

Palomar Adaptive Optics Test Plan

Title	LGS and NGS acquisition and lock
Date	12/1/06
Lead	M. Troy
Time requested	-
Required conditions	-

Purpose

Acquire NGS and LGS, Lock all loops and be ready to perform science at this end of this procedure

Test procedure

1. Setup
 - 1.1. This procedure assumes the LGS acquisition and characterization procedure has been executed
 - 1.2. Load co_zero centroid offsets for HOWFS
 - 1.3. Set servo loop gains
 - 1.3.1. llt_integral_gain 1.6
 - 1.3.2. ttm_integral_gain 0.15
 - 1.3.3. dm_integral_gain 0.15
 - 1.3.4. dm_porportional_gain 0.02
 - 1.4. Focus acquisition camera to NGS, 'move acq_z 14740'
 - 1.5. Set chopper delay and gate on generator using PC
 - 1.5.1.1. delay value = 58400
 - 1.5.1.2. Gate value = 3998
2. Move Telescope to a bright star near the TT NGS (follow BTO slew procedure)
3. Move telescope to put NGS on HOWFS
4. Lock on NGS star
 - 4.1. Register DM
 - 4.2. Lock TT and DM as normal and offload focus to telescope
 - 4.3. Make new telescope flat map and load
5. Pre-prepare for LOWFS lock
 - 5.1. Using TAO select LGS mode (Under the Observation menu)
 - 5.2. Focus acquisition camera to LGS, 'move acq_z 12300'
 - 5.3. Propagate laser
 - 5.4. Center Laser on reflecting spot, using acqview (center LGS button)
 - 5.5. Set HOWFS z stage
 - 5.5.1. start lgsfoc in IDL, set Height to 90km, send HWFS stage by clicking 1-shot, WFS stage should move to 80,840um
6. Lock LOWFS
 - 6.1. Focus acquisition camera to NGS, 'move acq_z 14740'
 - 6.2. Start up LOWFS plots, 'ao_plot_lo_gui' in IDL
 - 6.3. Move LOWFS to star using acqview (send LOWFS button)
 - 6.4. Set LOWFS camera rate, 'wfs_cam id=lo,rate=XXX',gain=0
 - 6.5. Take sky
 - 6.5.1. Move telescope 60" E

- 6.5.2. From TAO menu take LOWFS sky CCC
- 6.5.3. Move telescope back
- 6.5.4. re-start LOWFS, wfs_cam on, id=lo
- 6.5.5. Log all data, log wfp=lo, data=all
- 6.6. Startup pixel display, 'ao_display_latest_lo_pixel' in IDL
- 6.7. Zero LOWFS centroids, using acqview zero_lo_cent button
- 6.8. Lock, TTM using button on TAO
- 6.9. Check lock performance in plots
7. Lock HOWFS on LGS
 - 7.1. Start up LGS IDL plots (ao_plot_gui_lgs_hwfp)
 - 7.2. Start Chopper
 - 7.2.1. Using Terminal window on PC
 - 7.2.1.1. Set to external reference
 - 7.2.1.2. Set to run
 - 7.3. Set WFS camera to 100Hz
 - 7.4. Take sky
 - 7.4.1. offset llt_a 20 arcseconds
 - 7.4.2. From TAO menu take HOWFS sky
 - 7.4.3. offset llt_a -20 arcseconds
 - 7.4.4. turn howfs on, wfs_cam on, id=ho
 - 7.4.5. set log interval to avoid late messages, 'log wfp=ho, interval=10'
 - 7.5. Lock LLT
 - 7.5.1. Type "llt on"
 - 7.5.2. Check performance in GUIs
 - 7.6. Lock DM
 - 7.6.1. Click on DM button on TAO
8. Start focus offloading from LOWFS
 - 8.1. Need to write this
9. Tweak Performance
 - 9.1.1. HOWFS rate
 - 9.1.2. Register DM?
 - 9.1.3. Chopper versus none
 - 9.1.4. subap min flux
 - 9.1.5. Centroid offsets
 - 9.1.6. Servo loop gains
 - 9.1.7. reconstructors

Results and conclusions