Palomar LGSAO Engineering Summary 09/06/06 UT

Daytime results:
1. Tested new AO build: Dual mode problems appear to be fixed.

Night log:
1930 Continuing daytime debugging and tests:
EK & VV: Bringing laser up.
CS & JA: Optimizing BTO servo loop parameters.
MT & JR: Testing AO system in dual NGS. LOWFS foc zero = -5.95
2020 Opening dome for AO checkout.
PHARO directory: /scr1/06sep06
2024 Moving to WDS 56066 for AO checkout.
2030 Closing loops, adjusting pointing, taking flatmap with DM gains: 0.3, 0.03... testing flatmap script.
> ao_make_dm_flatmap, 'flat_map_tel_06sep06'
2100 Recording long-exposure illumination map for optimal reconstructor calculation.
2110 Performing dual-mode NGS test on WDS56066
New LOWFS zeropoint: -3.10
Testing LOWFS focus loop: looks good.
2125 Taking LOWFS performance data. Strehl at start (dual) ~40%.
30s, BrG, 0.1%. Background = 21

rate	gain	PHARO	Strehl	start	stop
500	0.79	20	42%		7057

2135 Struggling with LOWFS reacquisition. Closing loop appears to throw star out.
2200 Aligning laser to BTO in Coude.
2230 Closing dome for in-dome laser firing.
2310 Delay generator trigger in place, continuing...
2330 Problem solved. Projecting in dome.
2335 Testing BTO interlock - shutter closed, but alarm didn't sound.
2345 Going to prime focus to tune up laser focus. Final focus =
0000 Opening dome for laser projection.
0005 Adjusting laser. Everything unjumpered except cameras.
0008 Acquired laser, ~100" to N-E of optical axis.
Acq focus = 11977, FWHM=16.4
LLT focus = 11274, FWHM=?
0029 Tuning laser wavelength

-50	0
-40	11
-30	0
-20	8
-10	12
0	20
10	26
20	20
30	12

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       0          15
       5          13
       10         17
       15         18
       20         18
       25         23
       30         12
       -60        background
       10         12
       Very little flux from LGS.
0048 Checking flux on HOWFS.  Very low.
0100 Checking laser power: 5.5W.
0105 Lost BTO lock after changing 1.06 etalon.
0115 Realigning 589/660nm beams.  Unsuccessful.
0145 Giving up - will project with BTO loop.
0147 Projecting again - LGS is 10x brighter!
0151 New wavelength scan.  Sky: sky1
       -40        77    10
      -30         99    10.2
      -20         162   10.9
      -10         221
      0           156   11.3
      10          222   12.2
      20          225   11.3
      30          214   11.2
      40          162   10.7

      15          227   12.5
0215 V filter installed: lgs_focus_9, _10, 5s integration.
       sky2, sky3 (5s sky frames)
0219 Moving to Landolt 92-235, V=10.60.
     landolt92-235_1, _2 (5s)
0230 Starting chopper background test at zenith.
     Still seeing ~50% fluctuations in return LGS flux.
0300 Testing BTO loop closed on Q3:  1157536820 - 6857
     BTO loop open: 6924 - 6964
      & LLT on: 6989 - 7051
0300 Laser power measured to be 5.0-5.5 W
0315 Acquiring Tycho 2345-1262-1 in LGS mode.
     Found large astigmatism in sky flat map when using stim.
     Tel focus: 56.99... 56.88
0340 1.32 laser went unstable.  Rapid response caused 589 and 660
     beams to loose alignment.  Recovering...
0400 Propagating again.  Seeing factor of 3 fluctuations...
0407 Recording BTO telemetry to try to understand flux issue.
0425 Repeating LGS photometry measurements:
     lgs_focus_11,...
0430 Calling night for laser due to huge brightness variations.
0440 Beginning Bayesian reconstructor testing.
      V=8.0...
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     Landolt 95-302: V=10.7... FWHM=0.20"
0500 Calling night
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