

Caltech Optical Observatories / NASA Jet Propulsion Laboratory
Palomar Adaptive Optics

Palomar LGSAO Engineering Summary 07/12/06 UT

Daytime results:

1. Installed Na dichroic reflective spot.
2. Tried to reproduce new AO build loop crashes. Unsuccessful.
3. Installed and tested HOWFS chopper. Bkg < 2 DN/subap @ 100Hz.
4. Preliminary laser alignment to LLT: FSM = (-12.0, +4.0)
5. Tested new BTO S/W build.

Night log:

1950 RD and HP aligning laser to LLT, installing pulnix.
2030 Opening dome, rebooting AO.
2030 CS and JH finishing white light source replacement.
2108 Moving to Altair for LLT boresighting.
2130 Found the star ~5'W, ~5'E from telescope boresight. Steered it in by tilting LLT.
2140 Best focus in narrow field mode: 12840. Lowering spider assembly to increase useful focus range.
2200 Moving to SAO 65890, V3.4 K star. Found it 45"W, 25"S.
2200 Focus run: star1_sky
 ao_focus_loop, 11589-50, 50, 3, 'llt', 'star1_1', 'star1_sky'. Best focus = 11586.
2220 Translated secondary N 0.25 turns. FWHM=1.34
 N 0.25 turns: FWHM = 1.18"
 N 0.25 turns: FWHM = 1.24", focus = 11595
 S 0.125 turns, E 0.25 turns: FWHM = 1.32, focus = 11600
2235 Adjusted 200" focus to 57.35mm from 56.89mm
2240 W 0.25 turns: FWHM = 1.67". Seeing may be variable.
2250 E 0.124 turns: Final image quality: star1_10, FWHM=1.22
2255 Trouble with AO offloads to 200" focus. Rebooting TCS.
2300 Checking seeing with PHARO. FWHM=0.50" at BrG. Closed-loop images are ~55% Strehl.
2115 Checked repeatability of boresighting. Appeared good after ~1hr move to East.
2320 Checking red laser alignment to LLT. Some realignment needed. New LLT FSM position: (-12.0, 11.0).
2330 Aligning yellow laser to red in Coude lab.
2345 Several optics in 1.06 laser accidentally bumped with power meter. Realigning laser.
0005 Laser is fixed. Co-aligned in Coude lab.
0015 Opening to project laser.
0035 Projecting laser at zenith. Came in 30" from oasis.
0040 Manually focusing Acq. Manually focusing LLT.
0046 Shuttered for a passing helicopter.
0051 Focus run: laser1_sky
 Acq, 5 steps of 150: Best=11920, FWHM=17.4
 LLT, 5 steps of 50: Best=11300, FWHM=18.6
 Acq, 5 steps of 300: Best=11950, FWHM=18.6
0107 Scanning laser over wavelength.
 Position Frame Photometry (5s integ)

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(Position units are 0.001")
0      laser4_0   16x76
2      laser4_2   19.6x39
4      laser4_4   14.3x15.5
6      laser4_6   0
0      laser4_0b  17.0x64
-2     laser4_-2  17.0x30
-4     laser4_-4  26x7
-6     laser4_-6  0
-1     laser4_-1  15.7x63
0      laser4_0c  16.0x68
1      laser4_1   15.6x75
2      laser4_2   -
Optimal setting: +0.5
Power: 6.2W
0142 Moving to Landolt 111-775 (V=10.74) for photometric
      calibration.  landolt111775_1, _2 dithered (5s integ.)
0154 Back to zenith to adjust laser focus lens.
      6000      83
      8000      59
      10000     40
      4000      79
      2000      80
      0         84
0210 Acquiring LGS on HOWFS.
0218 Taking laser_off_100hz. Taking laser_detuned_100hz
0224 Closing UTT loop.
      int_gain      llt_a_sig  llt_b_sig
      0.1           .060      .070
      0.2           .057      .055
      0.4           .058      .072
      0.8           .051      .055
      0             .063      .071      not doing much.
      1.6           .075      .071
      Not clear whether the UTT loop gains are having any effect.
0240 Seeing has degraded to 1.6" (MASS/DIMM)
0245 Starting HOWFS chopper testing.
      Identified optimal delay time = 32000
      Gate time = 3998
      Raleigh
0325 Pause to realign Na and red lasers.
0410 Back on sky, working on HOWFS chopper test.
0435 Tested various methods for taking sky backgrounds in with
      chopper.
0445 Calling night.
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