

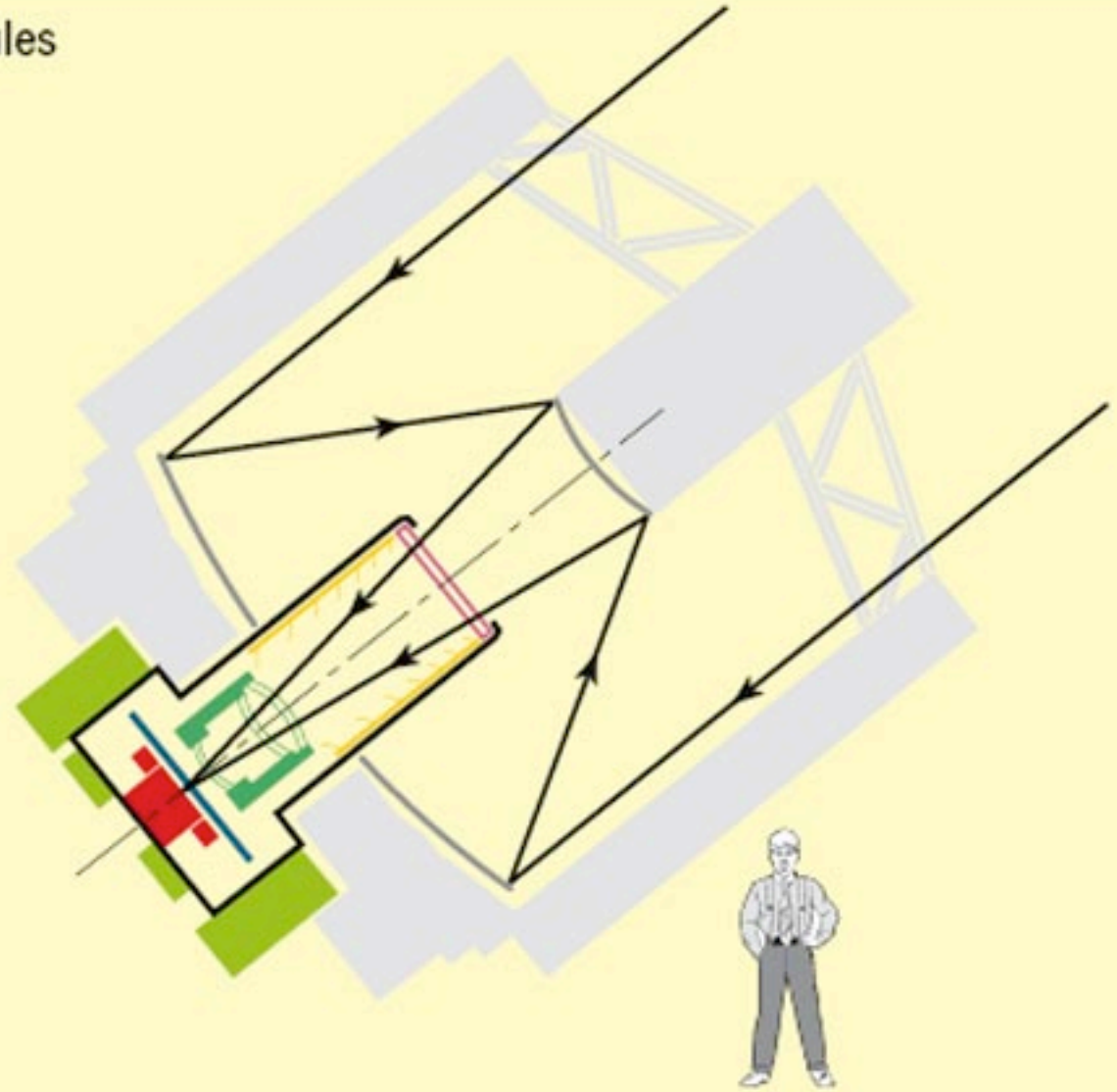
Commissioning Status

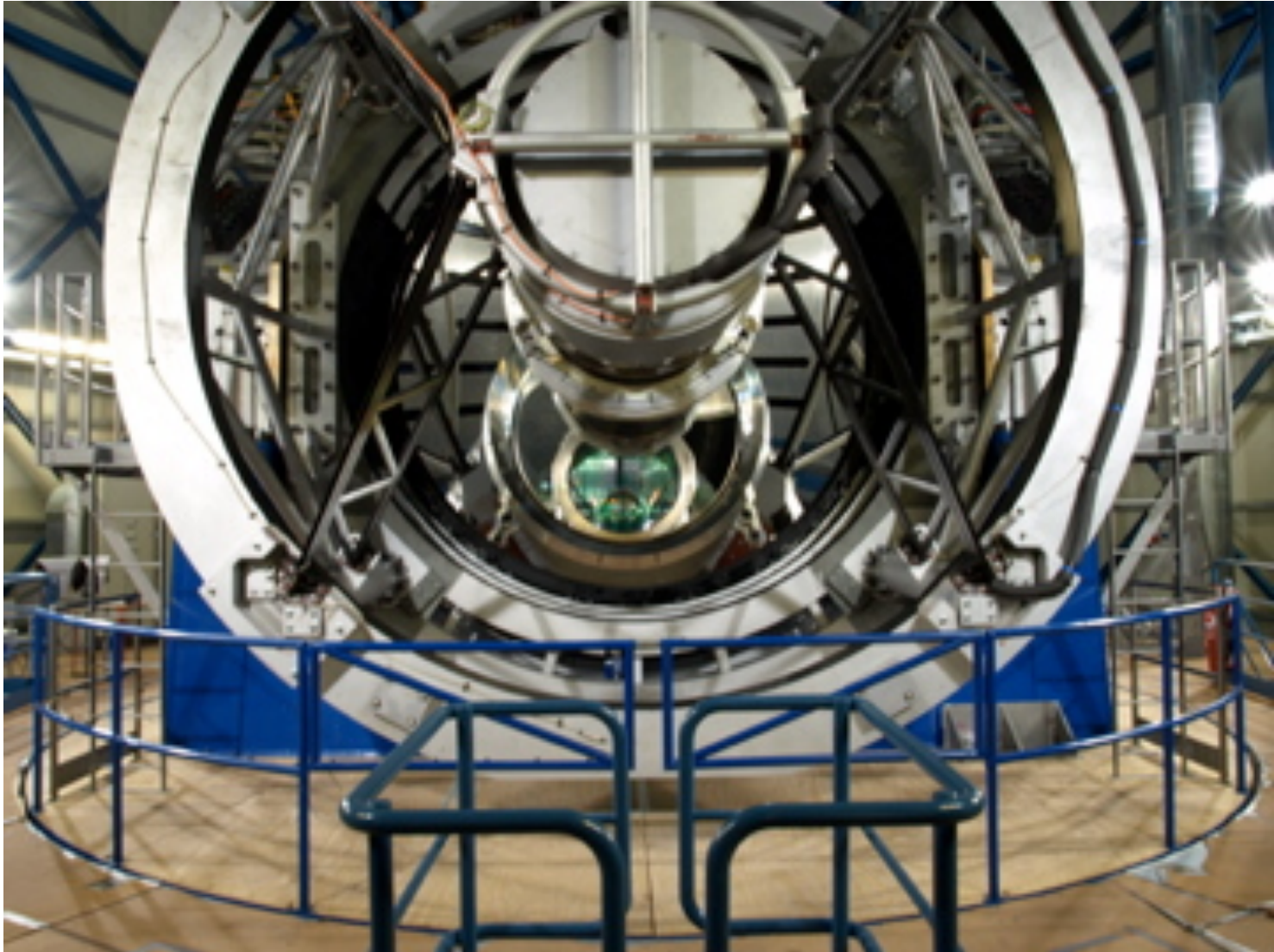
