

ISWG Activities Since March OS Meeting

- Met March 12-13 (week after last OS meeting) and drafted several key recommendations to HQ and the NGST Project:

1: The NGST guider should not be part of the NIRCcam, and would be provided by the Canadian Space Agency (CSA). Canadian scientists would be allocated some guaranteed observing time for the guider contribution.

2: The NIRCcam instrument team would be strongly encouraged to use up to \$25M from the CSA to enhance the performance of the camera. The NIRCcam team would include some Canadian scientists.

3: The ISWG urged HQ to complete selection of the Mid-infrared Steering Committee (MISC) to mesh with the needs of the ESA Consortium (need a first cut instrument design before the end of '01 to complete fund raising within Europe)

- Held a telecon and extensive e-mail exchange on moving target requirements for NGST.
- Will meet (for the last time?) Aug 21-22

Reactions to ISWG Recommendations

- 1) Canada has agreed to build the NGST guider and to contribute to the NIRCcam. Final details won't be known until the A.O. appears (will get a chance to comment on a draft version of the A.O.).
- 2) MISC formed and has been active.
- 3) Project has rejected the moving target recommendation for now -- ISWG will prepare a Design Reference Mission proposal to illustrate how such a capability would be used. A key argument for the ISWG is observing comets to compare with the spectra of circumstellar disks to see whether other comets are as similar mineralogically to disks as the comet observed with ISO. The Project does not think that this science is close enough to the core mission of studying the high redshift Universe -- ISWG's position is that it may not be very expensive to implement and the science is very strong in the context of Origins and it is therefore premature to eliminate this capability.

MISC Activities and Membership

U.S. members: G. Rieke (chair), M. Meixner, T. Greene, and G. Serabyn

Canadian member: S. Kwok

European members: G. Wright (European chair), T. Henning, P.-O. Lagage, F. Bortoletto

- MISC has drafted a set of science requirements as a result of several telecons
- MISC will be meeting July 17-18 in Edinburgh to develop an outline for the instrument design
- Outstanding question on the U.S. side (not being considered by the MISC!) is how we will solicit for the sections of the MIR instrument that we will provide (general AO versus NASA Center)

Top Level Science Requirements for NGST Mid-IR Instrument

- Imaging

- Wavelength range 5 - 27 μ m
- Diffraction limited imaging, Nyquist sampled at no longer than 8 μ m
- Minimum field of view 1.5 arcmin
- At least 8 spectral bands, 4-5 for SED definition, remainder for PAH isolation, brown dwarf atmosphere color identification
- Simple coronagraph (on order of one additional optical element)
- Larger imaging field of view a goal

- Spectroscopy

- Single object, 5 - 27 μ m, important goal to extend to 28.3 μ m (to provide continuity with NIRCAM at short end and observation of H₂ fundamental as a goal)
- Resolution R ~ 100 from 5 to 10 μ m
- Resolution R ~ 1000 - 3000 from 5 to 28.3 μ m
- Options to be reduced at meeting in July:
 - Tradeoff of complexity and science to set final resolution specification (options to be reduced by end of July through further deliberations of MISC)
 - Trade needs to include array performance and effect of resolution on reaching background limit
 - Need to consider whether the resolution should vary over the spectral range (beyond the natural changes due to behavior of dispersion)
 - Tradeoff to include IFU and a number of options for order separation
- Sizes, number, and type (e.g., IFU vs. long slit) of slits required, TBD

Upcoming Issues

- Should the ISWG be completely dissolved after the AO appears?
- Development of micro-mirror arrays/ micro-shutters reaching the end time wise. Will they be ready in time?
 - key for the science program as envisioned in the Design Reference Mission as spectra of representative samples of galaxies as a function of redshift are required.
 - Three technical development studies are proceeding in parallel
 - ESA is charged with developing alternative designs in case the micro-mirror arrays are not ready. The NIRSpec schedule will not slip.
- Even if the mirror arrays can be built, will a spectrograph based on them work well enough? -- scattered light, confusion/contrast questions being debated

What will be the process for choosing an alternate slit selector technology if one is needed?

