

Name	Dimension	Original	frac diff .05	frac diff .1	Where
emittance	a	3.1549e-09	2.4738E-09	2.4719E-09	
beta	x	5.0438e+01	4.9968E+01	4.9973E+01	Max for any element
beta	y	4.6026e+01	5.0061E+01	5.4753E+01	Max for any element
beta	x	1.2692e+00	1.3100E+00	1.3477E+00	Value at IP_L0
beta	y	2.6999e+01	2.6956E+01	2.7905E+01	Value at IP_L0
eta	x	2.4612e+00	2.6532E+00	2.6947E+00	Max for any element
phase	x	1.4530e+01	14.5568	14.5414	
phase	y	9.5800e+00	9.6068	9.6687	
phase_frac_diff		.05002	.05000	.12724	
chrom	a	-5.4032e-01	-8.8073E-01	-8.5119E-01	
chrom	b	-7.0973e-02	-5.7456E-01	-1.5392E-01	

Table 1: Comparison between .05 and .1 fractional phase delta optimizations using tao. The lattice is ctf_12wig at 2 GeV.

Additional constraints:

Parameter	Dimension	Type	Value	Weight	Where
emittance	n	max	0.0	5e21	GLOBAL
unstable_ring	n	target	0.0	1.e16	GLOBAL
beta	x	max	50.0	4.0e13	IP_L0 to IP_L0_END
beta	y	max	55.0	4.0e13	IP_L0 to IP_L0_END
beta	x	target	1.266	1.0e1	IP_L0
beta	y	target	27.25	5.0e1	IP_L0
phase	x	target	14.53	1.0e3	IP_L0 to IP_L0_END
phase	y	target	9.58	1.0e3	IP_L0 to IP_L0_END
eta	x	abs max	3.0	2.0e1	IP_L0 to IP_L0_END
chrom	x	target	1.0	1.0	GLOBAL
chrom	y	target	1.0	1.0	GLOBAL

Table 2: Constraints used in addition to hard limits on fractional phase difference.