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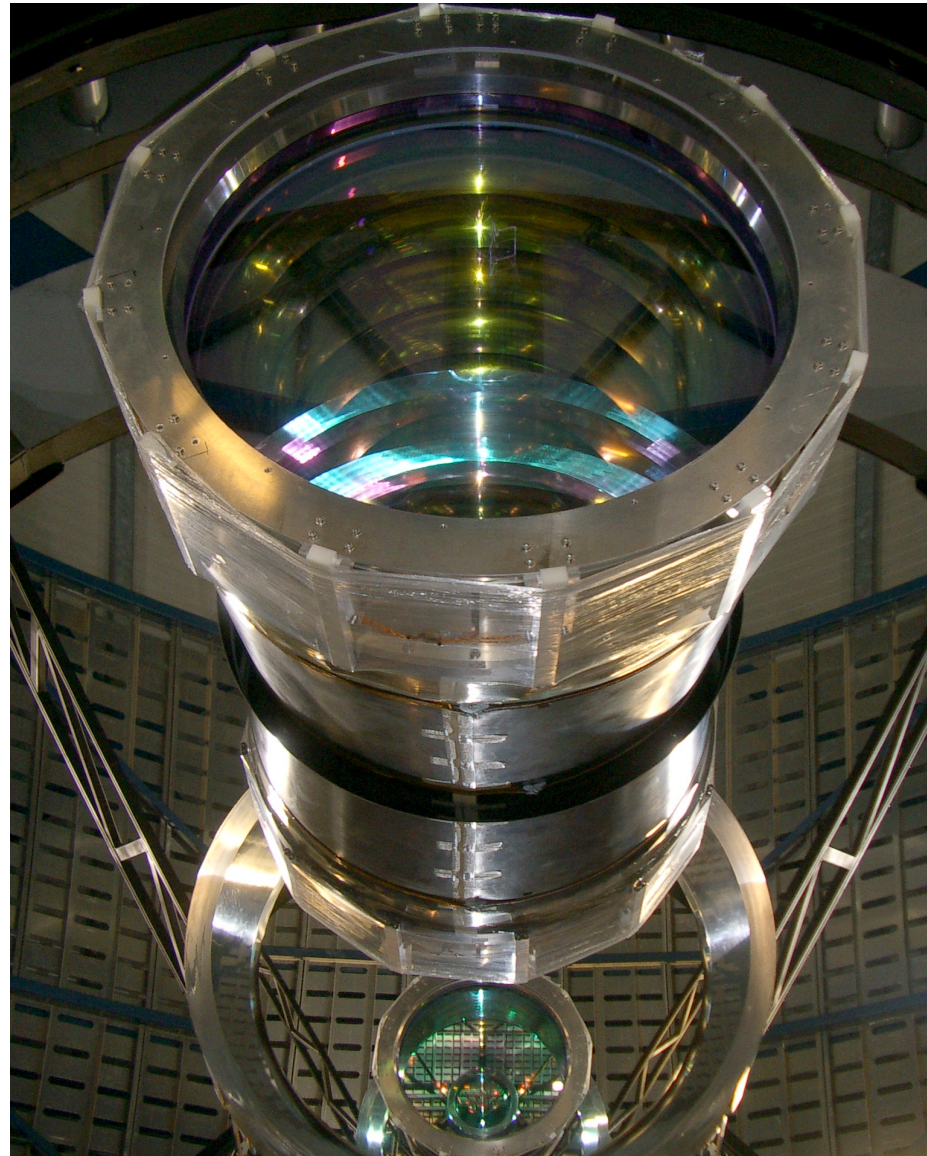


