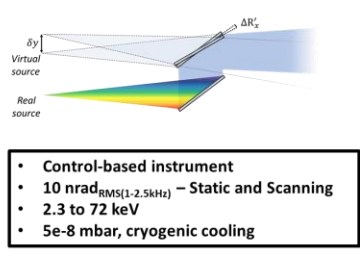
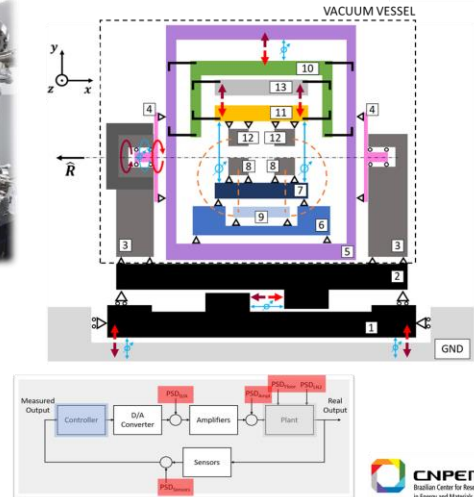
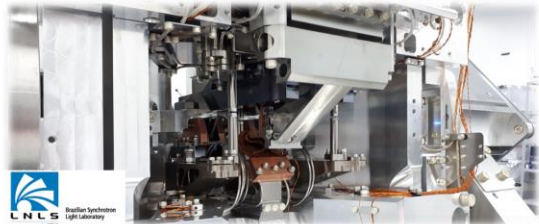


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¹also at the CST Group, Eindhoven University of Technology (TUE), Eindhoven, The Netherlands

TUPV004 Introduction: High-Dynamic DCM

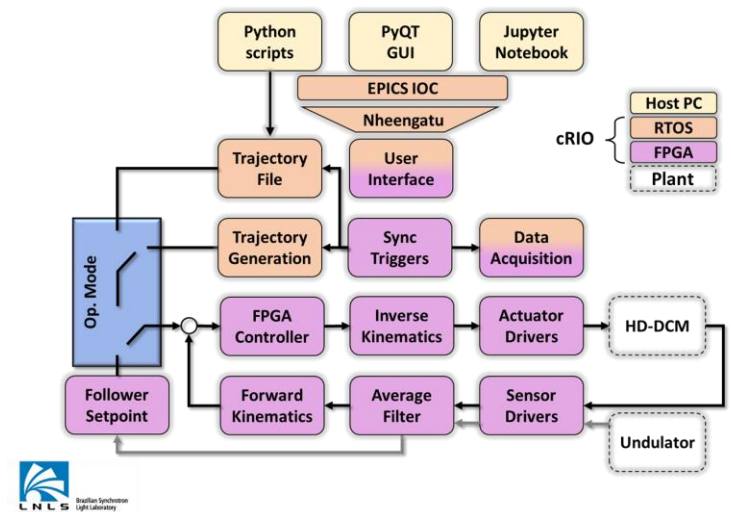


- Control-based instrument
- 10 nrad_{RMS}(1-2.5kHz) – Static and Scanning
- 2.3 to 72 keV
- 5e-8 mbar, cryogenic cooling

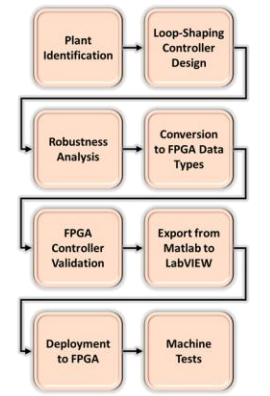


TUPV004 Control Architecture

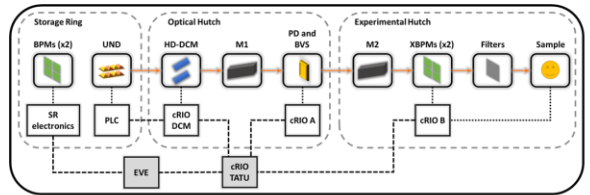
TUPV004



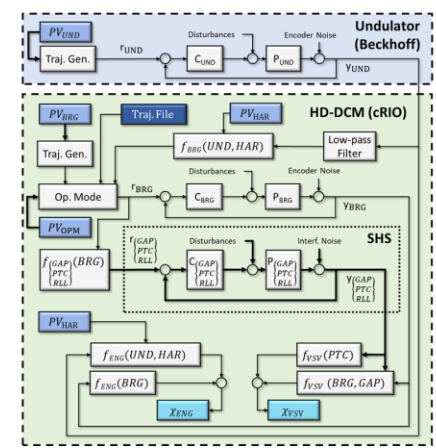
FPGA controller design and deployment workflow



