

Palomar LGS AO Engineering Summary 04/04/07 UT

Afternoon:

- Mitch and Software team debugging electronics problems with AO motor controller.
- Antonin and Jenny Developing test plans for LGS performance optimization.
- Ed and Renu adding polarization control to 1.06 um laser.

Night log:

1700 Setting up BTO (open & dust Coude optics, open LLT).  
1930 AO system electronics problem fixed!  
1935 Further AO system health checks.  
1951 Opening dome for AO checkout.  
1955 Starting AO checkout on SAO 60474.  
2005 Spontaneous AO reboot...  
2015 LOWFS telemetry not coming through.  
2020 Back on target. Strehl~48% at K; Seeing=.80" in K.  
2035 Starting BTO alignment with 660nm laser. Still waiting on laser readiness.  
2115 Starting laser alignment to BTO.  
2145 Laser alignment to BTO complete.  
2150 Laser power 5W.  
2152 Opening dome for laser projection at zenith.  
2159 Projecting at zenith. Laser came in 30" from HOWFS.  
2201 Focus loop 1:  
Laser blocked background: bkgd1  
Acq focus run 1: Interrupted by TAO freeze-up.  
2210 Restarting focus loop with new background: bkgd2  
Focus loop algorithms failing due to illuminated cirrus.  
2215 Moving on to zenith LGS optimization.  
Interrupted by TAO freeze-up.  
2225 Starting LGS acquisition; target 16.  
2235 Moving to Target 16.  
2205 DM loop locked on LGS. 150-200 cts. at 50 Hz.  
2210 Many BTO shutters of laser. Uncertain why.  
2315 No LOWFS telemetry. Stopping to debug. LO DSPs appear to not be on...  
2335 Calling spotters in to debug LO DSP problem.  
2353 Reseated LO WFP interface board - apparently fixed the problem.  
2355 Starting Acq calibration experiment.  
2359 Laser at 4W.  
0001 TAO frozen... now going again.  

TTM_A	TTM_B	PHARO	ACQ
0	0	10-11	0422, 0474
2	0	12-13	0586, 0594
-2	0	14-15	0644, 0656
0	2	16-17	0696, 0702
0	-2	18-19	0742, 0746
background		20-21	0788

  
0012 Starting LGS high-order optimization experiment.  
0015 TAO refusing to load tables. After much debugging, decided to revert to old AO build (ao-3.10b).  
Note: Restarting AO appears to send move commands to TCS.  
0040 Restarting LGS acquisition procedure.  
Still getting TAO/telemetry freeze-ups. Repeatedly.

0115 Restarting TAO without TCS connection to test if this  
could be a cause of the problems. Crashes continuing.  
0120 Calling spotters in to debug DSP/TAO/telemetry problem.  
0230 Starting acquisition of TYC2574-0470-1 to demo S/W  
problems.  
0308 Acquisition complete. Frames 28-57.  
160 cts @ 100 Hz.  
Sky: 82-84  
0319 Testing PHARO background method. Successful.  
0319 Testing dithering on PHARO. Found sign in X is flipped.  
0325 Optimizing HO gains:  
int\_gain PHARO img K Strehl  
0.15 91-93 25%  
0.05 18%  
0.10 20%  
0.15 19%  
0.30 9%  
optimum = 0.15  
0330 CO files:  
co\_default\_2 28%  
co\_default\_4 21%  
co\_default 21%  
co\_zero 20%  
co\_default\_2 31%  
0334 Testing LOWFS focus sensitivity  
+1mm 124-126 20%  
-1mm 127-129 26%  
-0.5mm 130-152 38%  
0345 Tested pupil reg. on laser. Unsuccessful.  
0350 DIMM reports 0.5" seeing!  
0351 Moving to science target SD1534+1615.  
172: 20s 40mas Ks background  
173-174: 20s 40mas open-loop.  
0400 Unable to lock BTO loop on laser at 20deg south.  
Visually aligned BTO on stimulus laser.  
0430 Jumpering out ASCAM due to many spurious cloud  
detections.  
0435 Moving to a new target: M57  
175: 20s 40mas background  
176: 20s 40mas open loop.  
Clouds thickening. LGS return very low  
0500 Calling night. Laser power 5.0 W.