

## Current Status of Low-Emittance Correction for CEsrTA

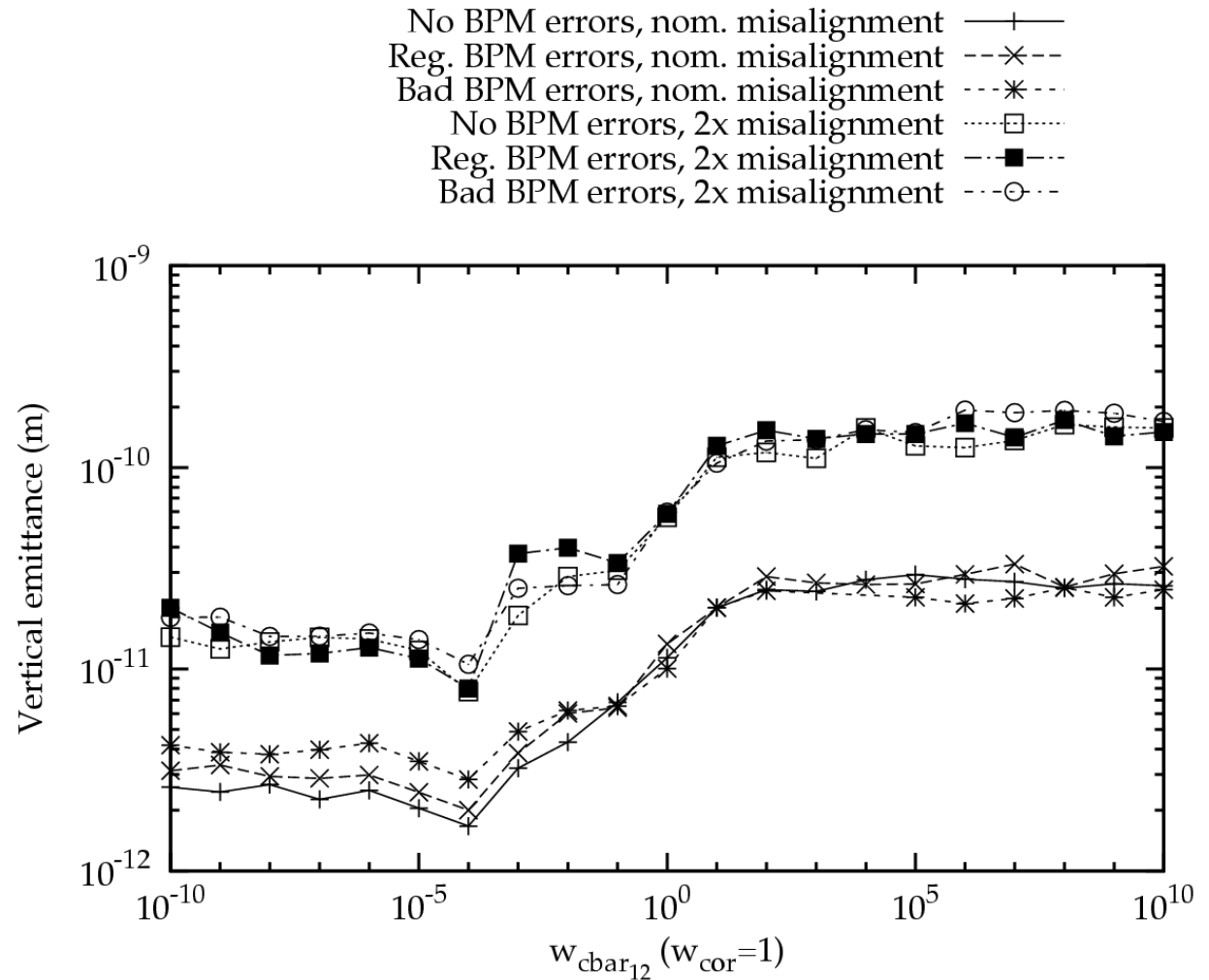
	Parameter	Nominal	Worse
Element Misalignment	Quad/Bend/Wiggler Offset	150 $\mu\text{m}$	300 $\mu\text{m}$
	Sextupole Offset	300 $\mu\text{m}$	600 $\mu\text{m}$
	Rotation (all elements)	1 mrad	2 mrad
	Quad Focusing	4e-4	4e-4
BPM Errors	Absolute (orbit error)	10 $\mu\text{m}$	50 $\mu\text{m}$
	Relative (dispersion error*)	2 $\mu\text{m}$	10 $\mu\text{m}$
	Rotation	1 mrad	2 mrad

\*The actual error in the dispersion measurement is equal to the differential resolution divided by the assumed energy adjustment of 0.001

# One-At-A-Time Correction

Three Passes (weighting optimized for each pass):