TUPV004 Integrated Control Diagram

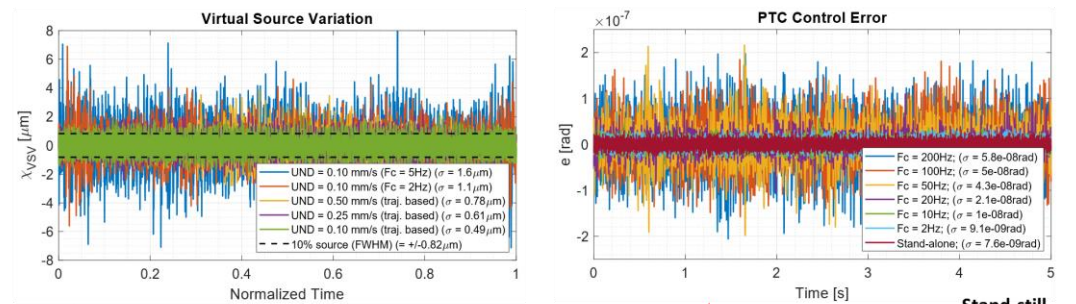


Kyma Undulator

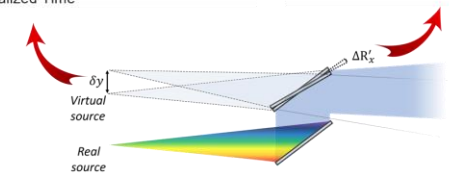


TUPV004 Undulator Integration Results

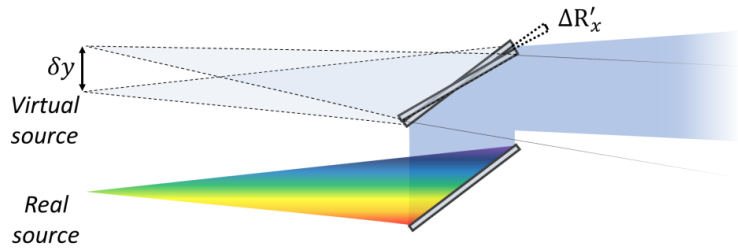
