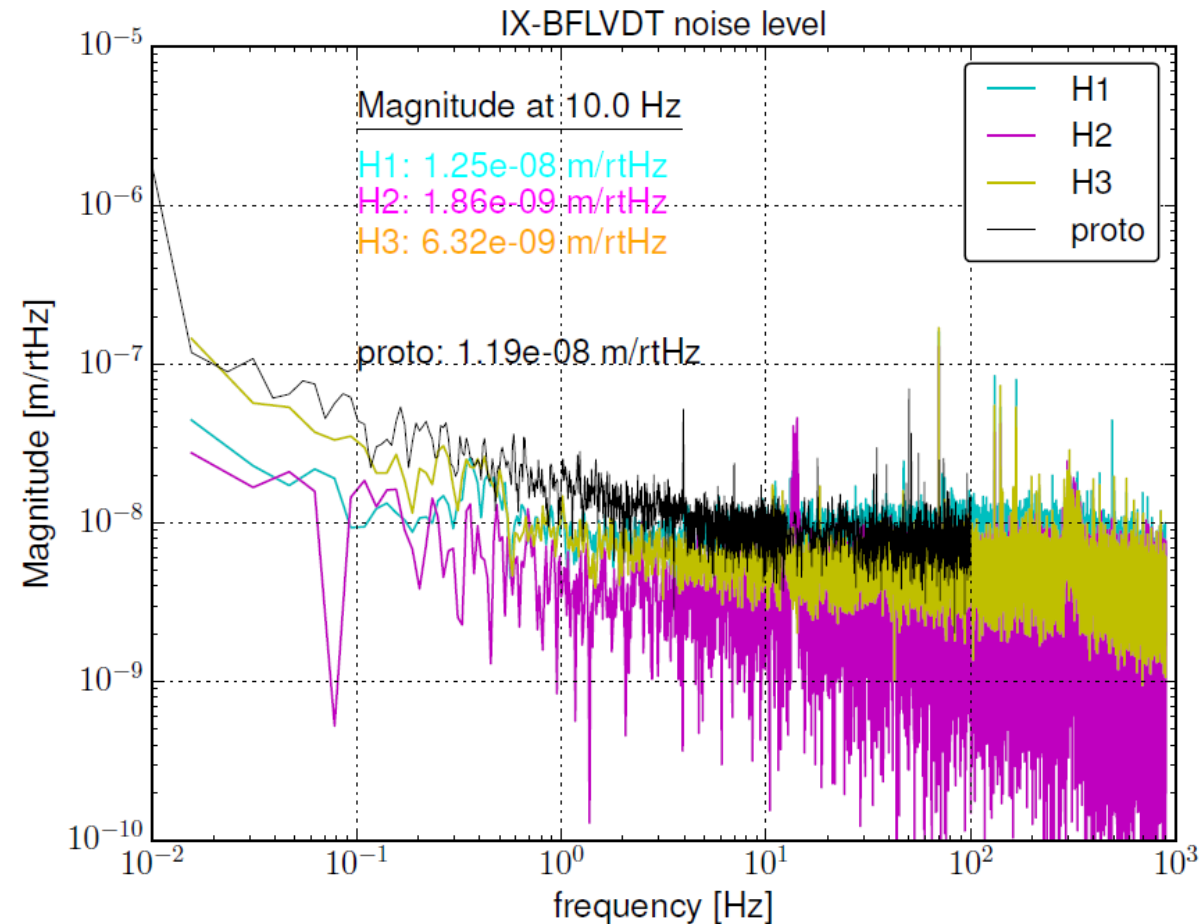
