SALT RSS-NIR
MID-TERM REVIEW
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CALIBRATION

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SALT CALIBRATION SYSTEM

• Designed to simulate same vignetting pattern as that seen by celestial object observations
• To provide calibration for first generation instruments through $\lambda = 0.9 \, \mu m$
• Light-shaping diffuser screen and Fresnel lenses modify the beam to illuminate the detectors in the same manner as a uniform sky
• Lamp light is injected through liquid light guides
• Lamp complement:
  – hollow cathode CuAr, ThAr
  – penray Ar, Hg, Xe, Ne
  – QTH flat field lamps
• Changing entrance pupil effects are accounted for by employing a moving exit pupil baffle, which can simulate the pupil geometry of a specific track

(Buckley et al., 2008, SPIE, 7014, 70146H-1)
MOVING BAFFLE

(Buckley et al., 2008, SPIE, 7014, 70146H-1)
DIFFUSER SCREEN AND FRESNEL LENSES

- Both made of UV-transmitting acrylic
  - total thickness = 6.1 mm
  - transmission shown below

long $\lambda$ cutoff of typical sky-limited spectroscopic observations

atmospheric absorption
LIQUID LIGHT GUIDES

- Current system has “blue” (series 300) and “red” (series 380)
- We propose to replace the “red” with a “NIR” (series 2000)

~ 5% loss at 550 nm  ~ 36% gain at 900 nm

1.7 μm
WAVELENGTH CALIBRATION

<table>
<thead>
<tr>
<th>Telescope</th>
<th>Instrument</th>
<th>Wavelength Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gemini</td>
<td>NIFS (AO)</td>
<td>sky lines, Ar</td>
</tr>
<tr>
<td></td>
<td>Flamingos-2</td>
<td>Ar</td>
</tr>
<tr>
<td>Keck</td>
<td>MOSFIRE</td>
<td>sky lines</td>
</tr>
<tr>
<td></td>
<td>OSIRIS (AO)</td>
<td>sky lines, pipeline solution</td>
</tr>
<tr>
<td>Subaru</td>
<td>MOIRCS</td>
<td>sky lines</td>
</tr>
<tr>
<td>VLT</td>
<td>X-shooter</td>
<td>Ar, Kr, Xe, Ne</td>
</tr>
<tr>
<td>LBT</td>
<td>LUCIFER</td>
<td>Ar, Kr, Xe, Ne</td>
</tr>
</tbody>
</table>

- SALT has Ar, Xe, Ne lamps
- Spectroscopy fine with these lamps, still evaluating Fabry-Perot needs
- Replace an existing lamp with a combination lamp and add Kr
  - e.g. replace Ar with Hg-Ar (standard penray), or get a custom Ar-Ne lamp
FLAT-FIELDING

- Existing QTH lamps good in the NIR
- Use existing system for injecting the lamp light with proper vignetting signature
- Stay away from dome flats because high chance of light leaks into instrument at prime focus, close to the screen