TUPV004



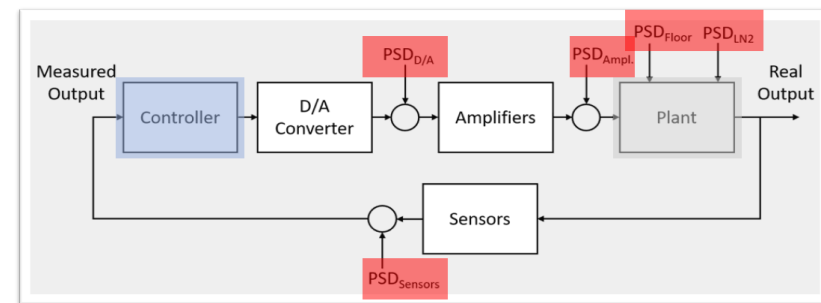
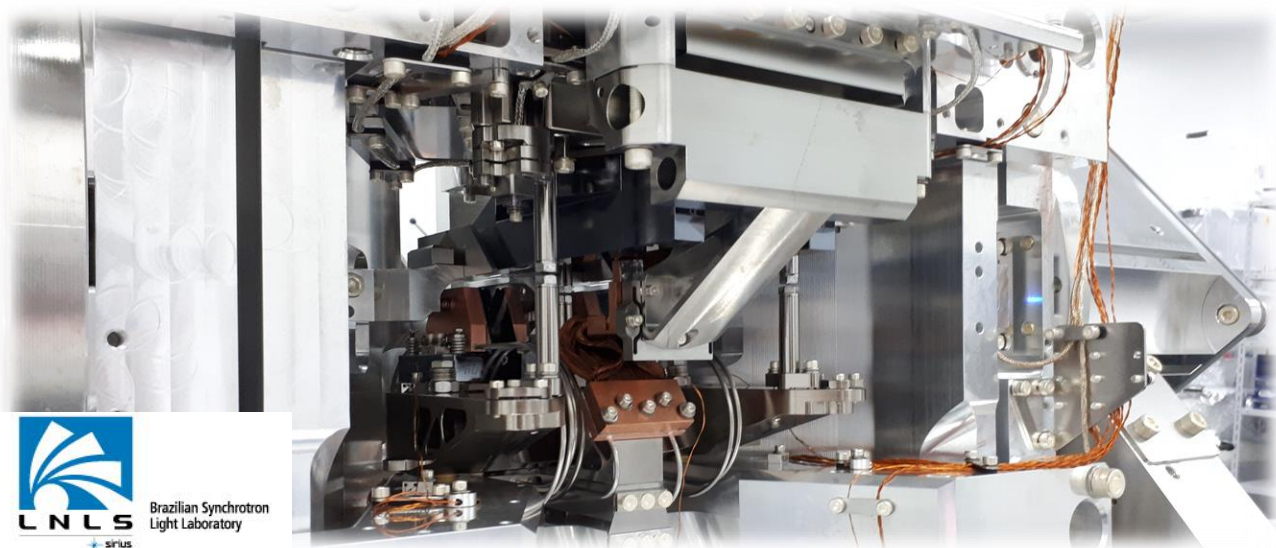
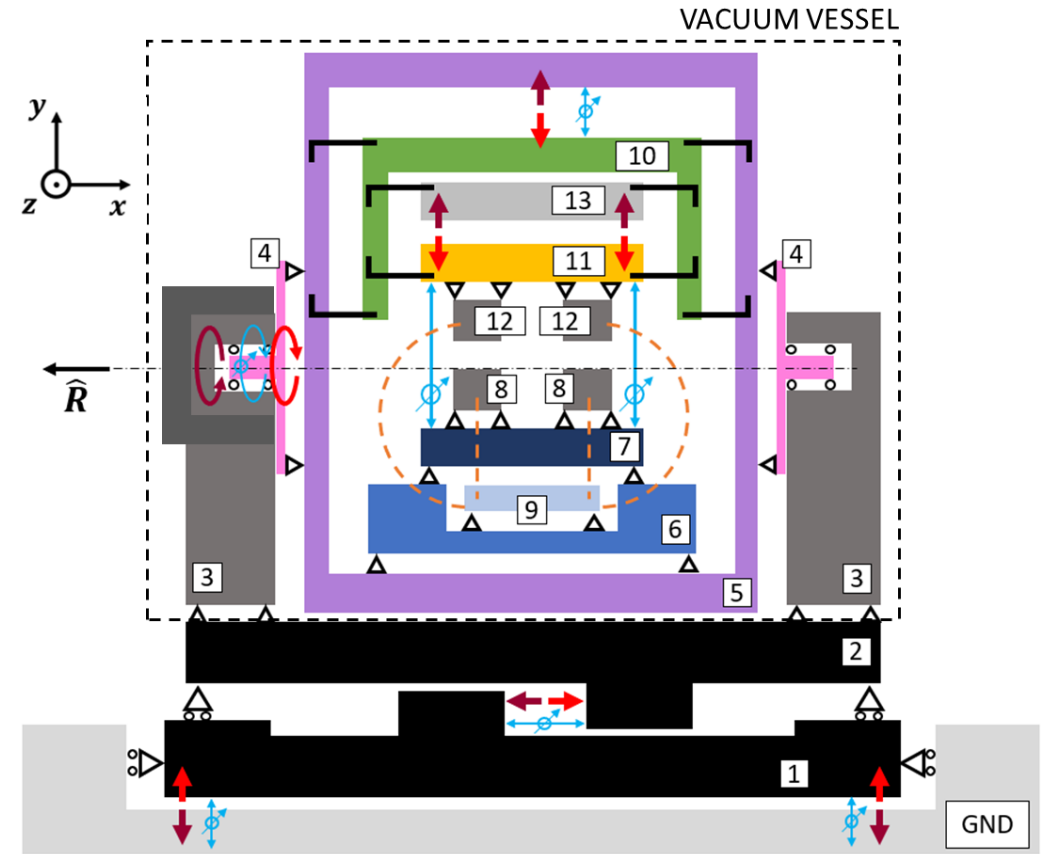
Scanning:
Scan range: 1 keV
Scan times: 4 to 12 s



