

# Storage Ring Parameters

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## Machine

|                                |                       |
|--------------------------------|-----------------------|
| RF Frequency                   | 50.582 MHz            |
| Circumference (Period)         | 88.9 m (297 ns)       |
| Number of Branches (Spacing)   | 15 (19.8 ns)          |
| Number of Bending Magnets (BM) | 12                    |
| BM Magnetic Radius             | 2.083 m               |
| Undulator Magnetic Structures  | 4 PPM (1 APPLE), 2 EM |

## Electron Beam

|                               |              | <b>Base Lattice</b>  | <b>LF15</b>          | <b>Base Lattice</b>  |
|-------------------------------|--------------|----------------------|----------------------|----------------------|
| Energy                        |              | 800 MeV              | 800 MeV              | 1 GeV                |
| Current (start of User fill)  |              | 280 mA               | 280 mA               | 190 mA               |
| Lifetime (@ Current)          |              | 4 h (250 mA)         | 4 h (250 mA)         | 9 h (180 mA)         |
| <b>Typical source points</b>  |              |                      |                      |                      |
| Bend Magnet                   | $\sigma_x$   | 500 $\mu\text{m}$    | 175 $\mu\text{m}$    | 625 $\mu\text{m}$    |
|                               | $\sigma_y$   | 85 $\mu\text{m}$     | 80 $\mu\text{m}$     | 180 $\mu\text{m}$    |
| Undulator                     | $\sigma_x$   | 900 $\mu\text{m}$    | 300 $\mu\text{m}$    | 1125 $\mu\text{m}$   |
|                               | $\sigma_y$   | 70 $\mu\text{m}$     | 45 $\mu\text{m}$     | 150 $\mu\text{m}$    |
| Emittance                     | $\epsilon_x$ | 120 nm·rad           | 41 nm·rad            | 187 nm·rad           |
| Emittance Coupling            |              | 1 %                  | 3 %                  | 2 %                  |
| Energy spread $\Delta E/E$    |              | $4.5 \times 10^{-4}$ | $4.7 \times 10^{-4}$ | $5.6 \times 10^{-4}$ |
| Bunch length                  |              | 77 mm                | 35 mm                | 103 mm               |
| With bunch lengthening cavity |              | 175 mm               | 225 mm               |                      |

## Photon Beam

|  | <b>800 MeV</b>  | <b>1 GeV</b>     |
|--|-----------------|------------------|
| <b>Critical Energy (Wavelength)</b>                  | 545 eV (22.7 Å) | 1065 eV (11.6 Å) |
| <b>Radiated Power (@ Current) in Bending Magnets</b> | 4.9 kW (280 mA) | 8.1 kW (190 mA)  |