Telescope & Camera

- detector array modules (infrared and CCD)
- filter barrel
- lens barrel
- baffle tube
- pressure window
- cryostat vessel
- electronics rack
- telescope structure and mirrors









- VISTA is currently undergoing Engineering testing and Commissioning.
- All subsystems are functional and integrated, however their performance and interaction are not yet fully optimised or verified.

The system has demonstrated fully “end-to-end integrated” functionality:

- Overall integrated control of the Telescope, Enclosure and Infra-Red Camera by the Telescope Control System
- Closed-loop control of the Primary and Secondary mirrors by the active optics system.
- Closed-loop auto-guiding of the Telescope axes.



Ongoing Activities

Ongoing Engineering and Commissioning activities include:

- Rigorous characterisation and calibration of the wavefront sensing and active optics system
- Refinement of the Telescope pointing model to improve pointing, acquisition and tracking.
- System-level shake-down of the Telescope/Enclosure/Camera/control system.
- Refining the automatic location and acquisition of guide-stars and aO reference stars.
- Optimisation of low-level Primary mirror support CANbus operation to improve performance.
- Investigation and characterisation of Secondary-mirror-related trefoil phenomenon
- Flat-field testing (sky-flat testing and Enclosure flat-field testing) to characterise and refine the system performance.
- Refinement of Template-driven observing and tiling.

Saturn (Uncorrelated 1sec)

The screenshot displays a software interface for processing astronomical data. The main window shows a bright, elongated Saturn image against a black background. The interface includes a menu bar at the top with options: File, View, Graphics, Real-time, Image-Arrays, and Help. On the left side, there is a control panel with several sections:

- A small preview window at the top left.
- Zoom controls: a green 'Zoom' button, a 'Z' button, and a '4x' label.
- Camera status: 'Camera: VIRCAM Attached'.
- A 4x4 grid of buttons, with the button containing '5' highlighted in green.
- Coordinate fields: X: 345.1, Y: 333.7.
- Value, Low, and High fields: Value: -6806, Low: -7620, High: 25887.
- 'Auto Set Cut Levels' and 'Set cuts 98%' buttons.
- Scale: 5x.
- Navigation buttons: Z, Z, Z, N, G.
- 'Store fix. pattern' button.
- 'Fix. pattern On/Off' checkbox.
- Data: DIT.
- A green 'Stop' button.

At the bottom left of the interface, there is a small information icon (i).

