

CBPM Continuous Monitoring (CCM)

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CBPM meeting

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Machine study – Tuesday 4, February

Message ID: 1850	Entry time: 2020-02-04, 16:47, Tuesday
Author:	Nate Rider
Subject:	CBPM Continuous vs Libera
Category:	Design
Instrument:	CESR BPM
Sub-System:	CBPM_II
Shift Key:	20200204
Started by looking at the slow data on the S7A and S7C libera monitors. At 0.5 mA S7C responds less and is hard to see an appropriate response to CHS CBUMPING 47. However both S7A and S7C do respond and there were no observed glitches.	
We added more bunches and bumped the beam and S7A, S7C and CBPM 9W all respond appropriately. data files 50 to 55	
orbit: 1366351	
Took a long ~30min data file for post analysis. data file 56	
The continuous monitoring functionality on the CBPM seems to be reasonable. It has a similar response to the Libera.	
S7A and S7C respond appropriately to bumps of the beam in the order of +/- 100 microns	
9W returned to orbit system	
orbit: 1366353	

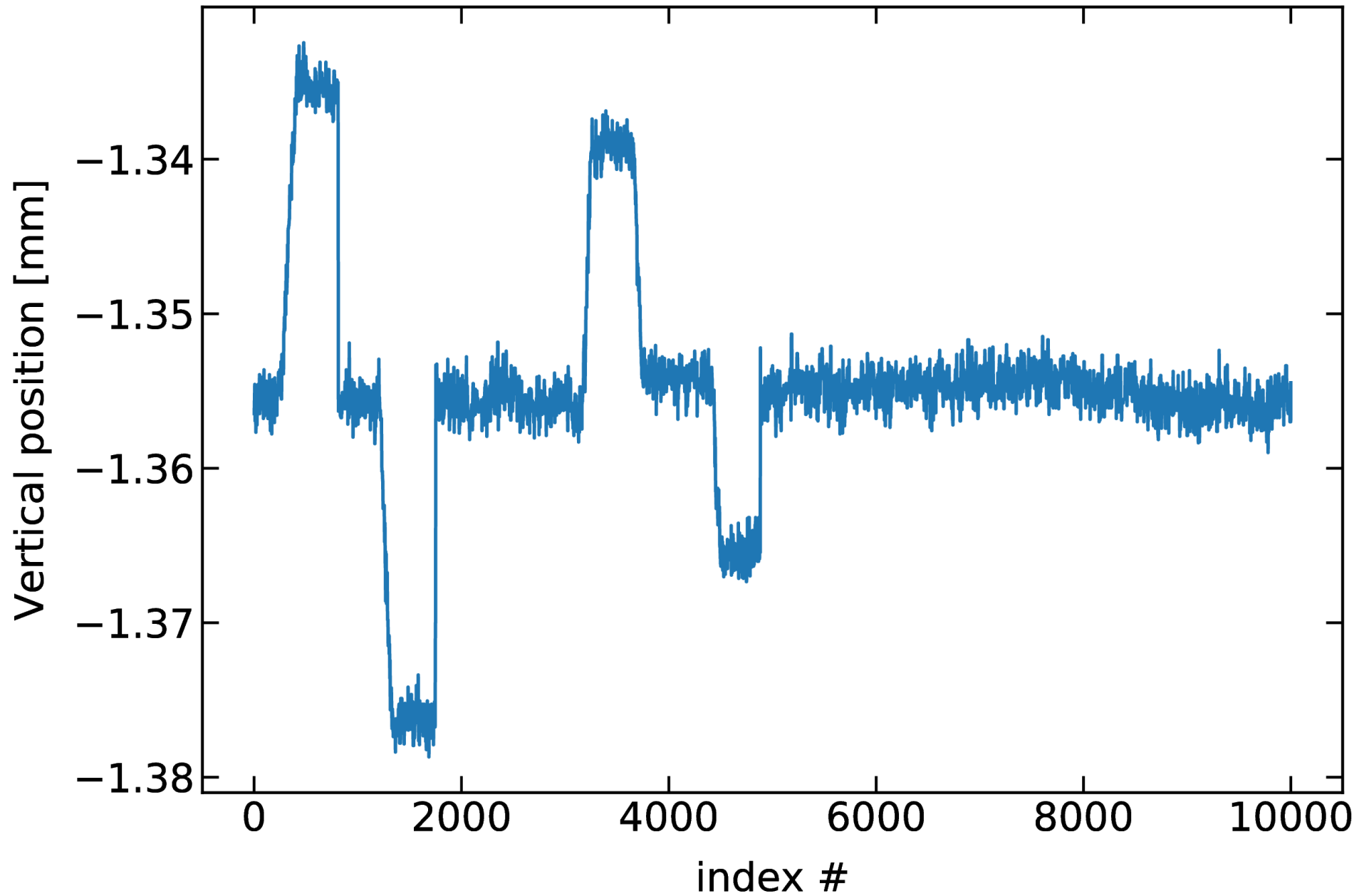
$k_y = 10.4$ mm for 9W
CHESS-U Quad Extrusion