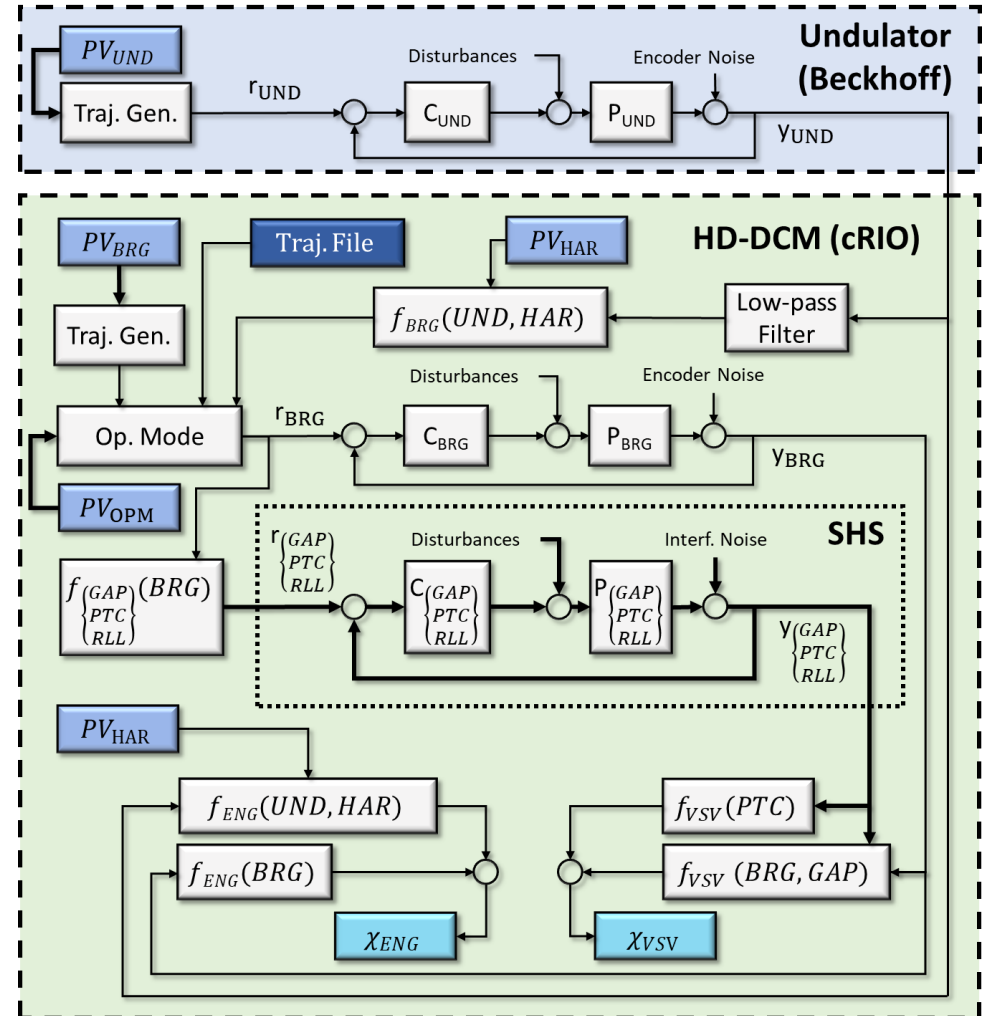
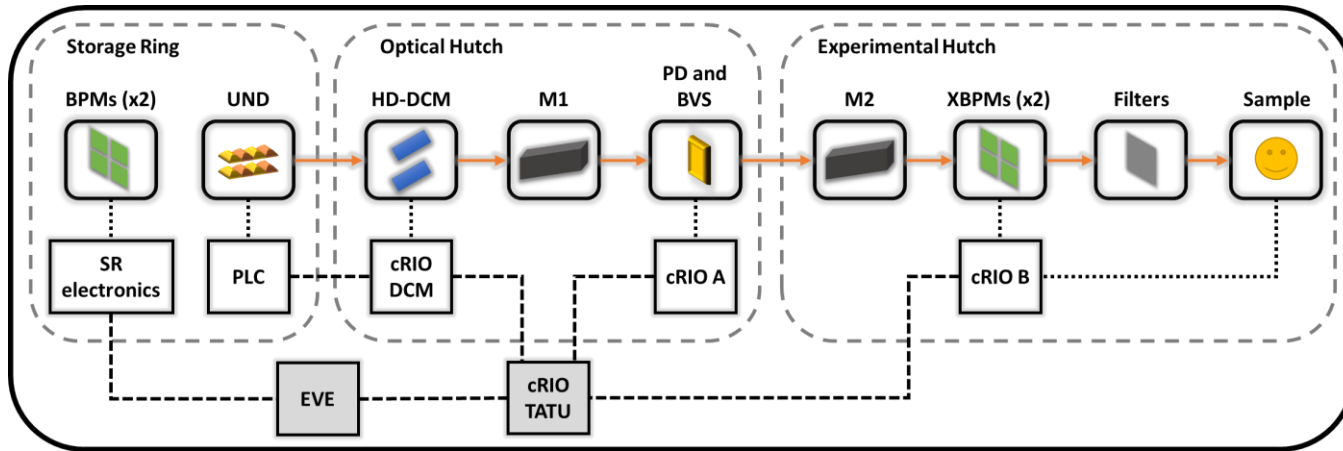