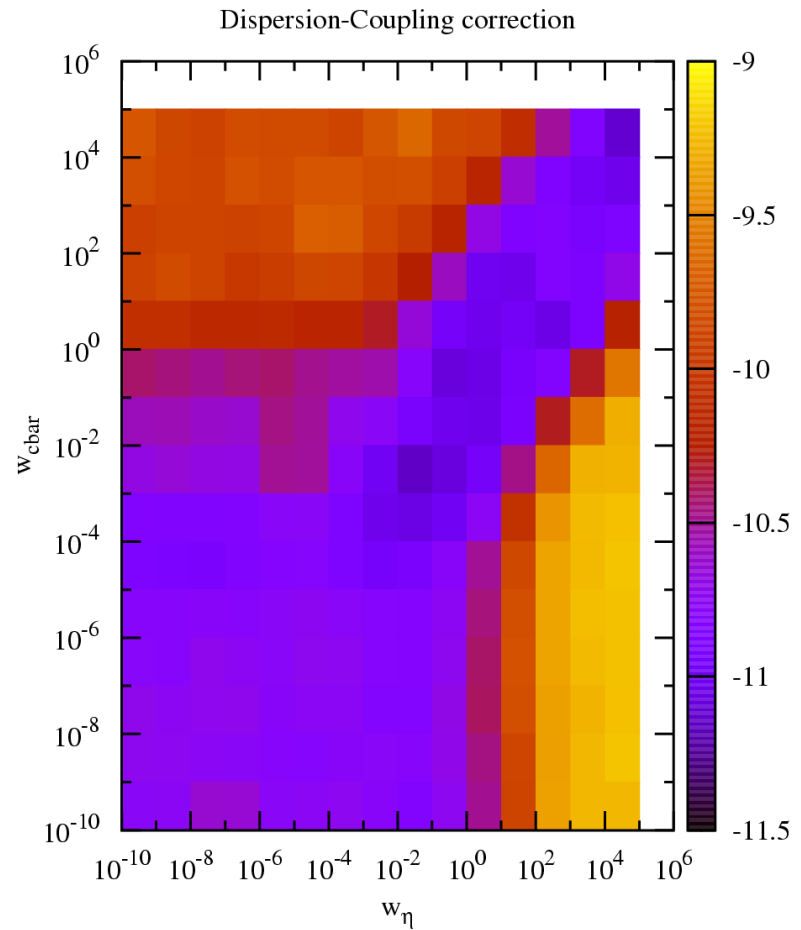
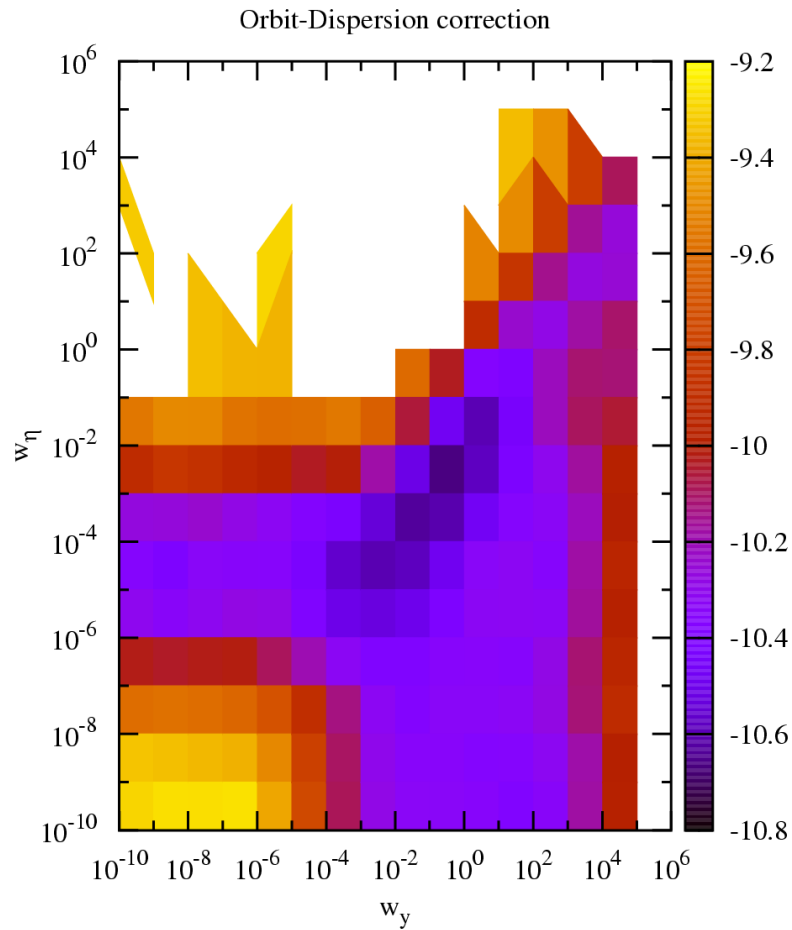
- Correct vertical orbit with vertical steering
- Correct vertical dispersion with vertical steering
- Correct coupling with skew quads



## Two-At-A-Time Correction

Two Passes (weighting optimized for each pass):

- Correct vertical orbit and vertical dispersion with vertical steering
- Correct vertical dispersion and coupling with skew quads



# Results

Vertical emittance (pm) after one-at-a-time correction:

Alignment	BPM Errors	Mean	1 $\sigma$	90%	95%
Nominal	None	1.6	1.1	3.2	4.0
“	Nominal	2.0	1.4	4.4	4.7
“	Bad	2.8	1.6	4.8	5.6
2 x Nominal	None	7.7	5.9	15	20
“	Nominal	8.0	6.7	15	21
“	Bad	11	7.4	20	26

Vertical emittance (pm) after two-at-a-time correction:

Alignment	BPM Errors	Mean	1 $\sigma$	90%	95%
2 x Nominal	Bad	6.5	6.7	9.6	11.3