

X-RAY STORAGE RING PARAMETERS AS OF DECEMBER 2007

Stored Electron Beam Energy	2.800 GeV
Maximum Operating Current	300 mA
Lifetime	~20 hours
Circumference	170.08 meters
PHOTON CRITICAL WAVELENGTH (ENERGY)	
$\lambda_c(E_c)$ 1.36 T	1.75 Å (7.1 keV)
$\lambda_c(E_c)$ at 5.0 T (W)	0.48 Å (26.1 keV)
LATTICE STRUCTURE (CHASMAN-GREEN) SEPARATED FUNCTION, QUAD TRIPLETS	
Number of Superperiods	8
Magnet Complement	<div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 5px;">}</div> <div> <p>16 Bending (2.70 meters each)</p> <p>40 Quadrupole (0.45 meters each)</p> <p>16 Quadrupole (0.80 meters each)</p> <p>32 Sextupole (0.20 meters each)</p> </div> </div>
STORAGE RING CHARACTERISTICS	
Number Beam Port on Dipoles	30
Number of Insertion Device Straight Sections	6
Maximum Length of Insertion Devices	< 4.50 meters
Dipole Bend Radius	6.875 meters
Radiated Bending Magnet Power (1=0.25A)	198 kW
Electron Orbital Period	567.2 nanoseconds
B(ρ)	1.36 Tesla (6.875 meters)
Damping Times	$\tau_x = \tau_y = 4$ msec; $\tau_z = 2$ msec
Nominal Tunes (ν_x, ν_y)	9.8, 5.7
Momentum Compaction	$4 \cdot 10^{-3}$
RF Frequency (f_{rf})	52.88 MHz
Radiated Power for Bending Magnets	237 kW (300 mA)
RF Peak Voltage	1120 kV
Design RF Power	450 kW
Synchrotron Tune (ν_s)	0.0023
Natural Energy Spread ($\sigma E/E$)	9.2×10^{-4}
Natural Bunch Length (2σ)	87 mm
Number of RF Buckets	30
Typical Bunch Mode (filled buckets)	25
Horizontal Damped Emittance (ϵ_x)	6.2×10^{-8} m-rad
Vertical Damped Emittance (ϵ_y)	3.4×10^{-10} m-rad
Power per Horizontal Milliradian (0.3A)	38 W

ARC SOURCE PARAMETERS

Betatron Function (β_x, β_y)	1.0 to 3.5 m, 11.4 to 23.6 m
Dispersion Function (η_x, η'_x)	0.03 to 0.25, -0.25 to 0.08
$\alpha_{x,y} = -\beta'_{x,y}/2$	0.38 to 1.65, -2.3 to 3.6
$\gamma_{x,y} = (1 + \alpha_{x,y}^2)/\beta_{x,y}$	1.073 to 1.133 m ⁻¹ , 0.54 to 0.58 m ⁻¹
Source Size (σ_x, σ_y)	260 to 464 μ m, 62 to 90 μ m
Source Divergence (σ'_x, σ'_y)	261 to 352 μ rad, 13.5 to 14.1 μ rad

INSERTION DEVICE PARAMETERS

Betatron Function (β_x, β_y)	1.16 m, 0.33 m
Source Size (σ_x, σ_y)	307 μ m, 11 μ m
Source Divergence (σ'_x, σ'_y)	231 μ rad, 32 μ rad