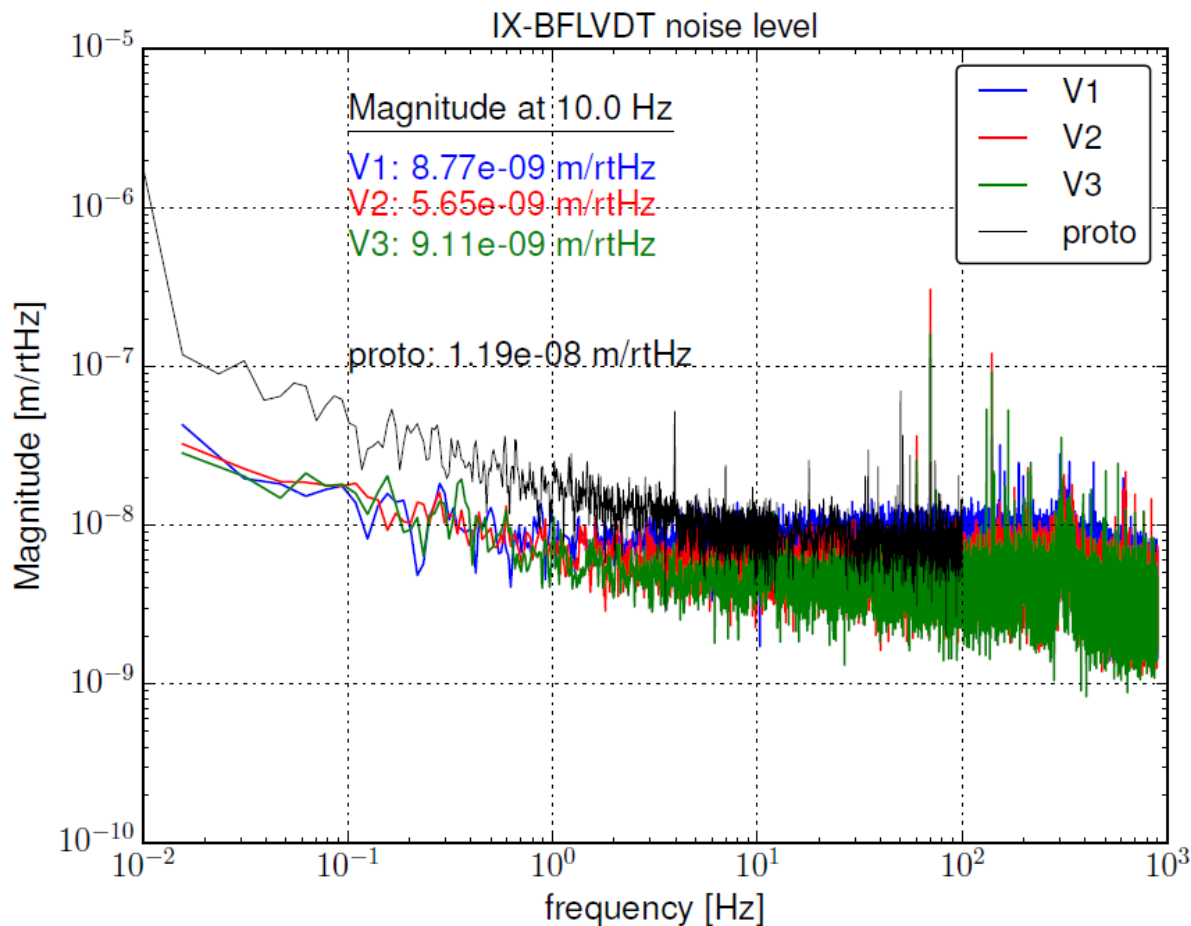
ITMX BF-LVDT: H2