Nate showed us plots already. I am taking a new look at the data with the goal of doing a quantitative (statistical) analysis.

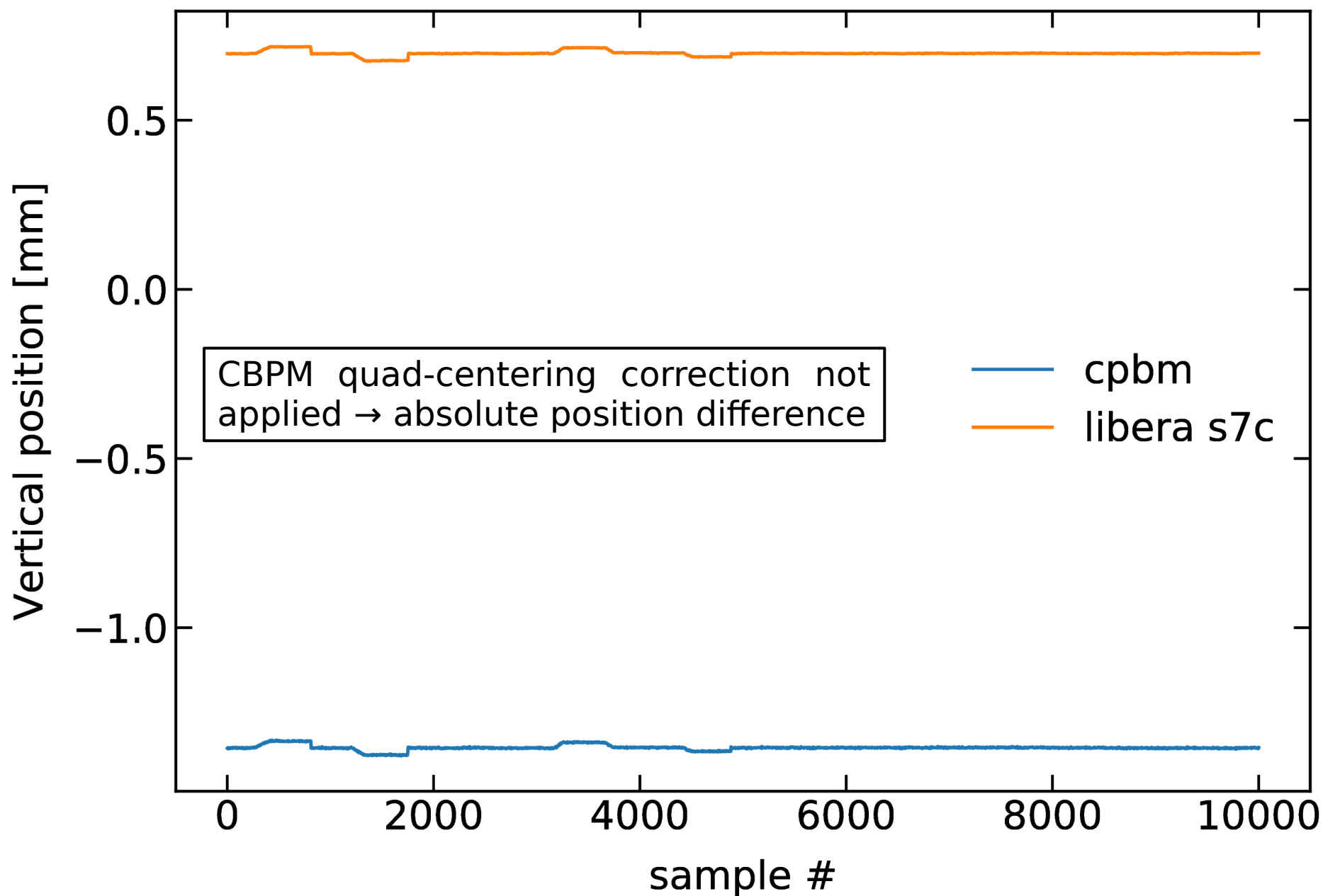
The data of interest from the machine study :

