

Caltech Optical Observatories / NASA Jet Propulsion Laboratory  
Palomar Adaptive Optics

Palomar LGSAO Engineering Summary 09/07/06 UT

Daytime results:

1. Fixed instability in 1.06 laser by installing an iris in the laser cavity.

Night log:

1900 Ready to begin laser to BTO alignment. Waiting for laser power-up.

1930 Decided to go ahead with AO checkout (Target 25)

1940 Restarting AO system to start with a blank slate.

1945 Laser is ready. Starting coude lab alignment while continuing with AO checkout.

1955 Coude alignment complete.

2020 Performing laser alignment in dome. Found LLT mirror

2045 Opening dome for propagation at zenith.

2103 Projecting at zenith. LGS fell directly on dichroic! Laser at ~7W.

2107 Detuned 2s image: laser\_sky\_1.  
Acq focus: filename laser\_focus1; best=11963, FWHM=14.4  
LLT focus: filename laser\_focus2; best=11271, FWHM=15.6

2114	filename	position	peak
	laser_sky2	-130	
	laser_focus3_-100	-100	13
	laser_focus3_-80	-80	23
	laser_focus3_-60	-60	34
	laser_focus3_-40	-40	59
	laser_focus3_-20	-20	65
	laser_focus3_00	00	36
	laser_focus3_20	20	30
	laser_focus3_40	40	26
	laser_focus3_60	60	17
	laser_focus4_-60	-60	26
	laser_focus4_-50	-50	33
	laser_focus4_-40	-40	44
	laser_focus4_-30	-30	30
	laser_focus4_-20	-20	31
	laser_focus4_-10	-10	41
	laser_focus4_00	00	26
	laser_focus4_10	10	31
	laser_focus4_20	20	21
	setting to -20.		
	laser_focus8_-20	-20	43

2135 Installing V filter, laser power = 7.5W. Weather report: thin cirrus, <1mag extinction.

2140 laser9, laser10, 5s integrations.

2143 Detuned: laser\_sky3 (5s)

2145 Acquiring LGS on WFS at zenith. Clouds reported over dome.

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2156 Shuttered due to thick clouds.  
2212 Starting on SSM FOR test.  
2222 Unable to proceed due to thick clouds.  
2356 Opening again, checking performance on SAO 73010, V=6.2 star  
overhead. Pharo frames 5-7, 8-10 (5s). Background: 11  
0001 Taking new flat map.  
0015 Clouds thickening. Giving up.  
0312 Cloud thinning, preparing to propagate again. Taking new  
flat map near zenith.  
0320 Laser power 7.5W  
0325 Moving to Tycho 2345-1262-1, V=10.0  
0415 Tuning laser.  
0435 Found best set point. Return = ~40cts (5s w/ V filter),  
20x18pix.  
0445 Closed HO and focus loops (zeropoint = -3.11). Focus loop  
improved as Na layer pushed to ~85 km.  
0452 Sky frames (Ks, 2s): ph0017-ph0019.  
0455 Turned off chopper - appeared to be causing fluctuations on  
HOWFS. Lock without chopper failed. Giving up on HO lock.  
0505 Checking chopper delays.  
0528 Found AO focus had run away. Manually refocused HOWFS.  
Saved 3 images: ph0020-ph0022.  
0530 Shuttered laser for FAA compliance.  
0535 Calling night.