Sub-Systems Status (31/08)

item	Problems	Concerns	TBD
Ground Works	0	0	Cosmetic & Tidying up
Civil Works	0	0	0
Enclosure	0	Encoder wheel	Dome 'Flat' (linearity) screen illumination level
Plant & Services	0	0	0
Control hard & soft	0	0	Tuning software
Computing system	0	0	Full rate, Archive
Equipment	0	0	0
Safety Equipment	0	0	Alarm link to VLT
Spares	0	0	0
Documentation	0	0	Complete Verification
Coating Plant	0	Magnetron arcing, Washing	0
Telescope	0	Reflectivity, Trefoil	M1 Support characterisation
Camera	0	0	SIQ, Software (AG / aO), System
Data Flow System	0	TBD	beyond VISTA

10sec J band images - Seeing

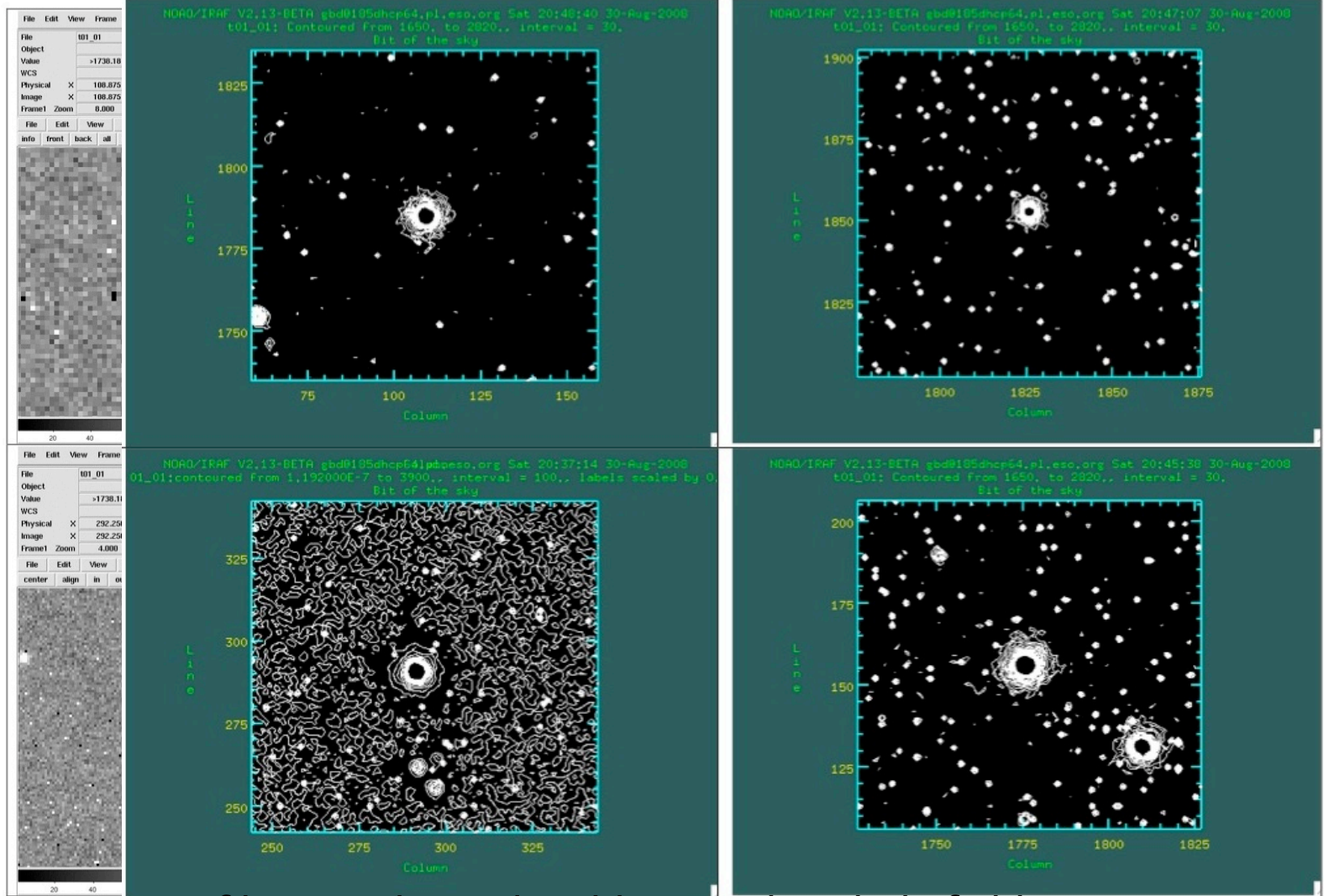