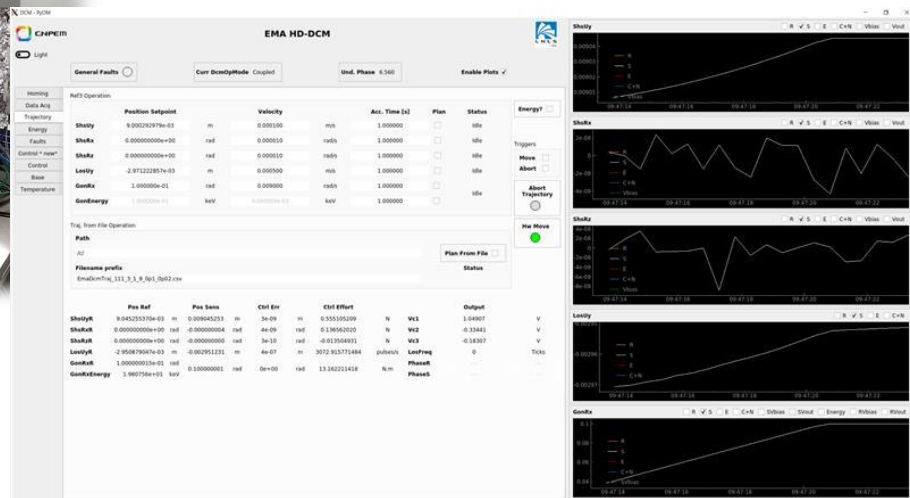
Introduction: High-Dynamic DCM