ITMX BF-LVDT: H3



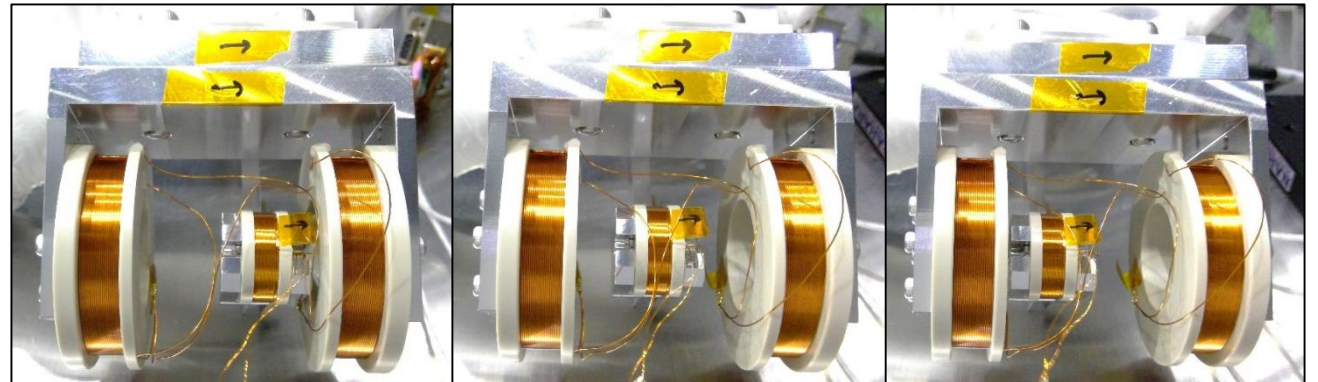
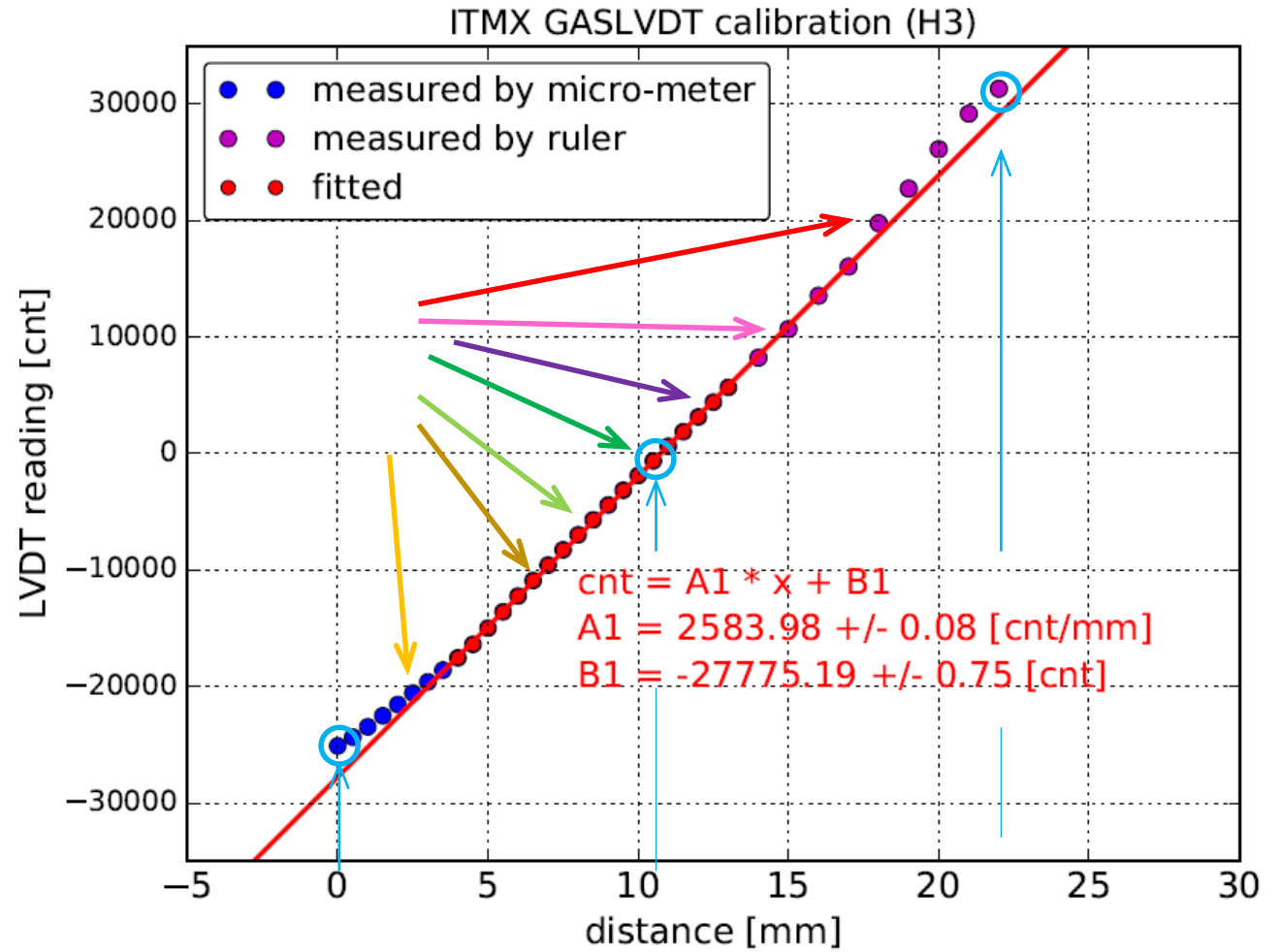
Noise level of ITMX BF-LVDT:



*The primary coil was locked at the center of the linear range, and then these spectra were measured.

