

Palomar Adaptive Optics Test Plan

Title	LGS Target Acquisition (SWIFT)
Version	1.0
Date released	8/8/2009
Lead	A. Bouchez
Time requested	12 min. per target
Required conditions	Sufficiently clear for laser projection

Purpose

Acquire science target, lock all loops and hand over system to observer.

Test procedure

1. Slew to a V=6 SAO star near the LGS target.
2. Setup AO system for NGS.
 - 2.1. Rotate the Cass ring if needed.
 - 2.2. Set TAO mode to NGS.
 - 2.3. Click "SETUP FOR NGS" with HOWFS at 500 Hz.
 - 2.4. Stop chopper if running. (R/X)
3. Acquire and register HOWFS.
 - 3.1. Move star behind reflective spot using hand paddle.
 - 3.2. Click "OFFSET + TAKE HOWFS BKG".
 - 3.3. Close TT loop.
 - 3.4. Register DM (coarse and fine).
 - 3.5. Close DM loop.
 - 3.6. Make a new telescope flat map and load.
 - 3.7. Ask observer to center star at the desired location for LGS acquisition.
 - 3.8. Save AO config.
 - 3.9. TX telescope.
4. Slew to LGS target tip/tilt star.
5. Request laser propagation.
6. Set up AO system for LGS.
 - 6.1. Set TAO mode to LGS.
 - 6.2. Click "SETUP FOR LGS with HOWFS at appropriate value (150 Hz).
 - 6.3. Start chopper (R/X/E/E).
7. Acquire LGS
 - 7.1. Center laser on reflective spot using UTPADDLE.
 - 7.2. Record centered position of LLT FSM.
8. Close the DM loop on the laser.
 - 8.1. Move LGS_X to LGS position.
 - 8.2. Update reconstructor with AORECON if Cass ring angle has changed.
 - 8.3. Click "OFFSET + TAKE HOWFS BKG".
 - 8.4. Close UTT loop.
 - 8.5. Verify that HOWFS framerate is correct. If necessary: Open loop, change framerate, take an offset background, close UTT loop.

- 8.6. Close DM loop.
9. Acquire the NGS and close TT loop.
 - 9.1. Set LOWFS framerate appropriate for NGS.
 - 9.2. Move ACQ_Z to NGS position.
 - 9.3. Set Acq to integration time appropriate for NGS.
 - 9.4. Identify NGS in ACQVIEW field and send LOWFS.
 - 9.5. Click "OFFSET + TAKE LOWFS BKG".
 - 9.6. Close TTM loop.
 - 9.7. Verify that LOWFS framerate is correct. If necessary: Open TTM loop, change LOWFS framerate, take an offset background, close TTM loop.
10. Close focus loop (pulldown on LGSFOC).
 - 10.1. Close focus loop on LGSFOC tool, gain=1.0, update 10s.
 - 10.2. Wait for focus to converge to <0.5 mm, then set gain=0.25, update 30s.
11. Ask observer to position NGS at desired location in the field.
 - 11.1. Record PSF image cube if desired
 - 11.2. Zero the telescope offsets
12. Offset to science target
 - 12.1. Set tip/tilt loop gain to 0.
 - 12.2. Ask observers to offset telescope to science target.
 - 12.3. Once telescope and LOWFS are in position, resume tip/tilt control
 - If total offset <45"
 - Reset the tip/tilt loops gain to the correct value (default: 0.7)
 - If total offset >45"
 - Open the tip/tilt loop
 - Click "OFFSET + TAKE LOWFS BKG"
 - Reset the tip/tilt loop gain to the correct value (default: 0.7)
 - Close the tip/tilt loop
 - Close the focus control loop
13. Hand over control to observer

Results and conclusions