

SPEAR3 Machine Parameters

Parameter	Operational Value
Beam energy	3 GeV
Injection energy	3 GeV
Current	100-500 mA
Fill pattern	280 bunches, 93-bunch gap, camshaft bunch in gap (6-bunch timing mode @ 100 mA available)
Circumference	234.144 m
Radio frequency	476.315 MHz
Bunch spacing	2.1 ns
Horizontal emittance	18 nm-rad*
Vertical emittance	7 pm-rad (0.04% emittance coupling)
Critical energy	7.6 keV
Energy spread	0.097%
Lifetime	~50 h @ 100 mA, ~14 h @ 500 mA
e- size (x,y)	dipole: 160, 10 μm rms standard ID: 432, 6 μm rms chicane ID: 397, 3.4 μm rms
e- divergence (x,y)	dipole: 236, 2.2 μrad rms standard ID: 42, 1.22 μrad rms chicane ID: 47, 2.14 μrad rms
Bunch length	17 ps rms (5 mm rms)
Straight sections for IDs (available ID length)	9 x 2.3 m 4 x 3.7 m 2 x 1.5 m (chicane)

* A lattice with 12-nm-rad emittance is under development.