- Control-based instrument
- $10 \text{ nrad}_{\text{RMS}(1-2.5\text{kHz})}$ – Static and Scanning
- 2.3 to 72 keV
- $5\text{e-}8 \text{ mbar}$, cryogenic cooling



Integrated Control Diagram

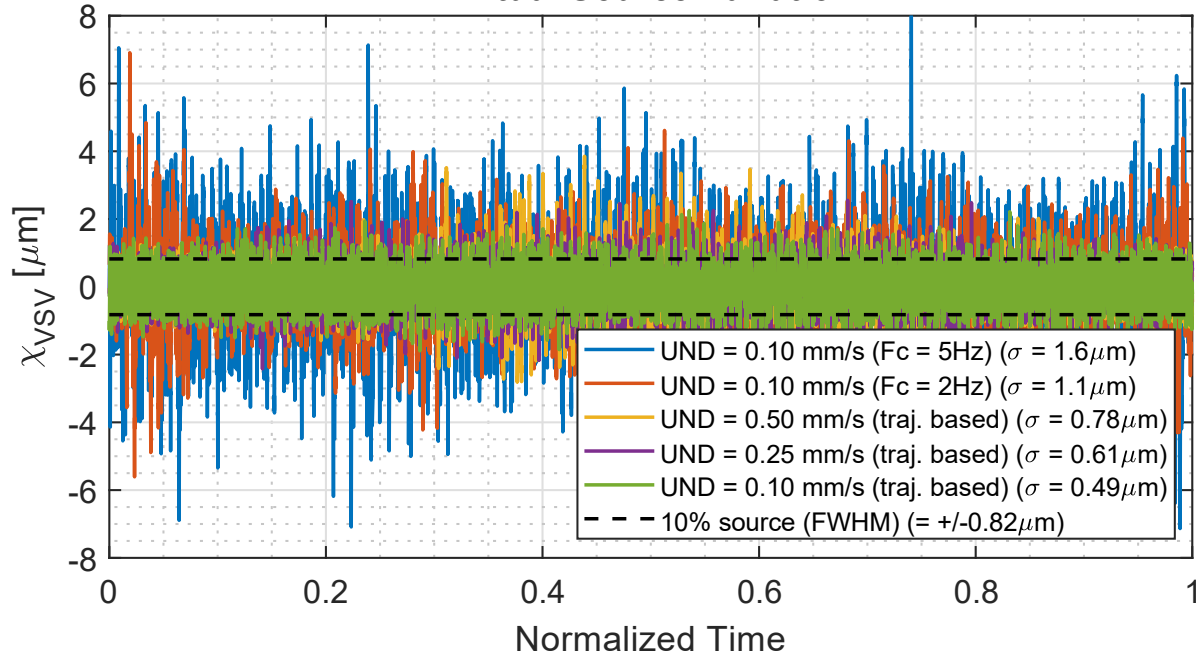
Pos Ref	Pos Sens	Ctrl Err	Ctrl Effort	Act. Time [s]	Plan	Status	Energy
ShkxK	0.00000000e+00	0.00000000e+00	0.00000000e+00	0.00000000e+00	W3	OK	1.00000
ShkyK	0.00000000e+00	0.00000000e+00	0.00000000e+00	0.00000000e+00	W3	OK	1.00000
ShkxR	0.00000000e+00	0.00000000e+00	0.00000000e+00	0.00000000e+00	W3	OK	1.00000
ShkyR	0.00000000e+00	0.00000000e+00	0.00000000e+00	0.00000000e+00	W3	OK	1.00000
UndyK	2.00000000e+03	0.00000000e+00	0.00000000e+00	0.00000000e+00	W3	OK	1.00000
UndyR	2.00000000e+03	0.00000000e+00	0.00000000e+00	0.00000000e+00	W3	OK	1.00000
UndKx	1.00000000e+01	0.00000000e+00	0.00000000e+00	0.00000000e+00	PhaseK	OK	1.00000
UndKy	1.00000000e+01	0.00000000e+00	0.00000000e+00	0.00000000e+00	PhaseK	OK	1.00000
UndKenergy	1.980750e+01	0.00000000e+00	0.00000000e+00	0.00000000e+00	PhaseK	OK	1.00000