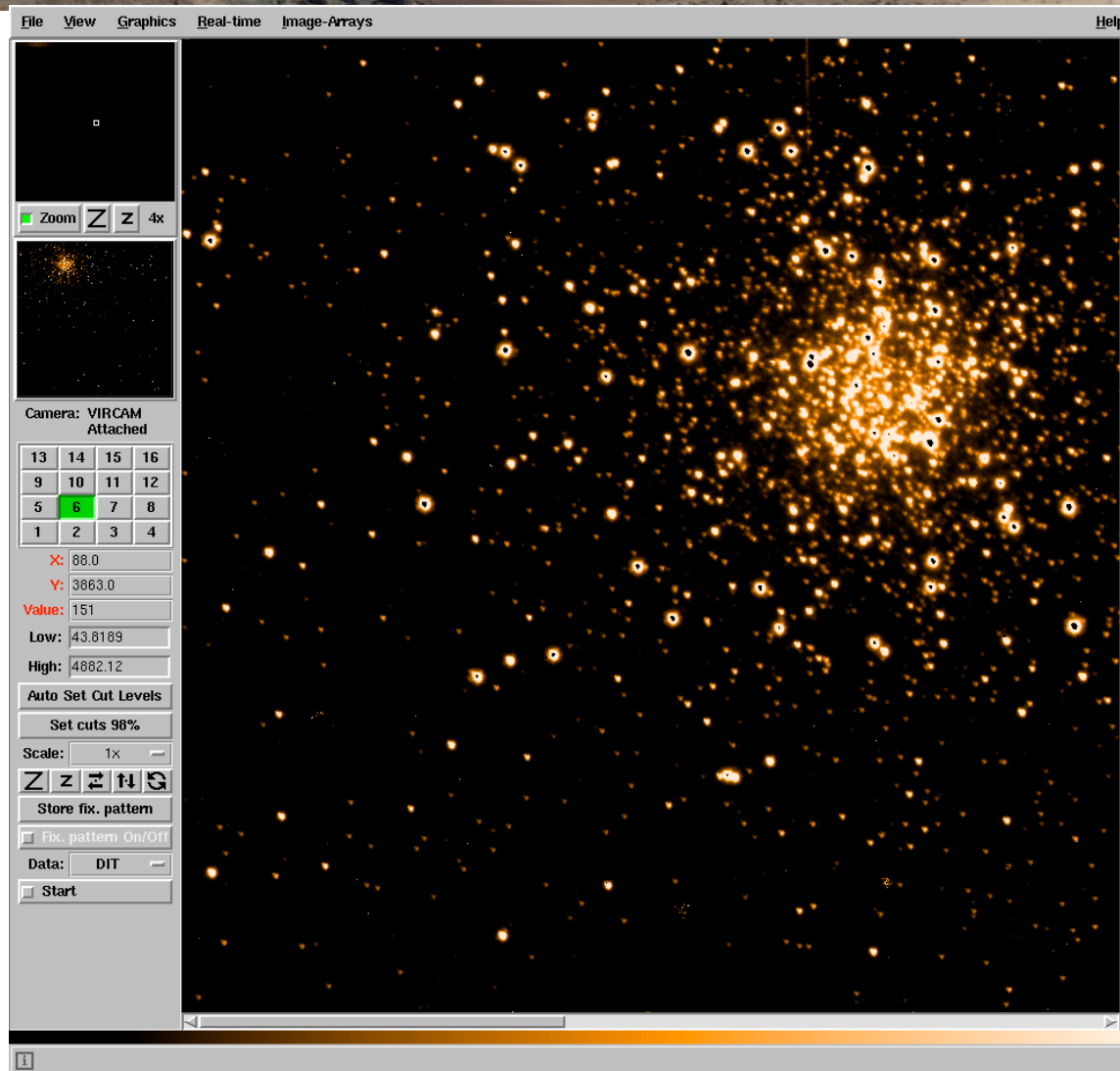
Image profiles circular and stable over the whole field
FWHM 2.1 pixels (0.71") close to the center of the field and 2.5 pixels (0.85") at

Movement Overheads (so far)

Very preliminary values

Overhead	Time (sec)	Comment
Preset	variable	Depends on ΔAz ΔAlt ΔRot at that ST Acc'n 0.5 °/sec max Speed 2°/sec
Guide Star Acquisition	~ 3 s	
Active Optics update	0 s / 30s	0 in parallel with observation 30 by itself
Pawprint movement	~ 5s	New guide and aO stars at each pawprint
Jitter movement	~2.5s	No change of guide/aO stars aO takes 30 sec
Microstep movement	tbd	No change of guide/aO stars aO takes 30sec