- x 9W button signals split between CBPM and Libera S7C
- x bump the beam (vertically) up and down
- x long data collection with “stable” beam

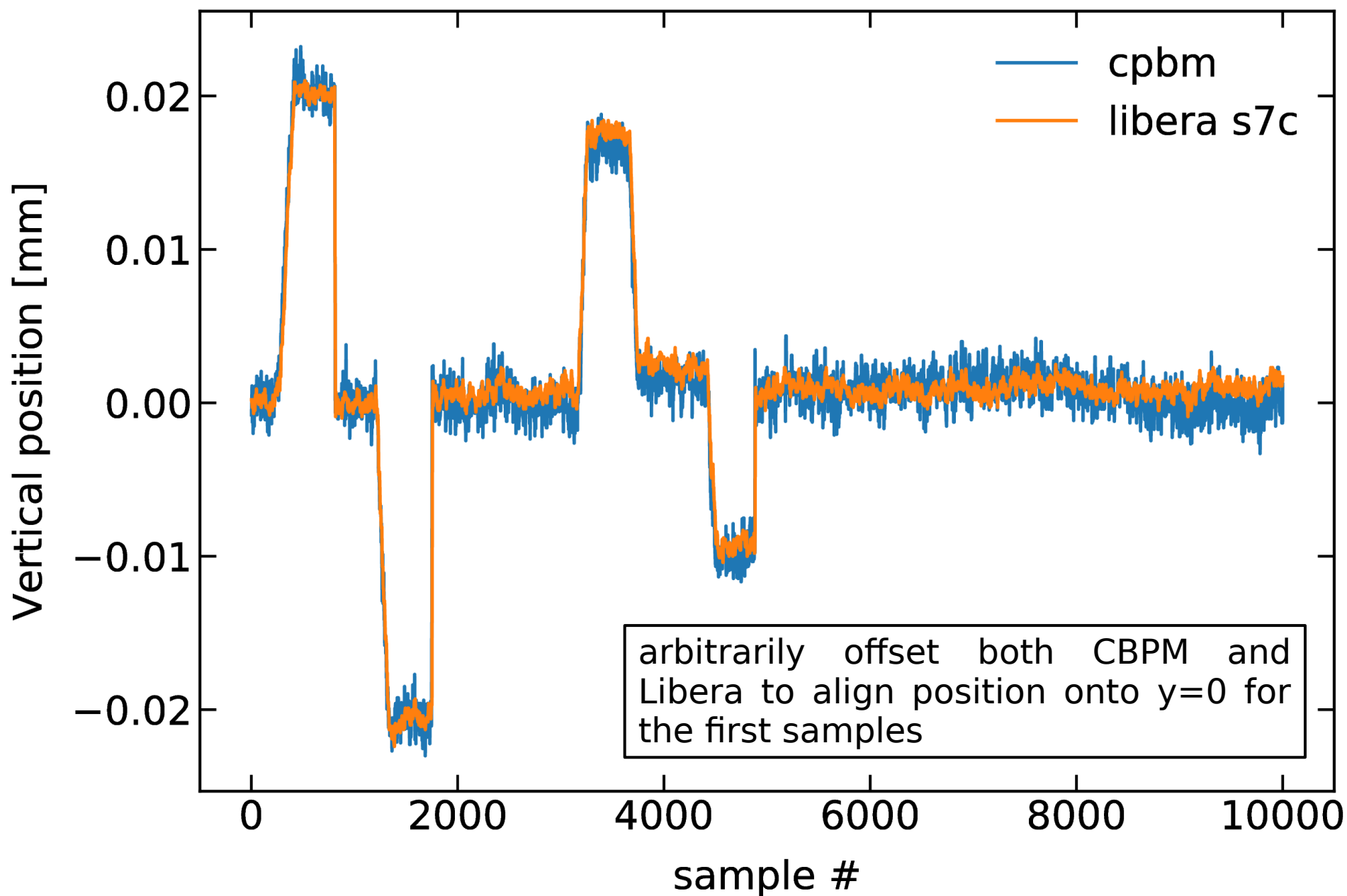
CBPM - bumping the beam



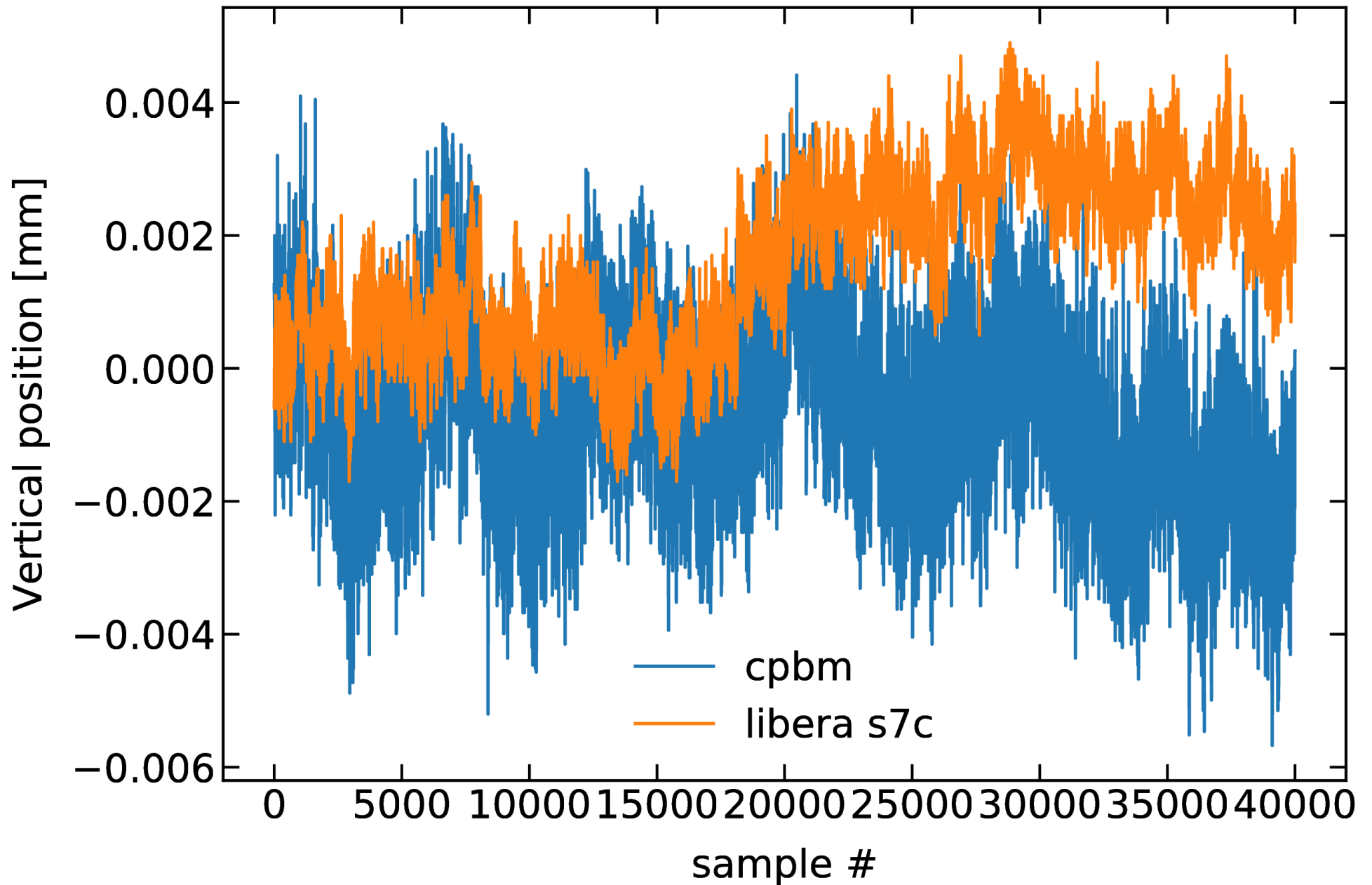
CBPM versus Libera S7C - bumping the beam



CBPM versus Libera S7C - bumping the beam



Long run with “stable beam”



Takeaways

Getting the constants sorted out to compare CBPM/Libera is essential!

When bumping the beam up/down vertically → CBPM and Libera S7C report position changes agreeing at the micron level

Over 20 minutes of stable beam → CBPM and Libera S7C report positions within 4 microns of each other:

x might be some slow beam position modulation → can only perform an approximate FFT because the timestamp of each sample is not well known.

I call it a **success!**

Next step

Perform a more quantitative statistical analysis → it is going slowly because I am “smartly” re-organizing my code:

- x lots of function and analysis capabilities from my previous CBM analysis code
- x creating “external” module with all these capabilities to be called (used) in any code I will write from now on → modular code writing to plug-and-play tool boxes

Additional materials