Instrument AO debriefing
EChO

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1. Main science goal: to study the physics and chemistry of the atmospheres of a representative sample of known exoplanetary systems found around nearby stars.
3. 5 years nominal lifetime (6 years goal).
4. Instrumentation:
   a. 1.2 m telescope, 3 mirror Korsch, off-axis, afocal.
   b. Spectrometer covering 0.55 to 11 micron (0.4 to 16 micron goal).
   c. Several detector possibilities (e.g. CCD, HgCdTe, Si:As).
   d. PLM passively cooled below ~45 K.
   e. Active cooling required for lower temperatures.
6. General S/C configuration: “horizontal” accommodation (Planck-like), with Sun below SVM and thermal shields.
7. Science ground segment responsibilities to be shared between ESA and the instrument consortium.
Payload interfaces (from EID-A)

1. AOCS (values are 3σ half angles, around pitch & yaw axes of telescope pointing frame).
   a. RPE of 60 mas for 90 s.
   b. PRE of 30 mas up to 10 hrs.

2. Optics:
   a. Diffraction limited at 5 micron (requirement at shorter wavelengths is TBD).
   b. Collimated beam (ø 37 mm) at exit pupil.

3. Mass:
   a. 121 kg in PLM
   b. 137 kg in SVM.

4. Power: 350 W.

5. Data: 35 Gbit/week.

6. Volume in PLM: ~1200x300x740 mm³.

7. Critical cryogenic interfaces:
   a. 300 mW available at 45 K (on 3rd V-groove).
   b. Additional heat sinking at intermediate stages possible (on other V-grooves).
   c. Extra 0.6 m² of instrument radiator area (for detector cooling).
   d. Active cooling proposed shall demonstrate sufficient margins.