47 Tuc (detector 6) raw data



Filter change overheads (so

Very preliminary values

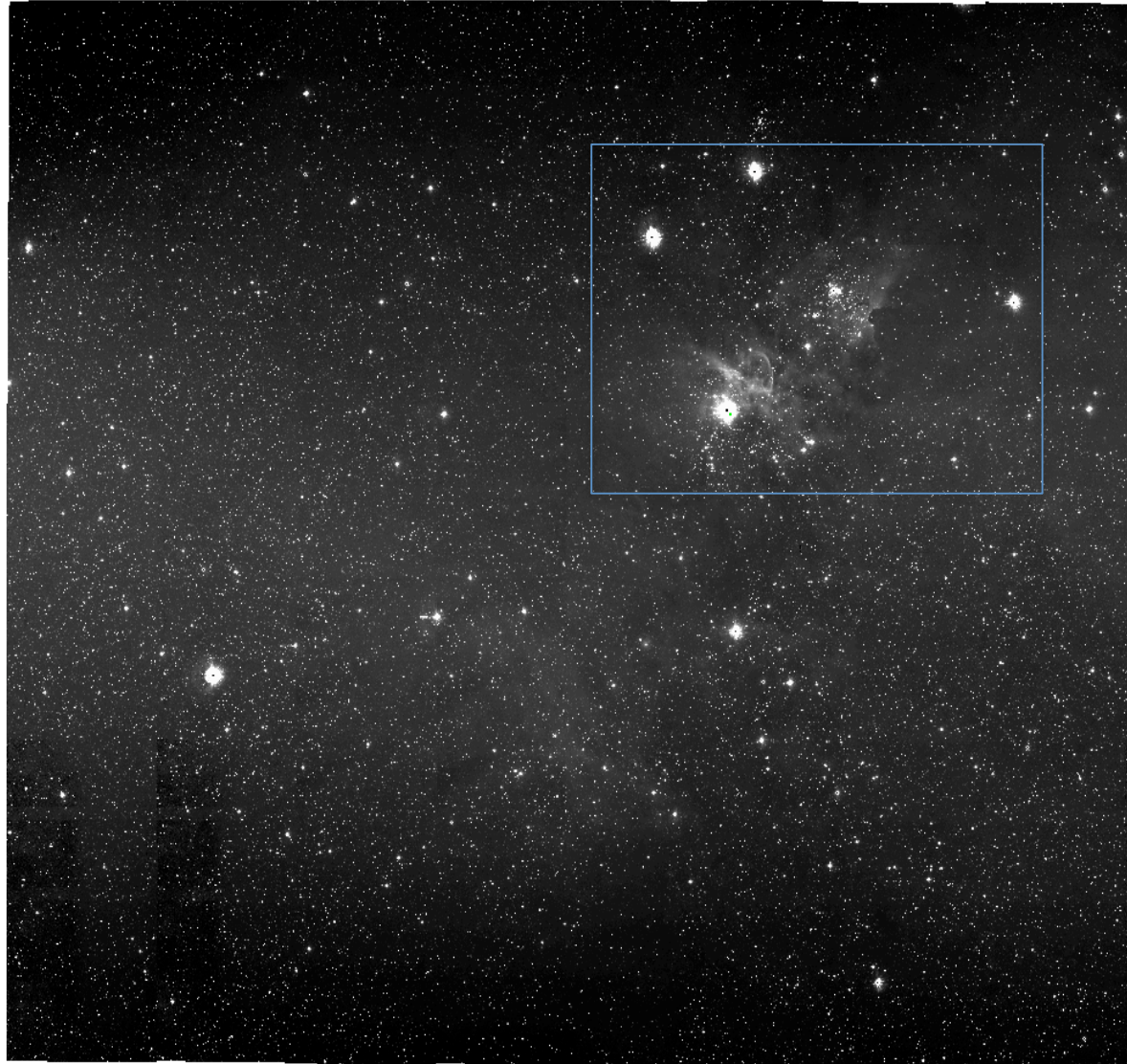
Positions moved	seconds	From/to
1	20/21	J \leftrightarrow Ks Ks \leftrightarrow H H \leq >Z' Z' \leftrightarrow Y
2	26/27	J \leftrightarrow H Ks \leq >Z' H \leftrightarrow Y
3	TBD	J \leftrightarrow Z' Ks \leftrightarrow Y
4	40	J \leftrightarrow Y

