Canted Undulator Beamline

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Canted Undulator Layout

X-ray beams with 1 mrad Separation

Electron Beam

Dipole
0.5 mrad

Dipole/Corrector
1.0 mrad

Dipole
0.5 mrad

BPM
Canted Undulator Major Features

- 1 mrad separation between beamlines
- Two 2.07 m long UA (3.3 cm period)
- 200 mA operation at $K=2.78$ (10.5 mm)
- Electromagnet dipoles and correctors
- New 7.5 mm aperture ID VC with center BPM and step-less RF transition
- New Vs. 200C FE design
<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak power density at normal incidence (KW/mrad)</td>
<td>276</td>
</tr>
<tr>
<td>Total power emitted from dual undulators (KW)</td>
<td>20</td>
</tr>
<tr>
<td>Total power emitted from each undulator (KW)</td>
<td>10</td>
</tr>
<tr>
<td>Vertical beam divergence (µm)</td>
<td>4.7</td>
</tr>
<tr>
<td>Vertical beam divergence (µm)</td>
<td>22</td>
</tr>
<tr>
<td>Vertical beam size (µm)</td>
<td>18.4</td>
</tr>
<tr>
<td>Vertical beam size (µm)</td>
<td>352</td>
</tr>
<tr>
<td>Maximum deflection parameter (K)</td>
<td>2.8 (corresponding to 10.5 mm gap)</td>
</tr>
<tr>
<td>Number of periods (N)</td>
<td>62 (with 60 active)</td>
</tr>
<tr>
<td>Undulator period length (µm)</td>
<td>3.3</td>
</tr>
<tr>
<td>Length of each undulator</td>
<td>2.07</td>
</tr>
<tr>
<td>Maximum beam current</td>
<td>200 mA</td>
</tr>
</tbody>
</table>

Horizontal separation to be operated at maximum current of 200 mA.

The front end version 2006 is designed for the dual caneled undulator with 1 mrad.
New 7.5 mm VC Extrusion
Undulator strong-back – as it used to be...

Undulator strong-back – as it has to be...

And this means that....

So do we have to...?
...Probably not!
Canted Undulator FE Layout
Thermal Analysis of PS2
Double Undulator Configuration
Corrector, Dipole, and BPM
Canted Undulator Status

- Set to begin procurement of long-lead items when funding available
- ID VC extrusion ready for production run
- Modification of magnetic structures on order from STI will reduce lead time
- First ID & FE ready by 3rd Quarter 2003