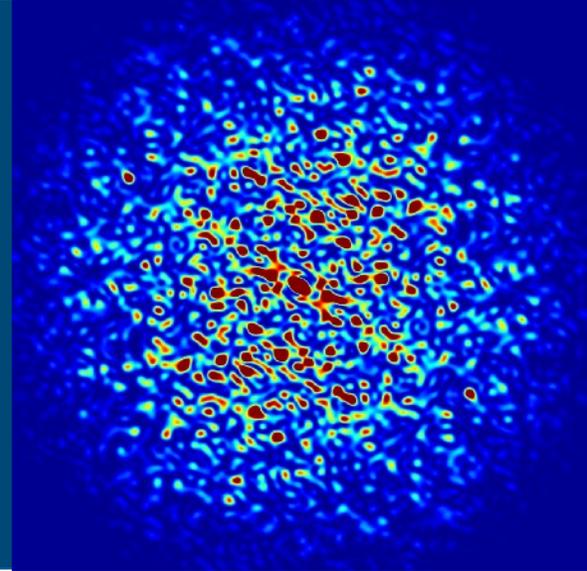


Recent developments in ID PM sorting technique

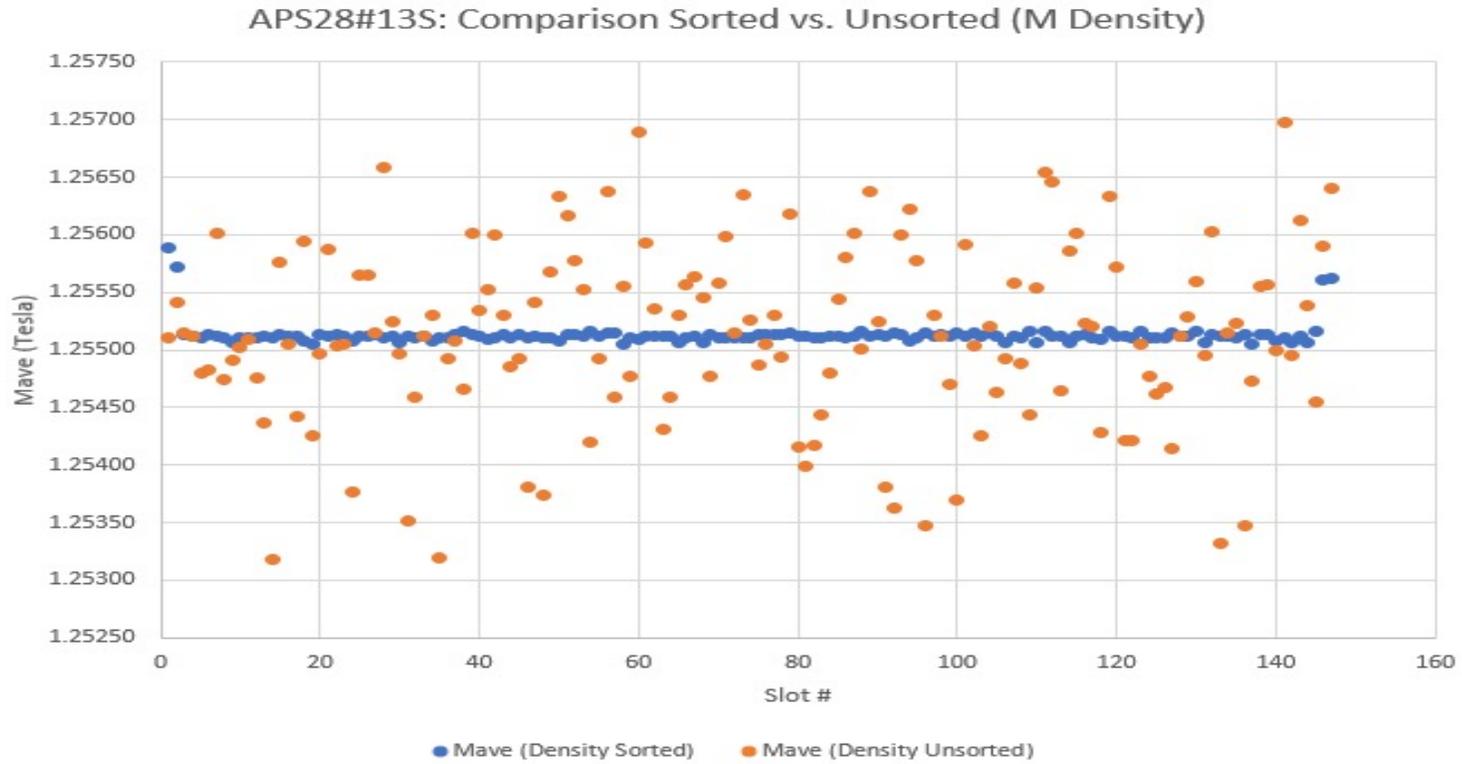


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IPAC 21, Virtual Edition
Campinas, SP, Brazil
May 24-28, 2021