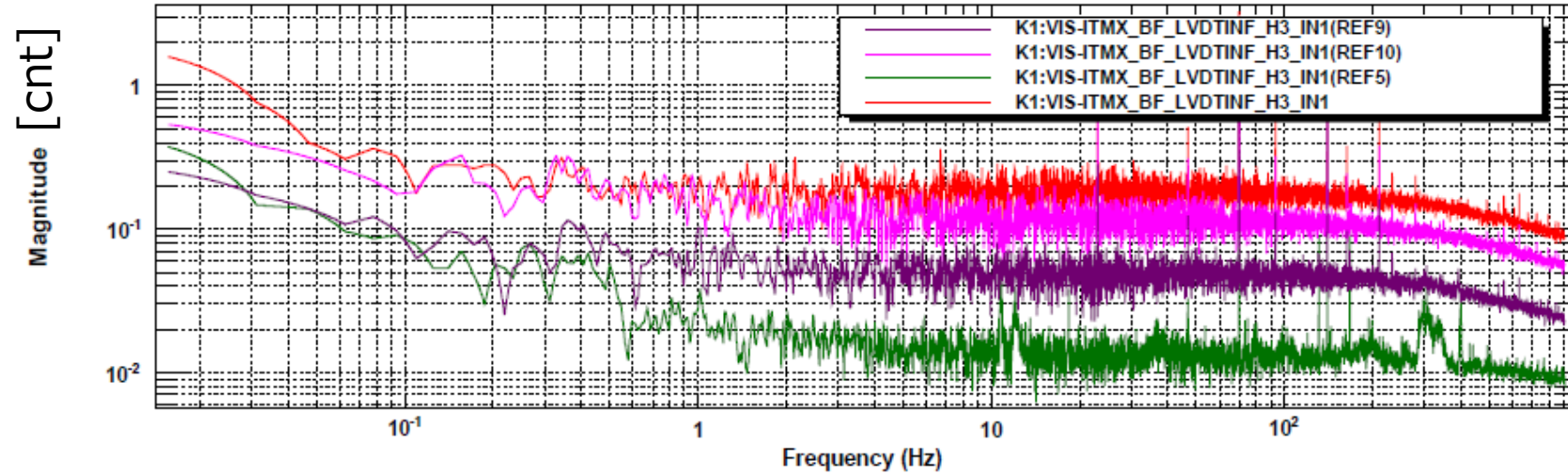
* "proto" is from: <https://granite.phys.s.u-tokyo.ac.jp/svn/LCGT/trunk/VIS/SuspensionControlModel/noise/F7LVDTprotonoise.dat>

Noise level of ITMX BF-LVDT at some positions:



Noise level of ITMX BF-LVDT-H3: $\text{calibration factor} = 1/2583.98 * 1e-3 \text{ [m/cnt]}$

