



Cornell Laboratory for
Accelerator-Based Sciences
and Education (CLASSE)

2018 Oct 22 OSC Baseline with Various Undulator Models

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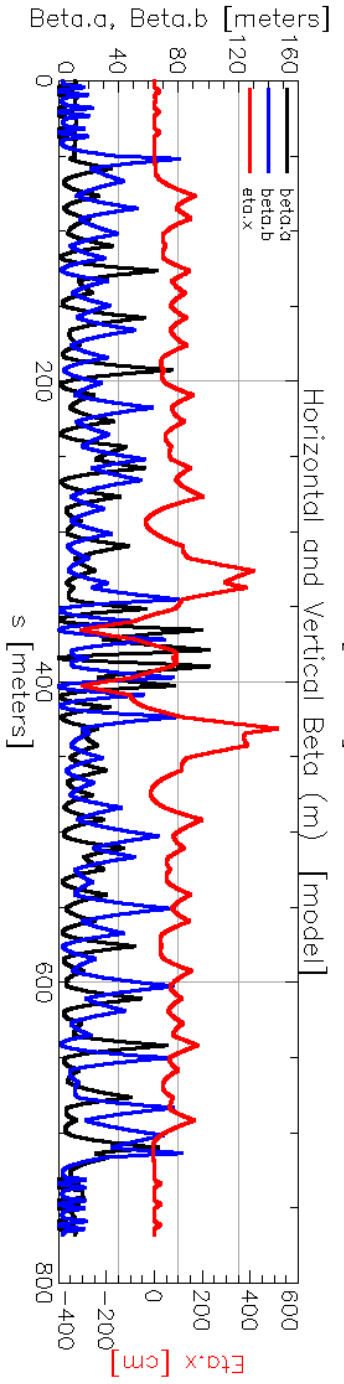
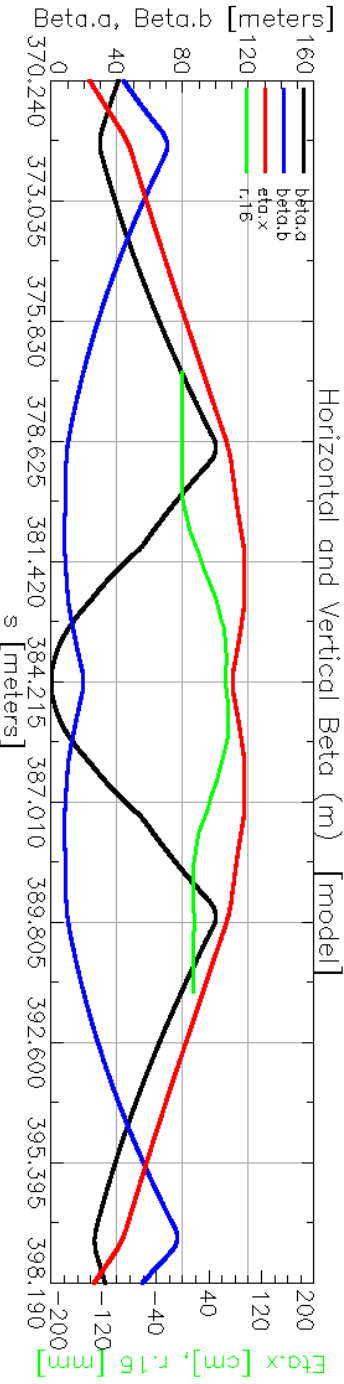
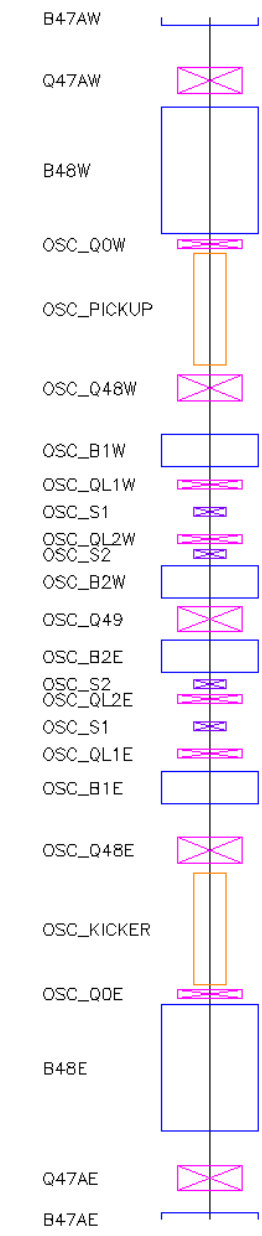


Notable Changes

- Q48E and Q48W moved inwards 3.5 cm each.
- Q0E and Q0W turned off.
- Suntao's custom CHESS-U undulator model investigated.
- Will's custom OSC undulator model investigated.



Layout, Optics, & Properties



- Lattice is CHESS-U standard undulator & OSC planar undulator variant.

- $\epsilon_x = 2.96 \text{ nm}$
- $\sigma_p = 4.06 \cdot 10^{-4}$
- OSC $\sigma_{\epsilon_x} = 30.0 \text{ nm}$
- OSC $\sigma_{\sigma_p} = 2.6 \cdot 10^{-2}$



Various Undulator Models

CHESS-U Undulator Model	OSC Undulators Model	ϵ_x (nm)	σ_p (10^{-4})	OSC σ_{ex} (nm)	OSC σ_{op} (%)	X_x, X_y
Bmad	Bmad	2.96	4.06	30.0	2.67	1.00, 0.99
Suntao's custom	Bmad	3.00	4.06	30.1	2.10	0.23, 0.98
Bmad	Will's custom	2.77	4.05	18.9	0.99	-0.04, -2.23
Suntao's custom	Will's custom	2.78	4.05	18.9	0.89	-0.43, -2.24

- Bmad CHESS-U device: 52 pole, 0.952 T
- Bmad OSC device: planar, 8 pole, 0.14 T
- Suntao's model is “drop-in”, no optics adjustments needed.
 - Field map, along with field integrals
- Will's model is in-progress. Not “drop-in”, lattice has been re-optimized.