

# X-Ray Storage Ring Parameters

## as of January 2004

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Normal Operating Energies	2.800 GeV						
Maximum Operating Current	280 mA						
Lifetime	~20 hours						
Circumference	170.1 meters						
Number of Beam Ports on Dipoles	30						
Number of Insertion Devices	6						
Maximum Length of Insertion Devices	< 4.50 meters						
$\lambda_c(E_c)$ at 1.36 T	1.75 Å (7.1 keV)						
$\lambda_c(E_c)$ at 5.0 T (W)	0.48 Å (26.1 keV)						
B( $\rho$ )	1.36 Tesla (6.875 meters)						
Electron Orbital Period	567.2 nanoseconds						
Damping Times	$\tau_x = \tau_y = 4$ msec; $\tau_z = 2$ msec						
Lattice Structure (Chasman-Green)	Separated Function, Quad Triplets						
Number of Superperiods	8						
Magnet Complement	<table style="border: none;"> <tr> <td style="font-size: 3em; vertical-align: middle;">{</td> <td>16 Bending (2.7 meters each)</td> </tr> <tr> <td></td> <td>40 Quadrupole (0.45 meters each)</td> </tr> <tr> <td></td> <td>16 Quadrupole (0.80 meters each)</td> </tr> </table>	{	16 Bending (2.7 meters each)		40 Quadrupole (0.45 meters each)		16 Quadrupole (0.80 meters each)
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32 Sextupole	(0.20 meters each)						
Nominal Tunes ( $\nu_x, \nu_y$ )	9.8, 5.7						
Momentum Compaction	$4.10^{-3}$						
RF Frequency	52.88 MHz						
Radiated Power for Bending Magnets	198 kW (0.25A)						
RF Peak Voltage	1120 kV						
Design RF Power	450 kW						
Synchrotron Tune ( $\nu_s$ )	0.0023						
Natural Energy Spread ( $\sigma_e/E$ )	$9.2 \times 10^{-4}$						
Natural Bunch Length ( $2\sigma$ )	8.7 cm						
Number of RF Buckets	30						
Typical Bunch Mode	25						
Horizontal Damped Emittance ( $\epsilon_x$ )	$7.5 \times 10^{-8}$ meter-rad						
Vertical Damped Emittance ( $\epsilon_y$ )	$1.5 \times 10^{-10}$ meter-rad						
Power per Horizontal Milliradian (0.25A)	32W						

### Arc Source Parameters

Betatron Function ( $\beta_x, \beta_y$ )	1.0 to 3.8 m, 7.9 to 26.5 m
Dispersion Function ( $\eta_x, \eta'_x$ )	0.47 to -0.11, -0.39 to 0.22
$\alpha_{x,y} = -\beta'_{x,y}/2$	-0.49 to 1.62, -3.4 to 4.5
$\gamma_{x,y} = (1 + \alpha_{x,y}^2)/\beta_{x,y}$	0.952 to 0.962 m <sup>-1</sup> , 0.81 to 0.52 m <sup>-1</sup>
Source Size ( $\sigma_x, \sigma_y$ )	371 to 612 $\mu\text{m}$ , 27 to 53 $\mu\text{m}$
Source Divergence ( $\sigma'_x, \sigma'_y$ )	476 to 324 $\mu\text{rad}$ , 9 to 7 $\mu\text{rad}$

### Insertion Device Parameters

Betatron Function ( $\beta_x, \beta_y$ )	1.60 m, 0.35 m
Source Size ( $\sigma_x, \sigma_y$ )	300 $\mu\text{m}$ , 6 $\mu\text{m}$
Source Divergence ( $\sigma'_x, \sigma'_y$ )	260 $\mu\text{rad}$ , 35 $\mu\text{rad}$