Power spectrum

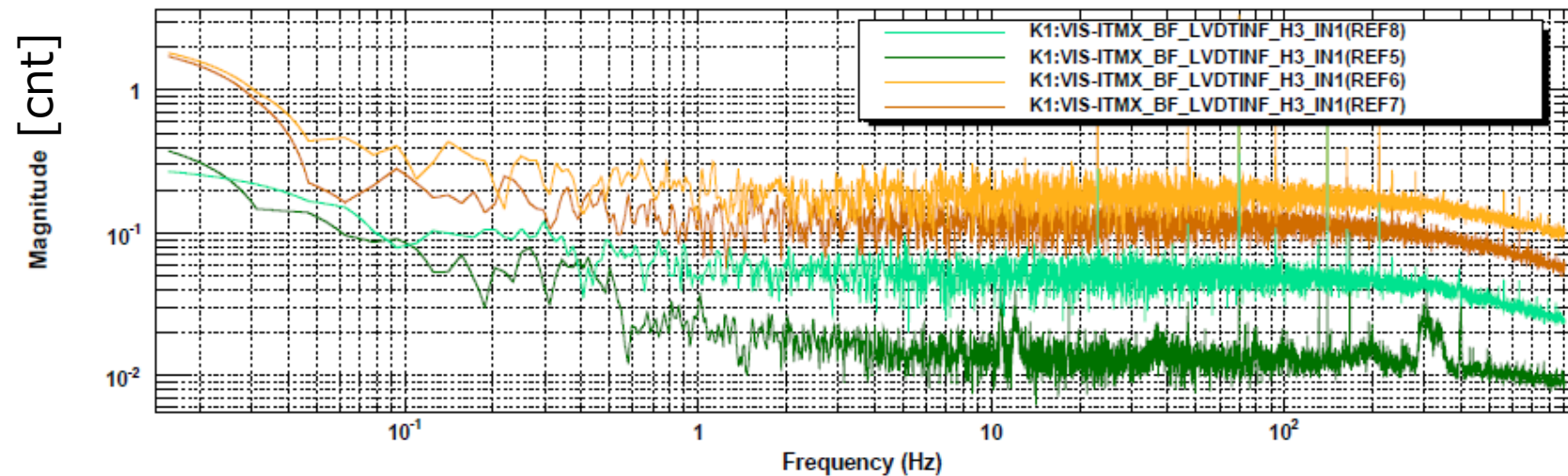


*T0=10/05/2018 05:31:06

*Avg=1/Bin=5L

BW=0.0234367

Power spectrum

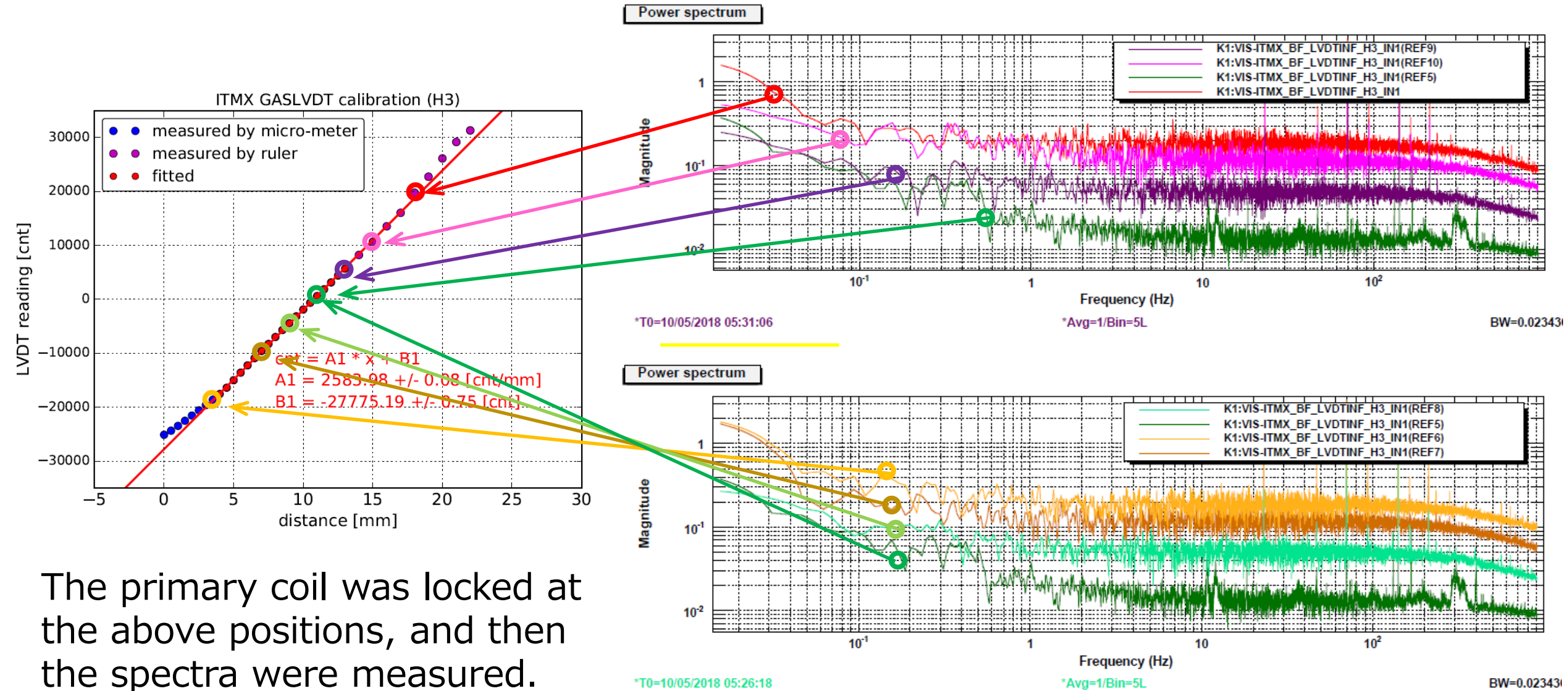


*T0=10/05/2018 05:26:18