Introduction

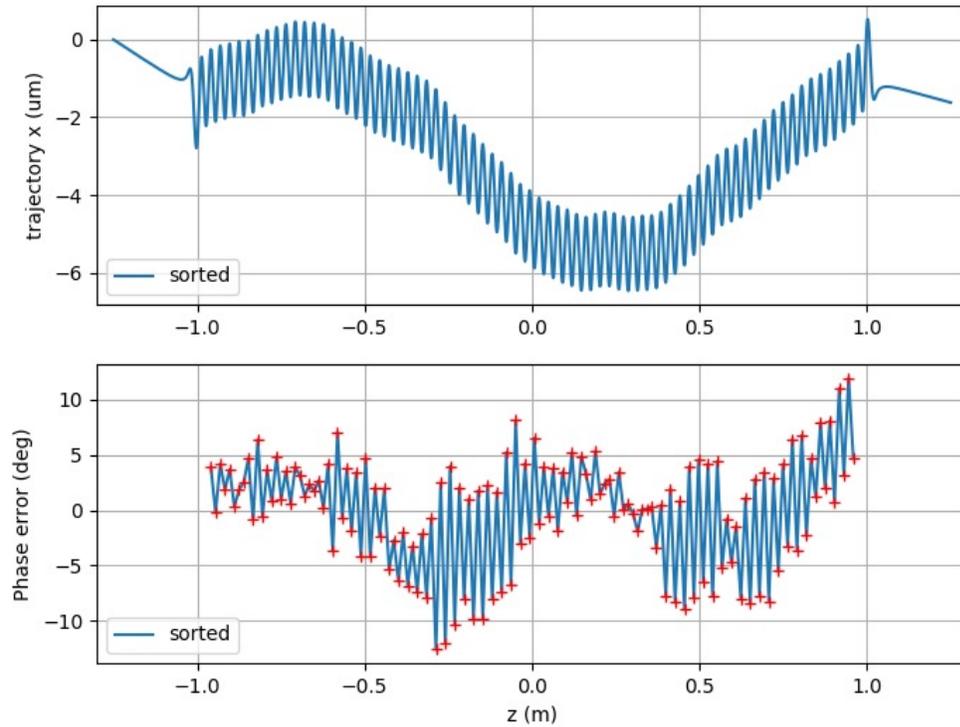
At the Advanced Photon Source (APS) we have assembled, measured, and analyzed over 14 new undulators of the same mechanical design, some of them with sorted magnets and some unsorted. The performance differences appear to be insignificant in meeting the tight APS Upgrade (APS-U) undulator requirements.

