

ILC Damping Rings Baseline Lattice Options

Comparison of Parameters

	OCS8	FODO5			DCO3		
Beam energy (GeV)	5.00						
Circumference (m)	6476.440						
RF frequency (MHz)	650						
Harmonic number	14042						
Number of straight sections	8	8			2		
Arc cell type	TME	FODO			FODO		
Arc cell length (m)	38.9	28.429			21.0		
Number of arc cells	128	188			192		
Number of dipoles per arc cell	1	2			1		
Arc dipole length (m)	5.6	2			2		
Arc dipole field (T)	0.146	0.139			0.273		
Number of quadrupoles per arc cell	4	2			2		
Number of sextupoles per arc cell	4	2			2		
Natural rms bunch length (mm)	9.00	6.00			6.00		
Natural energy spread (10^{-3})	1.28	1.28			1.27		
Transverse damping time (ms)	24.9	24.9			21.0		
Approximate phase advance per cell	90°	72°	90°	108°	72°	90°	100°
Momentum compaction factor (10^{-4})	4.00	4.00	2.54	1.68	2.80	1.73	1.29
Normalised natural emittance (μm)	5.22	3.85	3.12	2.63	6.53	4.70	4.27
RF voltage (MV)	21.2	45.0	29.2	20.5	31.6	21.1	17.2
RF acceptance (%)	1.46	2.70	2.45	2.17	2.35	1.99	1.72
Synchrotron tune	0.059	0.089	0.056	0.037	0.061	0.038	0.028
Horizontal tune	49.231	50.300	61.301	72.276	64.750	75.200	80.450
Natural horizontal chromaticity	-63.7	-63.3	-78.7	-107.7	-76.5	-95.1	-106.9
Vertical tune	53.339	51.255	62.241	69.226	61.400	71.400	75.900
Natural vertical chromaticity	-64.4	-63.1	-80.3	-100.3	-75.6	-93.4	-103.5

Magnet Counts

	OCS8	FODO5	DCO3
Number of arc dipoles	128	376	192
Arc dipole length (m)	5.6	2	2
Number of quadrupoles	778	623	690
Number of sextupoles	512	376	384
Total wiggler length (m)	208	208	216