SOXS (Son Of X-Shooter) in a nutshell

- Single-object wide band spectrograph from U to H band @ESO-NTT 350-2000 nm
- ‘Similar’ to X-Shooter
- Two arms (UV-VIS + NIR) with partial overlap around 800nm to cross-calibrate spectra
- R~4,500 (3,500-6,000)
- S/N~10 spectrum - 1 hr exposure for R~20
- Acquisition camera to perform photometry ugrizY (3.5’x3.5’)
- 180 n/yr for 5 yr GTO
Institutes from 6 Countries

- Common Path (INAF)
- Control Software & Electronics, Vacuum and Cryogenics, Detectors control (INAF)
- UV/VIS Spectrograph (Weizmann)
- NIR Spectrograph (INAF)
- Acquisition Camera (Un. Andres Bello-MAS)
- Calibration Unit (Turku University)
- Data Reduction (Queen’s Un. Belfast)
- Tel Aviv University
- Dark Cosmology Center
Organization structure
## Project Schedule

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Start</th>
<th>End</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Design</td>
<td>08/2016</td>
<td>07/2017</td>
<td>12 months</td>
</tr>
<tr>
<td>*Final Design</td>
<td>08/2017</td>
<td>07/2018</td>
<td>12 months</td>
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<tr>
<td><strong>MAIT</strong></td>
<td>02/2018</td>
<td>06/2020</td>
<td>29 months</td>
</tr>
<tr>
<td>Commissioning</td>
<td>09/2020</td>
<td>03/2021</td>
<td>7 months</td>
</tr>
<tr>
<td>Operations</td>
<td>2021</td>
<td></td>
<td>&gt;5 yr</td>
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</tbody>
</table>

*Split in 3 intermediate steps (two already done)  
**(Some) procurements anticipated
Operations

After commissioning no SOXS scientists is supposed to be in La Silla unless for limited periods.

- SOXS Consortium will manage the entire schedule, including Consortium time and open time.
- SOXS will not have a pre-planned program.
- All SOXS observations will be TOO.
- The schedule is worked out every day (1-3d in advance).
- One scientist will be on-call for problems and for changing the schedule in case of unforeseen fast-track events.
- SOXS Helpdesk: 3 people on duty for the observing runs.
UV-VIS Spectrograph

Common Path

NIR Spectrograph
**UV-VIS: Multi-Imager Spectrograph**

- Collimated beam is divided to 4 bands using 3 dichroics.
- Each band has its own optimized optics (disperser + camera).
- 1\(^{st}\) order dispersion, \(\mathcal{R} \sim 4500\) at \(\alpha \downarrow \text{Lit}\).
- 4 bands quasi-orders are imaged onto a single 4k×2k CCD.

<table>
<thead>
<tr>
<th>Quasi-Order</th>
<th>Wavelength Range [nm]</th>
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<tbody>
<tr>
<td>(u)</td>
<td>350 - 438</td>
</tr>
<tr>
<td>(g)</td>
<td>438 - 552</td>
</tr>
<tr>
<td>(r)</td>
<td>552 - 700</td>
</tr>
<tr>
<td>(i)</td>
<td>700 – 850 (880)</td>
</tr>
</tbody>
</table>
NIR Spectral Format

- 15 Orders
- 0.787-2.009 µm