

ILC Damping Rings OCS6 Lattice Parameters

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1 General Parameters

Circumference [m]	6695.057
Energy [GeV]	5.0
Harmonic number	14516
Arc cell type	TME
Horizontal tune	52.397
Vertical tune	49.305
Natural chromaticity (x, y)	-63,-62
Momentum compaction [10^{-4}]	4.20
Energy loss/turn [MeV]	8.69
Transverse damping time [ms]	25.7
Longitudinal damping time [ms]	12.9
Natural emittance [nm]	0.515
Norm. natural emittance [μm]	5.04
RF voltage [MV]	48.1
RF frequency [MHz]	650
Synchrotron tune	0.0958
Synchronous phase [deg]	169
RF acceptance [%]	2.7
Natural bunch length [mm]	6.00
Natural energy spread [10^{-3}]	1.28
Average current [mA]	402
Mean horizontal beta function [m]	13.1
Mean vertical beta function [m]	12.5
Synch. radn. integral I_1 [m]	2.8116
Synch. radn. integral I_2 [m^{-1}]	0.9872
Synch. radn. integral I_3 [m^{-2}]	0.08876
Synch. radn. integral I_4 [10^{-4}m^{-1}]	1.8888
Synch. radn. integral I_5 [10^{-5}m^{-1}]	1.3870

2 Fill Patterns

For explanation of notation, see “Recommendations for ILC Configuration Satisfying Timing Constraints”, H. Ehrlichmann, S. Guiducci, K. Kubo, M. Kuriki, A. Wolski (April 2006).

<https://wiki.lepp.cornell.edu/ilc/bin/view/Public/DampingRings/WebHome>

Number of bunches, N_b	5782	5658	4346	3646	2767
Particles per bunch, N_0 [10^{10}]	0.97	0.99	1.29	1.54	2.02
Average linac current [mA]	8.2	8.7	7.6	7.9	8.9
Machine pulse length, τ_{beam} [ms]	1.09	1.03	1.18	1.14	1.00
i	1	2	1	1	4
n_b	2	2	2	3	4
k_b	123	118	177	203	236
p	118	123	82	71	61
f_2	0	0	0	26	23
g_2	0	0	0	25	28
f_1	49	46	53	25	22
g_1	25	26	71	25	28

3 Footprint

