

Caltech Optical Observatories / NASA Jet Propulsion Laboratory
Palomar Adaptive Optics

Palomar LGSAO Engineering Summary 12/07/06 UT

Daytime results:

1. Significant progress made on laser power and stability:
Removed the beam-shrinking telescope in the 1.06 um laser output. Plumbed water to the TE cooler baseplate of the 1.06 laser KTP crystal. Added two fans to the inside of the laser housing to circulate air. Final power (at 2100): 7.5W, very stable.

Night log:

- 1715 Opening dome.
- 1720 Beginning NGS AO checkout.
Strehl= \sim 35% on a bright star. Seeing FWHM=0.53" at K.
- 1740 Beginning NGS low light test.
- 1855 Giving up on NGS low light test. Unable to acquire V=12.2 star (Vequiv \sim 15.7) with HOWFS.
- 1900 Starting predictive AO control test.
Moving to Beta And (V=2.06).
- 2018 Measured seeing: 0.60 in K = 0.84 in V.
- 2035 Closing dome for laser/BTO alignment.
- 2050 Laser power measurements:
Laser bench: 7.0 W
PF entrance: 5.7 W
LLT focus: 4.8 W
Laser bench: 7.2 W
- 2205 Opening dome for laser propagation.
- 2220 Propagating at zenith. Started detuned but found resonance quickly.
- 2223 Automated LGS centering not successful. Debugging.
- 2224 Focus run 1: laser_blocked_1
Acq: best focus=12246. FWHM=13.8 pix
LLT: best focus=11730. FWHM=13.5 pix = 2.2"
- 2255 Adjusting laser_focus to maximize return. Maximum not obvious - leaving at 9000 cts.
- 2310 Laser images behind V filter:
laser_5, laser_6 (5s integ.) FWHM \sim 20.0 pix.
- 2311 Moving to Landolt 95-149 (V=10.94)
- 2320 Saved landolt95-149_1, _2. FWHM=16.0
- 2325 Removed V filter.
- 2325 Moving to a bright star near first LGS target.
- 0025 Found chopper parameters.
Delay: 52400, Gate=4000
- 0028 AO system crashed. Rebooting.
- 0040 Reacquiring V=10.0 star.
- 0050 Seeing = 1.55" in V.
- 0130 Completed acquisition. DM loop does more harm than good.
LGS FWHM = 4.8". Giving up...
- 0145 Sending team to prime focus to adjust signal levels on diagnostics cameras.

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0300 Starting LOWFS Rayleigh background experiment.
Noted strange background pattern on LOWFS when in Rayleigh -
saved data for later analysis.
0415 Performing UTT mirror calibration - appear at first glance
to be rotated several degrees from N-S.
0512 Calling night for the laser.
0515 Performing calibration of Acq camera axes.
0517 Laser is (was) 6.5W.
0520 Calling night.