Palomar Adaptive Optics Test Plan

Title	Laser Acquisition on science nights
Version	5.1
Date released	4/4/07
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Time requested	30 min.
Required conditions	N/A

Purpose

Acquire LGS, focus LLT, determine LGS magnitude and spot size,

Test procedure

1. Prepare to project laser
    - 1.1.1. Telescope at zenith.
    - 1.1.2. Dome open.
    - 1.1.3. Mirror cover open.
    - 1.1.4. Raise windscreen.
    - 1.1.5. Spotters on station.
    - 1.1.6. Radar on and adjusted.
    - 1.1.7. ASCAM and IRCAM on and alarms reset.
    - 1.1.8. BTO configured for 589nm laser at zenith.
    - 1.1.9. Laser alarm system ready.
2. AO Setup
    - 2.1. Check stimulus position on HOWFS.
        - 2.1.1. Move SSMs to center stimulus on HOWFS if necessary.
    - 2.2. Configure AO to look at sky
    - 2.3. Verify LLT FSM mirror position (last good position, previous night)
    - 2.4. Confirm that best available flatmap is loaded.
    - 2.5. Set TAO to LGS mode
    - 2.6. Move LGS_X to NGS position.
    - 2.7. Move ACQ_Z to LGS position (9950 um)
    - 2.8. Focus LLT to last good position (or NGS focus - 300).
        bto move llt_focus 11780
    - 2.9. check/set laser focus to correct value
        bto move laser_focus 7000 (4/4/07 UT)
    - 2.10. Set Acq ON, integration = 2s.
    - 2.11. In an appropriate experiment directory: IDL> ao_plot_vid_image
3. Project laser.
4. Move LGS to a clear location on Acq.
    offset llt_a +X=up; offset llt_b +X=left
    If LGS is not in the Acq. FOV, use ellipticity of dichroic spots (apex points to LGS).
5. Focus LLT on Na layer
    - 5.1. Manually offset LLT focus in 30um steps (*bto offset llt_focus...*), checking FWHM with ACQVIEW Gaussian fit at each position: -30, 0, 30
6. Determine laser focus (after major laser changes)
    - 6.1. Block laser, save a 2s background image using ao_plot_vid_image.
    - 6.2. Rough focus laser spot, looking at image in acq. camera

bto_control "offset laser_focus …" in steps of 2000

6.3. ao_focus_loop, 0, 2000, 7, 'laser_focus','save_name, sky='sky_name',time=6.0

6.4. bto move laser_focus XXX

7. Save a final image of the LGS. Note file name below.

Results and conclusions