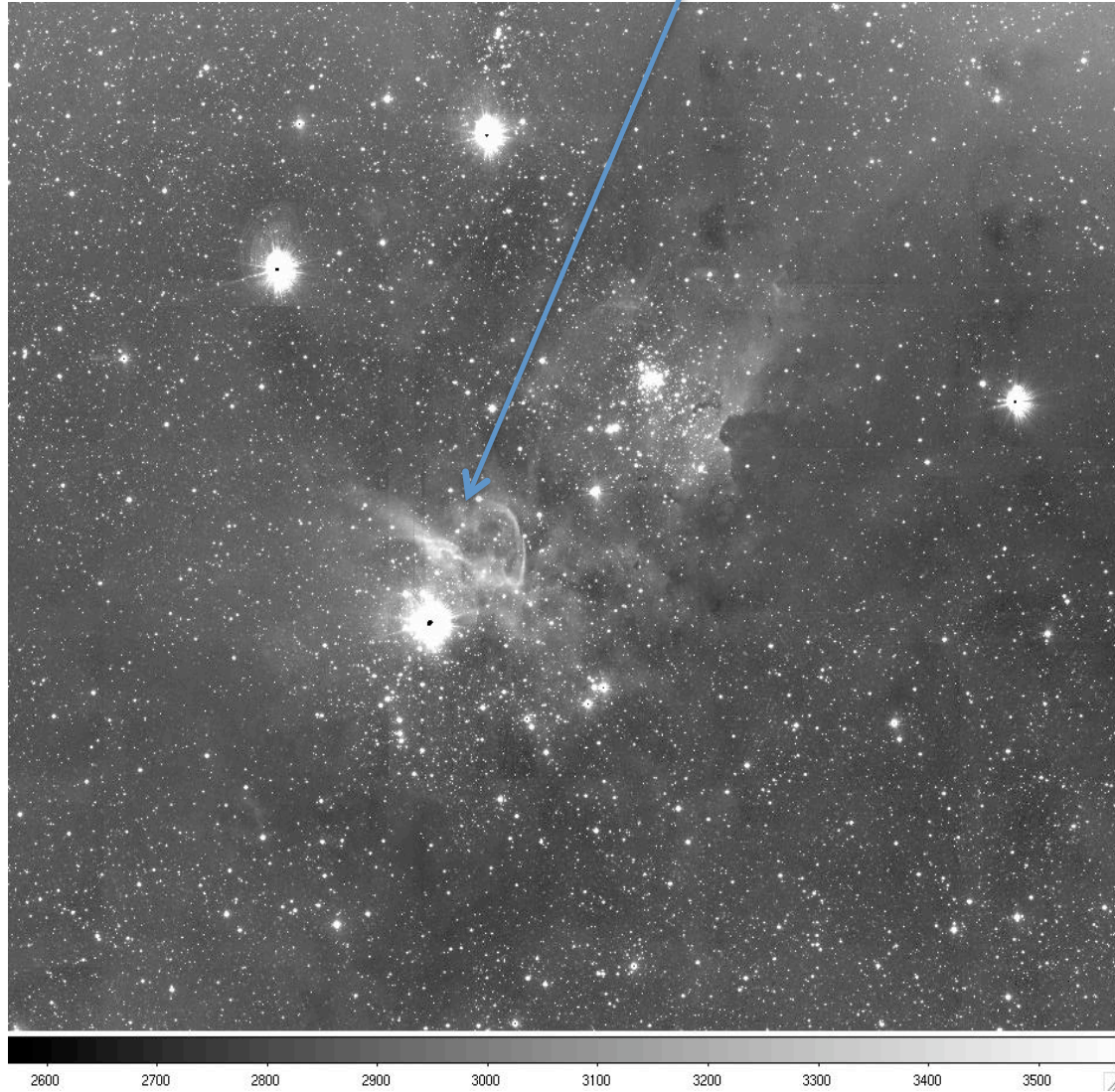
The screenshot shows a control interface with the following elements:

- Status:** Reference position (+ve clockwise) is SUNBLIND.
- Filters Installed:** A list of filters including DANK1, NB118, Y, J, DANK2, Ks, H, and others.
- Simulation Mode:** Digital I/O simulation is set to Normal, with F (ignored).



Carina (Tile 1.4deg x 1.0 deg6 J-band 1)





Integration Overheads (so far)

Very preliminary values

	Time (sec)
T_res - Reset	1 sec
Read	0
T_red- Read (end)	1 sec
T_pro + T_wri Process + Write	~12 sec variable - determined by IRACE system
Total	$T = [Ndit * (DIT + [T_res + T_red]) + [T_pro + T_wri]]$
Total	$T = (Ndit * (DIT + 2)) + 12$