*Avg=1/Bin=5L

BW=0.0234367

Noise level of ITMX BF-LVDT-H3:



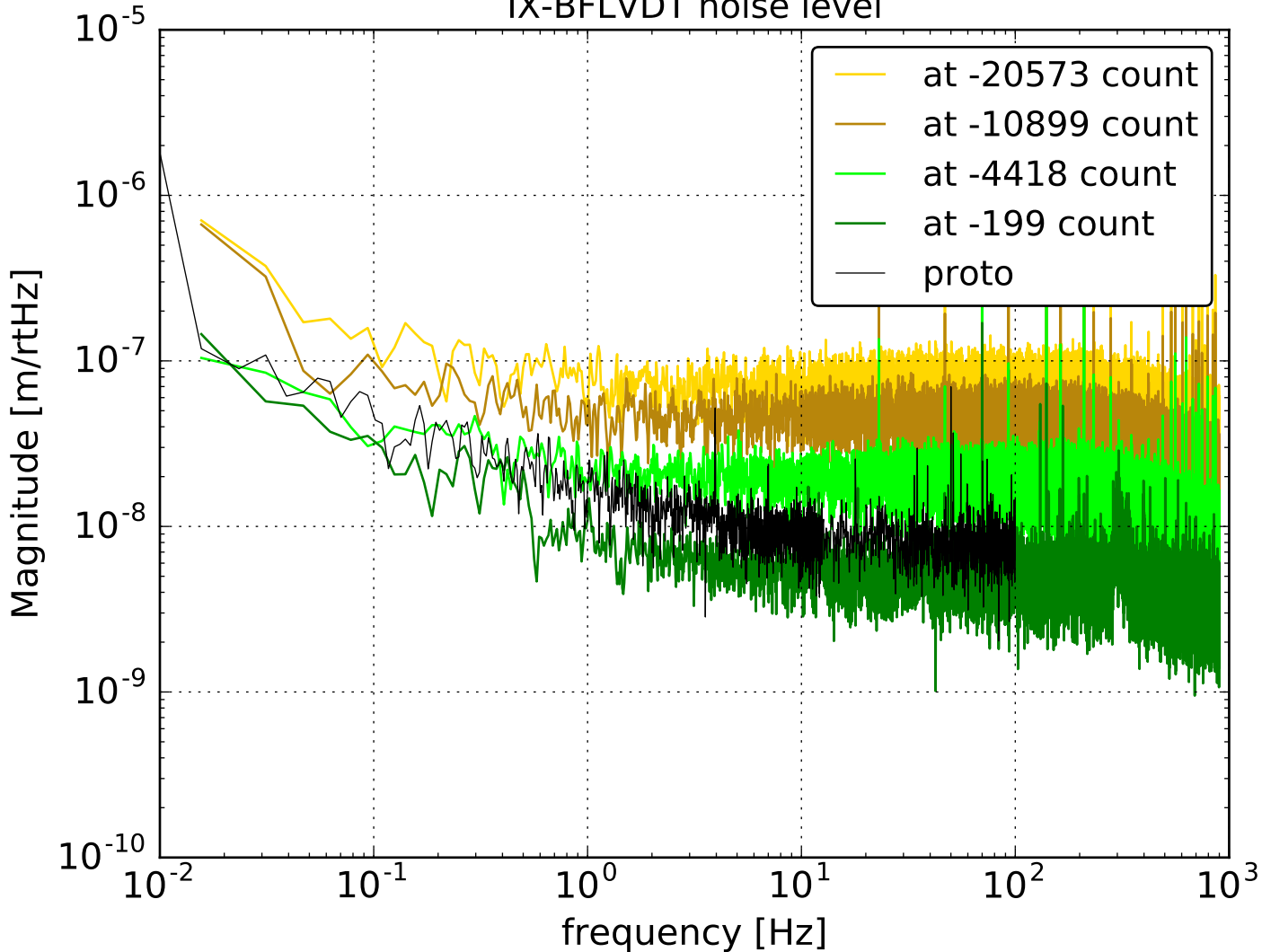
The primary coil was locked at the above positions, and then the spectra were measured.

