COSMOS FACT SHEET

COSMOS (4-m Blanco telescope)

High-throughput multi-object/longslit spectrometer/imager

- Peak total system throughput ~40%

Currently available configurations:

- Spectroscopy, R~2200 - ~4000 w/ 0.9 arcsec slit; long-slit coverage options:
- Also provides 0.6, 1.2, 1.5, and 3.0 arcsec slits, resolution scales accordingly

<table>
<thead>
<tr>
<th>Disperser</th>
<th>Fringe Frequency (lines/mm)</th>
<th>Blaze</th>
<th>Resolution with 3 pixel (0.9&quot;) slit</th>
<th>Wavelength Range (Å)</th>
<th>Dispersion (Å/pixel)</th>
<th>Blocking Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue (b2k)</td>
<td>1172</td>
<td>500nm</td>
<td>2400&lt;sup&gt;4&lt;/sup&gt;</td>
<td>3480-6190</td>
<td>0.66</td>
<td>N/A</td>
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<td></td>
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<td></td>
<td></td>
<td>3795-6615</td>
<td>0.69</td>
<td>N/A</td>
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<td></td>
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<td>4150-7070</td>
<td>0.71</td>
<td>GG-395</td>
</tr>
<tr>
<td>Red (r2k)</td>
<td>842</td>
<td>800nm</td>
<td>2300&lt;sup&gt;5&lt;/sup&gt;</td>
<td>4985-9040</td>
<td>0.99</td>
<td>GG-455</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>5515-9635</td>
<td>1.00</td>
<td>OG-530</td>
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<td></td>
<td></td>
<td>6080-10250</td>
<td>1.02</td>
<td>OG-570</td>
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<tr>
<td>High-Res Blue (hb4k)</td>
<td>1186</td>
<td>480nm</td>
<td>4000&lt;sup&gt;4&lt;/sup&gt;</td>
<td>3770-5450</td>
<td>0.41</td>
<td>N/A</td>
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<td></td>
<td>4000-5695</td>
<td>0.41</td>
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<td>4230-5950</td>
<td>0.42</td>
<td>N/A</td>
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<tr>
<td>High-Res Visible (v4k)</td>
<td>1508</td>
<td>600nm</td>
<td>3900&lt;sup&gt;6&lt;/sup&gt;</td>
<td>4805-6860</td>
<td>0.50</td>
<td>GG-395</td>
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<td></td>
<td>5070-7170</td>
<td>0.51</td>
<td>GG-395</td>
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<td></td>
<td>5350-7485</td>
<td>0.52</td>
<td>GG-395</td>
</tr>
<tr>
<td>High-Res Red (hr4k)</td>
<td>1141</td>
<td>790nm</td>
<td>3800&lt;sup&gt;7&lt;/sup&gt;</td>
<td>6065-8925</td>
<td>0.70</td>
<td>GG-495</td>
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<td>6445-9340</td>
<td>0.71</td>
<td>GG-495</td>
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<td></td>
<td>6845-9765</td>
<td>0.71</td>
<td>GG-495</td>
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<tr>
<td>Wide (l2k)&lt;sup&gt;8&lt;/sup&gt;</td>
<td>905</td>
<td>480nm</td>
<td>1800&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2845-6250</td>
<td>0.83</td>
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<td>3160-6825</td>
<td>0.90</td>
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<td>3570-7420</td>
<td>0.94</td>
<td>N/A; GG-395&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>1</sup>COSMOS can hold up to five dispersers at a time. The number of dispersers that can be used during a night is limited by the time available for afternoon calibrations.

<sup>2</sup>The wavelength ranges given for each disperser correspond to the blue, center, and red slits respectively.

<sup>3</sup>The dispersion given for each disperser corresponds to the blue, center, and red slits respectively.

<sup>4</sup>At 5000Å.

<sup>5</sup>At 7000Å.

<sup>6</sup>At 6000Å.

<sup>7</sup>At 8000Å.

<sup>8</sup>The COSMOS optics are transmissive down to 3600Å. There is little value in using this grism with either the blue or center slits.

<sup>9</sup>This grism and slit combination can be affected by 2nd-order blue light from 3600Å - 3700Å appearing between 7200Å - 7400Å if the GG-395 blocking filter is not used. If this filter is used, light below 3950Å will not be transmitted.

- Multi-slit coverage similar; details depend on mask design
  - Recommended mask FOV ~5x10 arcmin
• Imaging: 10 arcmin diameter FOV, available filters comprise *most* KPNO and CTIO 4-inch filters.
  o Narrowband filter passbands shift to blue
  o Some filters aren’t optically flat and degrade images
  o Consult manual for details on what’s useful
• Detector is an e2v CCD: deep-depletion device with broadband coating
• *Check back for detector and grism upgrades!*

Download the User Manual for more information!

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