



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

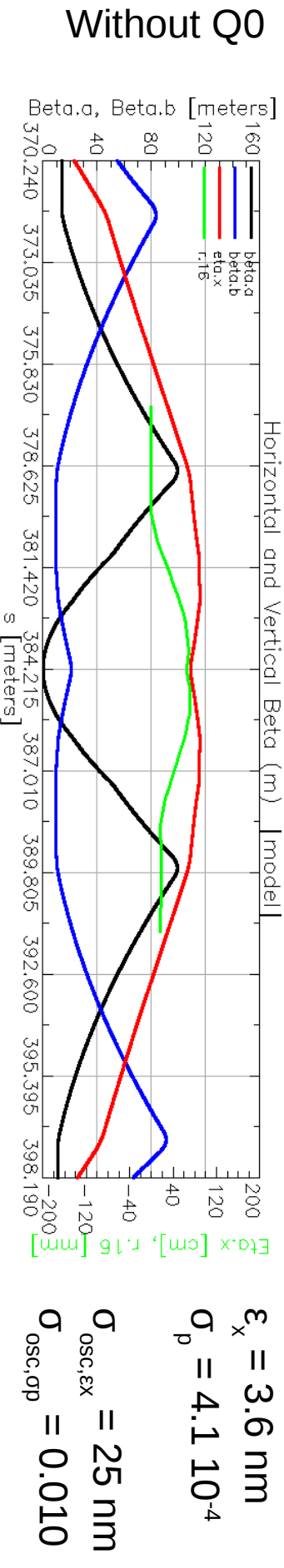
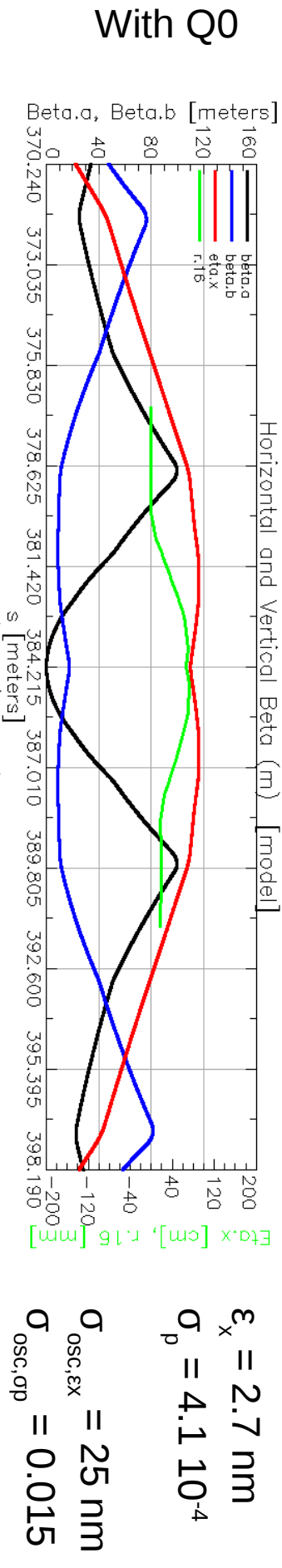
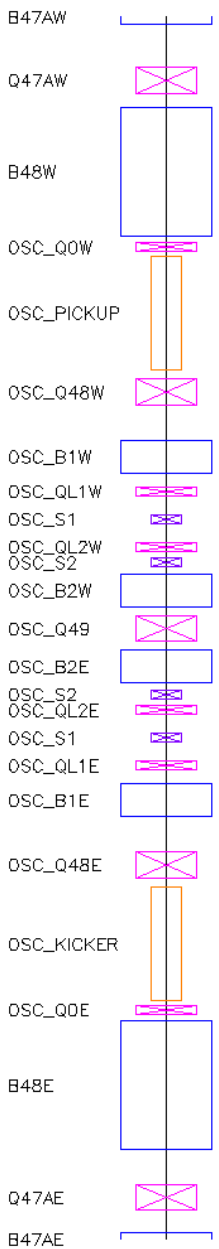
# OSC Optics Without Q0 (Refined)

Michael Ehrlichman



# Optics with Q0 reduced to zero

- Method: Starting with 0.75 m bends OSC bypass, step-by-step reduce Q0 to zero while re-optimizing with LM to meet bmadz constraints and OSC envelopes.





# constraints

- Push harder on beta and dispersion spikes, allow beta and eta elsewhere to rise a bit.

constraints (some modification from bmadz constraints)						
Name	Type	Range	constraint	without Q0 (refined)	Lattice without Q0	Lattice with Q0
eta.a	target	IP_L0	0.0	3.2e-4	9.7331301E-04	1.2646199E-04
etap.a	target	IP_L0	0.0	1.3e-2	-2.3385448E-03	-4.9035787E-03
beta.a	target	IP_L0	11.181	11.185	1.1225971E+01	1.1186420E+01
beta.b	target	IP_L0	2.5201	2.519	2.4933534E+00	2.4417430E+00
beta.a	max	IP_L0	48.0	11.185	1.1225971E+01	1.1186420E+01
beta.b	max	IP_L0	40.0	2.519		
alpha.a	abs max	IP_L0	1.0E-03	1.1e-3	1.5963990E-03	1.0844337E-03
alpha.b	abs max	IP_L0	1.0E-03	0.79e-3	1.0115048E-03	1.1726977E-03
eta.a	abs max	IP_L3	2.0	0.727	7.1517357E-01	7.5123728E-01
etap.a	target	IP_L3	0.0	-0.245e-3	-2.5633279E-03	1.4884405E-04
alpha.a	abs max	IP_L3	1.0E-03	1.11e-3	1.6211187E-03	9.0609783E-04
alpha.b	abs max	IP_L3	1.0E-03	1.03e-3	2.3947255E-03	1.2014843E-03
beta.a	max	IP_L3	100.0	0.169	1.6355019E-01	1.7493200E-01
beta.a	max	IP_L0	80.0	33.8	3.4594128E+01	3.1693133E+01
beta.a	max	Q14E	80.0	79.0	7.8164934E+01	6.4508413E+01
beta.b	max	IP_L0	80.0	79.0	7.7485915E+01	8.0276011E+01
beta.b	max	Q14E	80.0	75.5	7.7341982E+01	7.8114410E+01
beta.a	max	Q14W	70.0	85.8	9.6797080E+01	7.0556219E+01
beta.a	max	Q43E	60.0	85.8		
beta.b	max	Q14W	64.0	72.8	7.0016979E+01	6.3765479E+01
beta.b	max	Q43E	64.0	79.8	8.1887119E+01	7.4976309E+01
eta.a	abs max	Q14W	2.0	2.22	1.8947983E+00	1.6960795E+00
eta.a	abs max	Q38E	2.0	2.09	1.9414929E+00	1.9629271E+00
beta.b	max	Q44W	100.0	81.5	8.0563015E+01	7.5152554E+01
beta.a	max	Q43W	100.0	97.0	1.0023218E+02	9.7377688E+01
beta.b	max	Q43W	80.0	89.2	8.7575108E+01	8.0396190E+01
eta.a	abs max	BEGINNING	5.0	6.03	6.5530393E+00	5.0255833E+00
phase.a	target	END	104.11238	104.112	1.0411238E+02	1.0411238E+02
phase.b	target	END	79.35663	79.3566	7.9356630E+01	7.9356631E+01
emit.a	max		3.0E-09	3.6	3.0672728E-09	2.6841198E-09



# optics with and without QO

