

Palomar LGSAO Engineering Summary 04/14/06 UT

Daytime results:

1. AO setup complete.
2. HOWFS gating successfully tested. Some recabling required: Timing signal to BTO and HOWFS were reversed.
3. LLT focus control tested. Soft limits are: 5500-13500 μm .
4. High-speed BTO servo loop running well on 660nm laser.
5. CSFL between 7 and 8 W. Ready to project in dome.

Night log:

1900 Aligning BTO with red laser.
1920 AB and HP to prime focus to align laser to LLT.
1930 Computer 'lgs' not able to communicate with TCS using new IP address. Reverting to old address.
1950 Found central LLT FSM position to be: $\text{llt_a}=25.0$, $\text{llt_b}=-10$.
2010 Restarted BTO with integral gain =0.50. Reset all motors. Laser came back in to within 3mm on LLT iris.
2030 Moving to BS3705 ($V=3.13$, K7) for AO checkout.
2035 running AO at 1 KHz, 10000 cts. Trying different centroid offset files. CO_0 is best.
2035 PHARO directory: /scr1/14april06. PHARO frames: 0000-0009. Sky frames: 0010-0012. Approximately 34% Strehl.
2040 Having trouble with telescope control from AO or PHARO.
2043 Taking telescope flatmap: flatmap_sky_060414.
2048 Open loop frame: 0013. FWHM=0.75"
2049 Testing PHARO offset with loops closed. Worked fine. t
2100 HP and RD heading to prime focus for LLT boresighting.
2124 Moving to Saturn for boresighting. Tel focus=56.04
2147 Unable to open IRCAM shutter. JH trouble-shooting.
2205 Achieved boresight on Saturn. Best LLT focus = 8700
2220 Moving to B Leo, $V=2.14$ for LLT image quality test.
2235 Star came in 135" W, 25" N of telescope boresight.
2240 Focus run: llt_1 . Sky= llt_1_sky . Best focus $\sim 5625 = 38$ pix
2255 Trying to null apparent coma by tensioning spiders, moving secondary West by $\frac{3}{4}$ turn.
2305 Continued west ... much worse. Decided to undo changes.
2315 Moving $\frac{3}{4}$ turns to E ($1/4 = 200$ μm). Best foc 8700 = 37 pix.
2320 Moving to $9/4$ turns to E. FWHM at 8720 is 22 pix (1.45").
For future reference: Move image towards flare.
2330 3 turns E, $\frac{3}{4}$ turns S. Best focus 8720 = 17pix = 1.20".
0000 Aligning LLT to 200" optical axis again.
0005 Final LLT image quality on boresight: 20.3 pix = 1.4" at 8720 focus.
0010 Seeing is 1.0" at K = 1.4" at V.
0015 Aligning BTO for low-power Na laser.
0120 Ran into many problems with BTO alignment. Trolley homing does not appear consistent. BTO servo loop runs away when closing loop on Na laser, both at low and high power.

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0200 Tried reducing BTO motor gains to 0.25, then 0.05. BTO loop still running away.

0200 Closing BTO loop on M1-Q1 only, and aligning M2 and M3 manually.

0220 Preparing to project laser at zenith.

0235 Laser projection cancelled - Clouds over 80% of sky.

0300 Measuring Q2 signal levels with Na laser.

0335 Cancelled LGS for remainder of night. Released spotters.

0430 Cancelled NGS for remainder of night.