

Palomar LGS AO Engineering Summary 05/24/07 UT

Afternoon:

- Instrument setup not complete until 4:30pm.
- Laser 4.7W, stable. Output relay not aligned
- BTO and LLT aligned and tested.

Night log:

2005 Starting NGS checkout while AB and JR work on laser collimation.
2015 Completed NGS checkout. FWHM @ K = 0.25", Strehl=73%.
2030 Attempting LOWFS platescale measurement...
2155 Completed laser and BTO alignment in Coude lab.
Required realignment of everything downstream of SFG.
2155 Closing dome for final BTO alignment in dome.
2210 RT realigning Na cell arm of laser. Power=5W.
2230 Sending HP and AM to prime focus for LLT boresighting.
2245 LGS came in <5" from boresight. No adjustments necessary!
2305 Clouds too thick for image quality optimization.
2310 Shuttered due to clouds.
2320 Aligning LLT finder scope and investigating LLT flexure.
no flexure visible in finder (+/- 20") within 0035 30deg.
At elev=50deg, 30" of flexure noted (northward, while observing in North-East).
2350 Bringing prime focus team back down.
0010 Projecting at zenith again. Clouds have mostly gone.
0018 Laser still at 5.0 W.
0020 Running LLT & Acq focus loops
Acq best focus: 10275; FWHM=14.6 pix.
LLT best focus: 11865; FWHM=15.7 pix = 2.9".
Saved final images: 2120.fits; 2126.fits; 2132.
0035 Locking on the laser at zenith. Return ~200 cts at 50 Hz, through clouds.
0045 Acquiring a V=10 star for HO aberration investigation.
0142 Discovered that light pollution from tip-tilt star is corrupting backgrounds and HO correction for V=10.
0145 Testing LOWFS focus zeropoint... and CO files (no effect, but staying with co_zero)
LOWFS zpt = 0.0 Strehl 13-20%
LOWFS zpt = 1.0 Strehl 6-10 %
LOWFS zpt = -1.0 Strehl 5-12 %
LOWFS zpt = 0.0 Strehl 7-16%
Clouds thinner, more uniform. Getting 200 cts @ 50 Hz.
0155 Testing effect of framerate. 60 cts @ 100 Hz, correction terrible (lots of waffle). Appears to not be related to bad background (on out-of-focus NGS).
0210 Moving to a V=14 star to measure performance without out-of-focus NGS light.
0215 Debugging pupil registration problems.
0245 Locked on V=14 star. 110 cts @ 50hz.
100 Hz, 500cts Strehl 15-29%.
200 Hz, 230cts Strehl 17-28%. BEST.
400 Hz, 120cts Strehl 10-15%.
0255 Optimizing HO loop.
50 Hz, 240cts. Strehl 19-25% (LOWFS at 200 Hz).
100 Hz, 100cts Strehl 15-23%

0300 Moving to GLIMPSE-C01 (bright NGS first)
0305 Telemetry system crash.
0315 Restarting AO.
03:34 On target, taking images. Quite spectacular.
04:00 Testing registration on laser. Unsuccessful, possibly
due to large spot size.
04:02 Moving to I19477+2401 (bright NGS first)
04:22 Taking images. Image quality looks very good.
04:32 Shuttered for FAA compliance.
04:33 Taking sky frames for I19477+2401 images.
04:56 Calling the night.