N.B. ETC assumed $T_res + T_red = 1$ not 2
ETC assumed $T_pro + T_wri \sim 4$

NGC 6723 – Globular Cluster

14"x10.5"
"JHKs





Parallelisation of Overheads

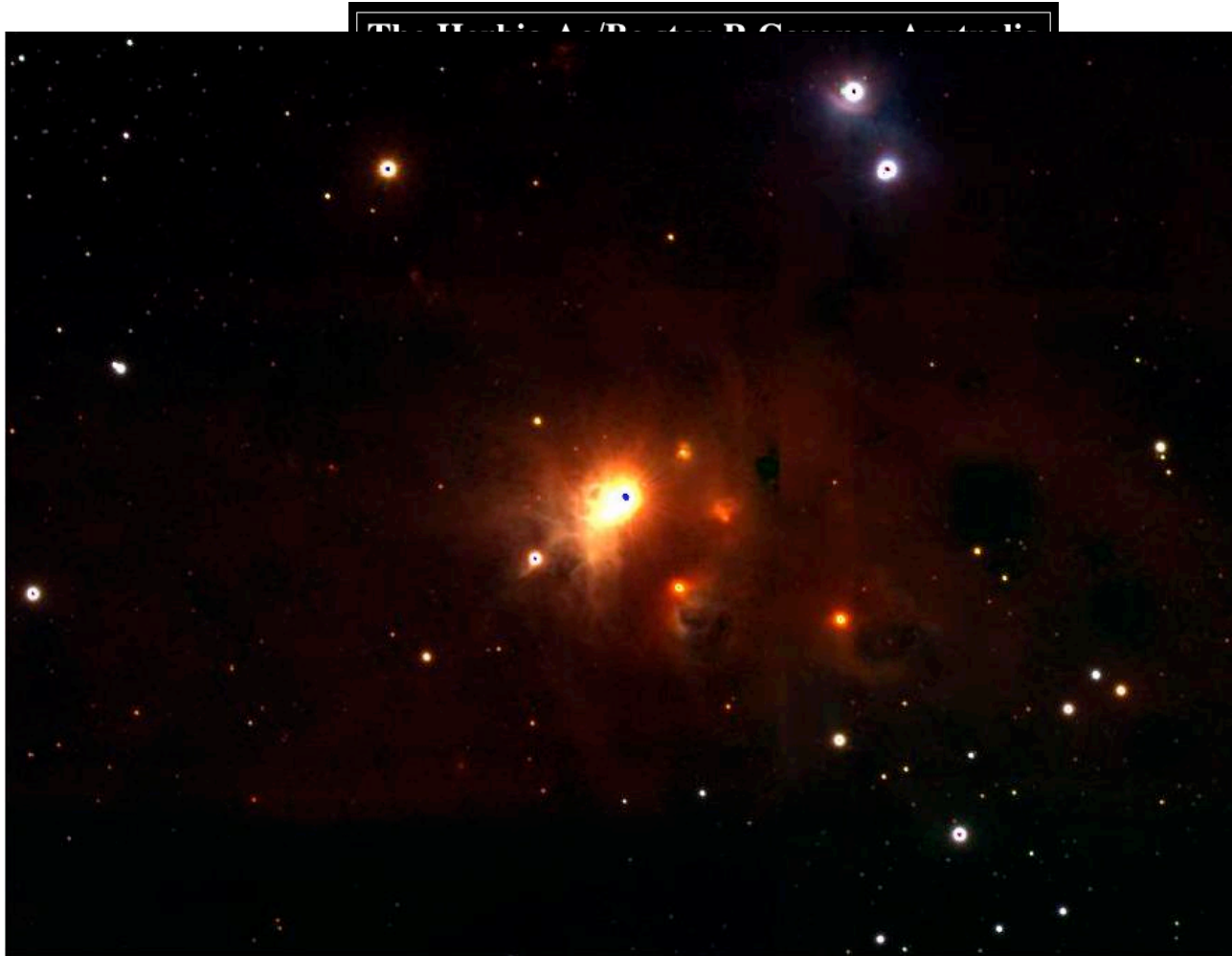
	Overhead	to	Comment
1	Preset	2	Acc'n 0.5deg/s Speed 2deg/sec
2	Filter change	1	Depends on pair
3	Guide Star Acquisition	-	
4	Active Optics update	8, 9	0 in parallel with observation 30 by itself
5	Pawprint movement	4	If exceeds 30 sec
6	Jitter movement	4	If exceeds 30 sec
7	Microstep movement	4	If exceeds 30 sec
8	Integration	4	If exceeds 30 sec
9	Read out		If exceeds 30 sec



Camera data (mostly J)

- No surprises (so far)
 - No obvious crosstalk, even from very bright objects. Expect that correcting for crosstalk will be unnecessary.
 - Minimal persistence
 - Non-linearity generally 2–4% at the 10,000 ADU level.
 - astrometry: WCS well described by the ZPN projection with distortion coefficient is within $\sim +/ - 1$ of the predicted 42 radian/radian³ distortion.
 - Systematic astrometric residuals already at $< \sim 50$ mas over the whole detector array.

R Corona Australis – Young



14"x10.5"
" JHKs



END