

Palomar LGSAO Engineering Summary 04/16/06 UT

Night log:

2310 Tuning high-speed servo loop gains on Q1 and Q3, using CSFL at 5.5 W.
2330 Fog is clearing. Opening and moving to V=4.5 star for AO checkout.
2335 PHARO closed-loop images: 17-19, directory: /scr1/14apr06.
2335 Frames 20-22: ND0.1, 10s. Flatmap: flatmap_sky_060416.
2342 TT only: frame 23-24: Br+1%, 30s: ~1.0" in K. Telfoc: 59.22
2345 Frames 25-27 on sky.
2346 seeing 1.3 arcsec. In K band (from PHARO)
2349 IRCAM is seeing false positives every ~3 m, caused by glint?
2355 Projecting at zenith. Unable to find laser return.
0000 Laser shuttered due to loss of BTO servo lock.
0005 Closing dome for incoming fog.
0059 Opening to perform boresighting on bright NGS. HD127762.
0100 Not opening due to fog.
0120 Opening again.
0125 Reticle center: (390, 234). Star came in at (403, 219)
0130 Centered star on (390, 232).
0135 Moving to zenith to check BTO alignment to LLT.
0145 Projecting at low power in dome. Aligned BTO.
0153 Opening dome for projection on sky.
0159 Projecting at 5W on sky.
0205 Blocked for aircraft.
0208 Back on sky.
0210 Laser image, acqfocus: 11250. LLT:8720:
 laser_1. Detuned: sky_1
0214 Blocked by LWIR. Rearming.
0218 Found approximate LLT focus: 8420.
0221 Acq focus loop 1: best focus <11200
0227 Acq focus loop 2: best focus ~11745
0231 LLT focus loop 1: best focus ~8350 (20.8 pix)
0234 Shuttered for LWIR.
0235 Propagating again.
0236 Acq focus loop 3: best focus ~11650 (20 pix)
0243 Shuttered for LWIR.
0244 Propagating again.
0245 LLT focus loop 2: 8340 (22 pix)
0253 20s exposures; tuned: laser_2. Detuned: sky_3
0300 Moving to Landolt 107-970 for photometric calibration.
0302 Sky: ngs_sky1 (5s sky), Focus loop on star (5s):
ngs_acq_focus1. Telescope flatmap is in. Min FWHM ~14.3
0309 Moving to SA065024 for telescope flatmap.
0315 AO crash. Need to reboot.
0320 Acquiring LGS on HOWFS. Very low counts.
0328 Shuttered by LWIR
0331 Restarting with LWIR jumpered.
0335 Taking background on detuned laser at 50Hz. See LGS now.

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0338 Setting LLT gain=0.2. 200 cts at 50Hz.
0345 Closed HOWFS loop on LGS. Loop is stable!
0350 Measured ~0.3" star trail in J on PHARO (fr 156-157)!
0355 Adjusting laser focus to maximize counts on HOWFS.

Attempting to focus laser on LLT primary:

Foc	HOWFS
7.0	200
6.0	125
7.0	200
8.0	250
7.5	230
8.0	300
8.5	300
9.0	250
9.5	175

Returning to laser focus = 8.25. HOWFS cts=275.
Attempting to tune laser wavelength with no feedback. Got counts up to 400 cts/50Hz.

1/4	1/2	HOWFS
6deg	354	375
"	005	400
"	015	375
"	025	250
"	015	375
"	005	300

Returning to 15 deg. HOWFS cts=350.

0450 Closing loops at 500 Hz. Taking detuned sky.
0452 AO Video not functional.
0457 Closed UTT at 500Hz: ~40 cts after careful wavelength tuning of laser
0504 AO crash. Rebooting.
0514 Recording Acq image: laser_3 (5s)
0515 Recording detuned image: sky_4 (5s)
0517 Recording HOWFS sky at 100 Hz.
0520 Recording 100Hz data on LGS:
 open loop: 1145190061
 close UTT @ 0.4 gain: ...0130 - 0186 [loop unstable]
 close UTT @ 0.2 gain: ...0284 - ? [loop unstable]
0527 Recording some more LGS images.
0530 Shuttering laser at 05:30am for FAA compliance.

A very successful night, despite the weather.