APS28#13S

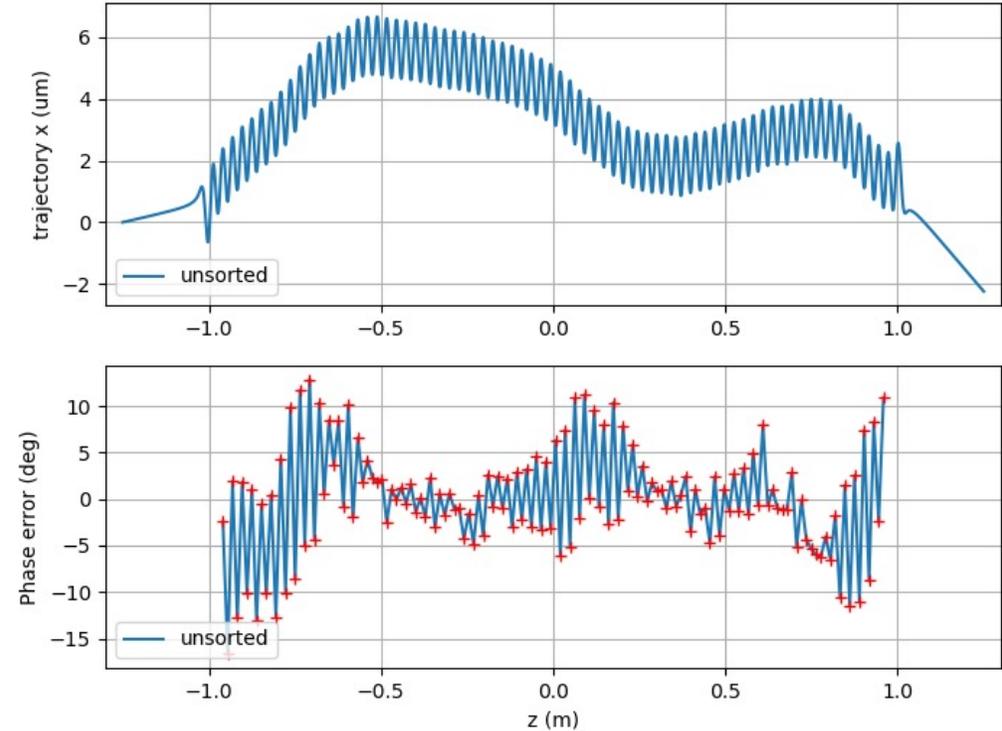


APS-U #13S Hall Probe Data before Tuning

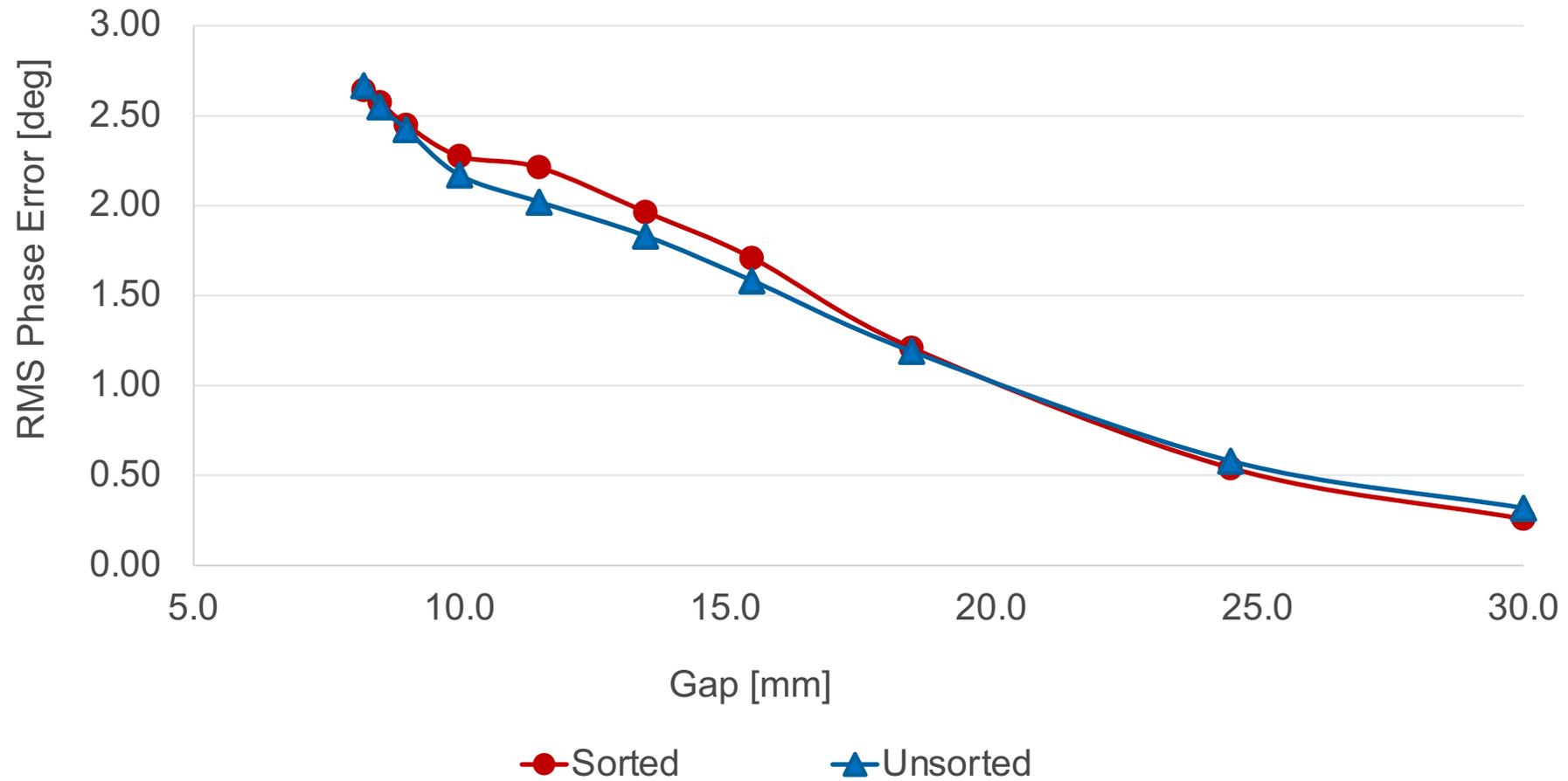
Sorted



Unsorted



APS-U #13S Hall Probe Data after Tuning



All Device Parameters after Tuning

Device ID	RMS Phase Error [deg]	Sorting Status
APS28#1S	2.6	Unsorted
APS28#2	2.6	Sorted
APS28#3S	2.7	Sorted
APS28#4S	2.5	Sorted
APS28#5S	2.9	Sorted
APS28#6S	2.8	Sorted
APS28#7	2.7	Sorted
APS28#8	2.4	Sorted
APS28#9S	2.4	Sorted
APS28#10S	3.1	Sorted
APS28#11S	2.4	Sorted
APS28#12S	2.1	Sorted
APS28#13S	2.6	Sorted
APS28#13S	2.7	Unsorted
APS25#1S	2.1	Unsorted
APS21#1S	1.6	Unsorted

Discussion

Sorting means that we know what the sources of the errors are, but this is not the case because we have very different results with the same procedure. Furthermore, due to wrong sorting we may have unexpected results. One of the samples is shown in the next slide. Tuning of the vertical trajectory resulted in a strong normal component. Restoring the initial case without taking in account the M_x component of the magnets decreased this component significantly.

Normal Quadrupole APS27#3