→ Depending on the position, the noise floor changed by \sim one order of magnitude.

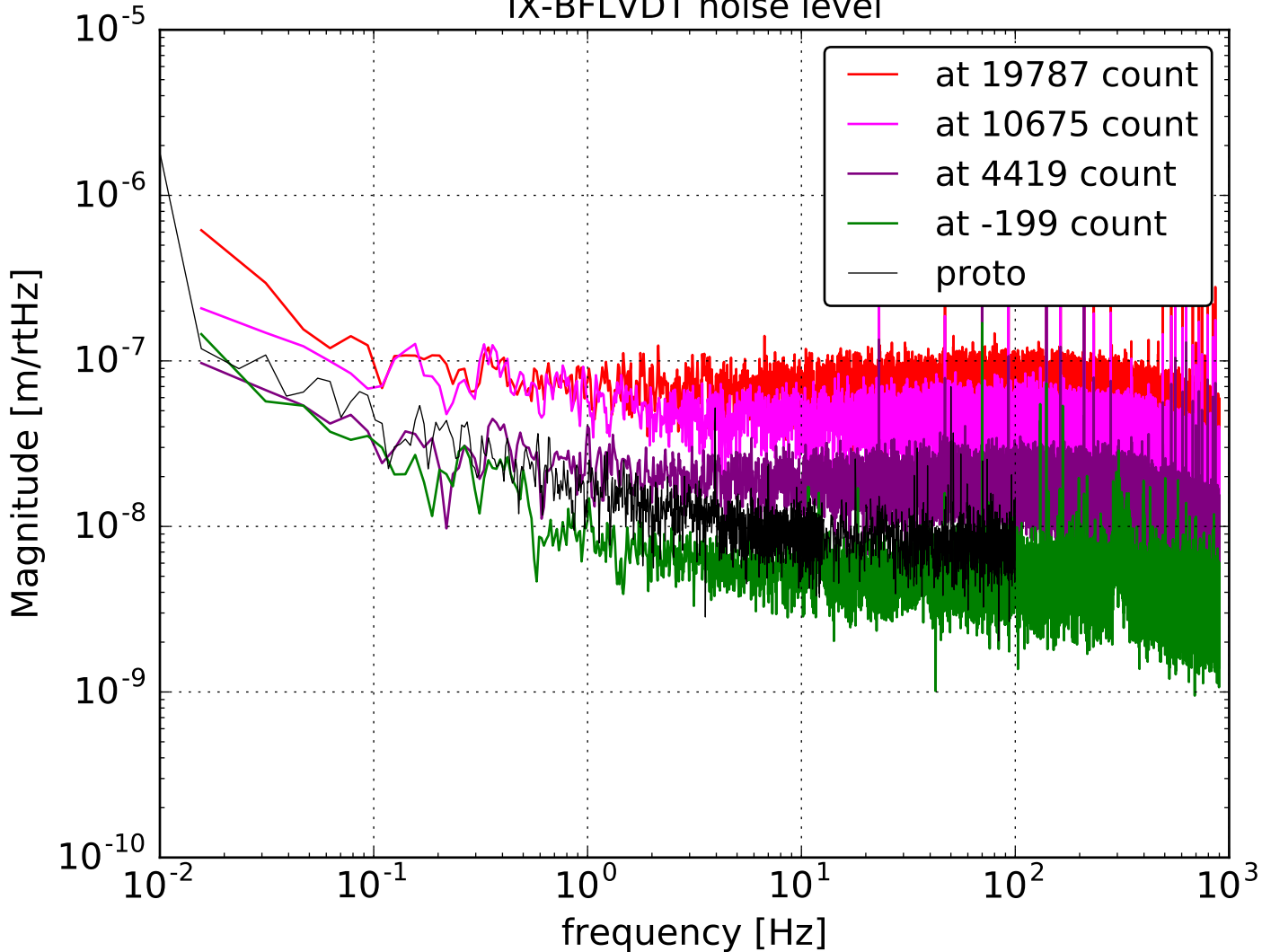
Noise level of ITMX BF-LVDT-H3:

- We will have larger noise if we do not use BF-LVDT at the center of its linear range.
- Since the “proto” was used as BF-LVDT noise in a simulation so far (I think), we might have to update BF-LVDT noise in the simulation.

