

## VUV STORAGE RING PARAMETERS AS OF DECEMBER 2003

Normal Operating Energy	0.808 GeV									
Peak Operating Current (multibunch ops.)	1.0 amp									
Circumference	51.0 meters									
Number of Beam Ports on Dipoles	18									
Number of Insertion Devices	2									
Maximum Length of Insertion Devices	~ 2.25 meters									
$\lambda_c(E_c)$	19.9 Å (622 eV)									
B( $\rho$ )	1.41 Tesla (1.91 meters)									
Electron Orbital Period	170.2 nanoseconds									
Damping Times	$\tau_x = \tau_y = 13$ msec; $\tau_e = 7$ msec									
Lifetime @ 200 mA with 52 MHz (with 211 MHz Bunch Lengthening)	360 min (590 min)									
Lattice Structure (Chasman-Green)	Separated Function, Quad, Doublets									
Number of Superperiods	4									
Magnet Complement	<table border="0"> <tr> <td>8</td> <td>Bending</td> <td>(1.5 meters each)</td> </tr> <tr> <td>24</td> <td>Quadrupole</td> <td>(0.3 meters each)</td> </tr> <tr> <td>12</td> <td>Sextupole</td> <td>(0.2 meters each)</td> </tr> </table>	8	Bending	(1.5 meters each)	24	Quadrupole	(0.3 meters each)	12	Sextupole	(0.2 meters each)
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12	Sextupole	(0.2 meters each)								
Nominal Tunes ( $v_x, v_y$ )	3.14, 1.26									
Momentum Compaction	0.0235									
RF Frequency	52.887 MHz									
Radiated Power	20.4 kW/amp of Beam									
RF Peak Voltage with 52 MHz (with 211 MHz)	80 kV (20kV)									
Design RF Power with 52 MHz (with 211 MHz)	50 kW (10 kW)									
Synchrotron Tune ( $v_s$ )	0.0018									
Natural Energy Spread ( $\sigma_e/E$ )	$5.0 \times 10^{-4}$ , $I_b < 20$ mA									
Bunch Length ( $2\sigma$ )	9.7 cm ( $I_b < 20$ mA) (36 cm)									
( $2L_{rms}$ with 211 MHz Bunch Lengthening)	9									
Number of RF Buckets	7									
Typical Bunch Mode	160 nm-rad									
Horizontal Damped Emittance ( $\varepsilon_x$ )	$\geq 0.35$ nm-rad (4nm-rad in normal ops.)*									
Vertical Damped Emittance ( $\varepsilon_y$ )	3.2 Watts									
Power per Horizontal Milliradian (@ 1A)										

## ARC SOURCE PARAMETERS

Betatron Function ( $\beta_x, \beta_y$ )	1.18 to 2.25 m, 10.26 to 14.21 m
Dispersion Function ( $\eta_x, \eta'_x$ )	0.500 to 0.062 m, 0.743 to 0.093 m
$\alpha_{x,y} = -\beta'_{x,y}/2$	-0.046 to 1.087, 3.18 to -0.96
$\gamma_{x,y} = (1 + \alpha^2_{x,y})/\beta_{x,y}$	0.738 to 0.970 m <sup>-1</sup> , 1.083 to 0.135 m <sup>-1</sup>
Source Size ( $\sigma_x, \sigma_y$ )	536 to 568 μm, >60 to >70 μm (170-200 μm in normal ops.)*
Source Divergence ( $\sigma'_x, \sigma'_y$ )	686 to 373 μrad, 19.5 to 6.9 μrad (55-20 μrad in normal ops.)*

## INSERTION DEVICE PARAMETERS

Betatron Function ( $\beta_x, \beta_y$ )	11.1 m, 5.84 m
Source Size ( $\sigma_x, \sigma_y$ )	1240 μm, >45 μm (220 μm in normal ops.)*
Source Divergence ( $\sigma'_x, \sigma'_y$ )	112 μrad, >7.7 μrad (22 μrad in normal ops.)*

\*  $\varepsilon_y$  is adjustable