jupyter Qt
EPICS Interface

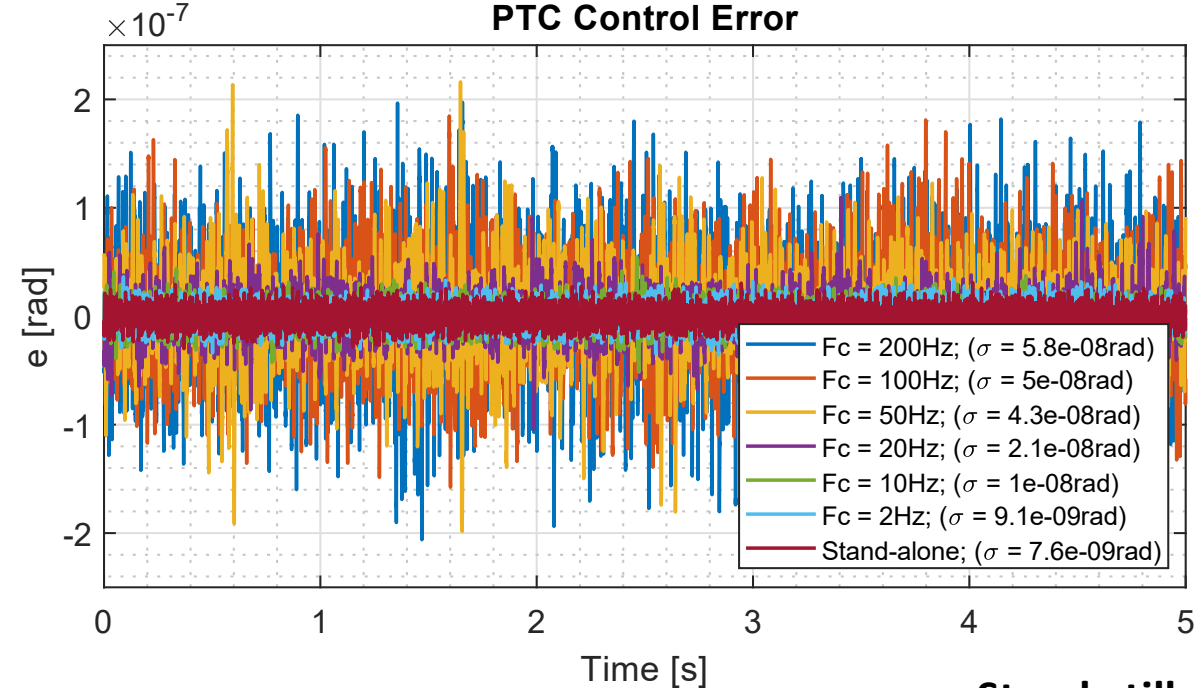
Kyma Undulator

Undulator Integration Results

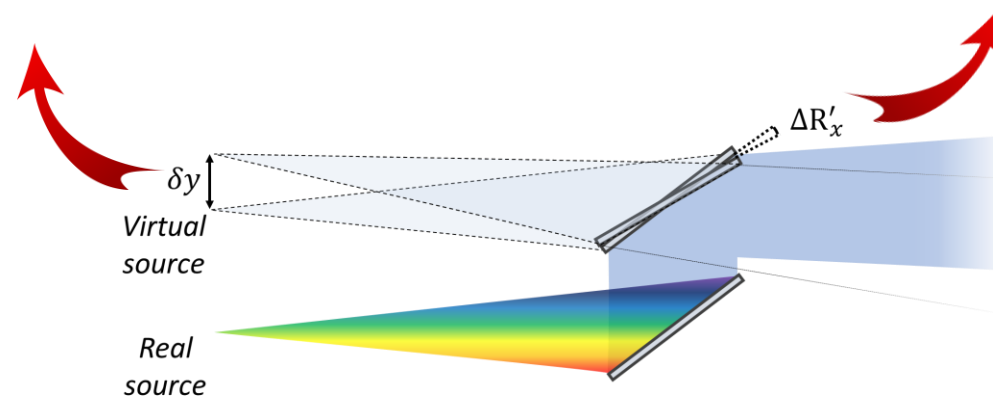
Virtual Source Variation



PTC Control Error



Scanning:
Scan range: 1 keV
Scan times: 4 to 12 s



Stand-still