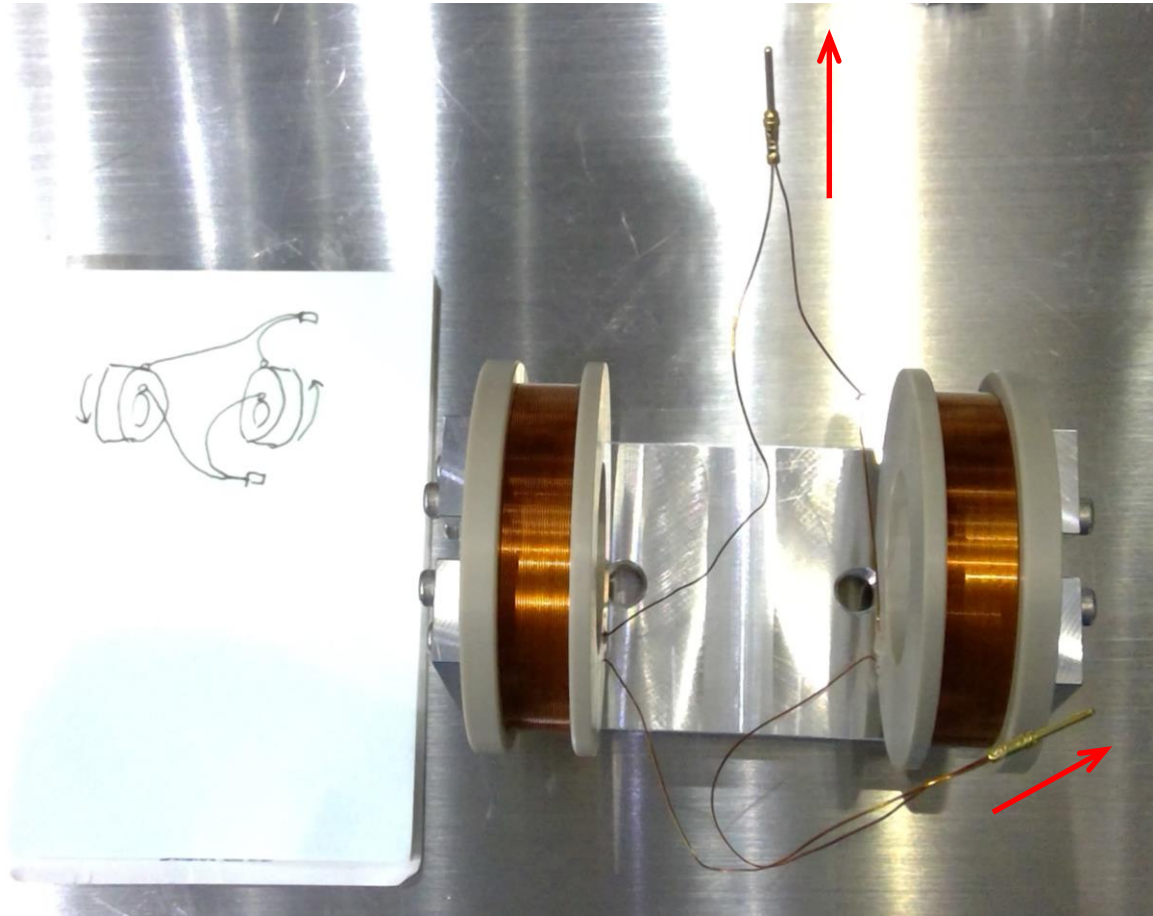
IX-BFLVDT noise level



IX-BFLVDT noise level



[Note] Cabling of the secondary coil:



To 2/7 pin.