Palomar Adaptive Optics Test Plan

Title	BTO setup
Version	2.0
Date released	4/3/2007
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Time requested	1 hr during the first afternoon of each observing run.
Required conditions	Dome closed

Purpose

1. Power up BTO, align mirrors using 660nm stimulus beam, save default positions.
2. Align LLT to 660nm stimulus beam.

Test procedure

Personnel required: AO operator (lead), BTO operator, 2x prime focus personnel.

Power up Coude hardware:

1. Uncover BTO Coude bench.
2. Power on ESP300 and FSM controllers.
3. Power on 660nm laser. Power supply should be set to 3.75V, 0.75A. Follow procedures to ensure diode safety!

Power up Dome hardware:

4. Verify that telescope focus is nominal for AO (~61 mm)
5. Telnet to "viswa_power" and turn on all devices.
   - 5.1. /on C2
   - 5.2. /on C3
   - 5.3. /on trolley
   - 5.4. /on bto
   - 5.5. /x
6. Disable BTO firewall
   - 6.1. ssh root@bto.palomar.caltech.edu
   - 6.2. /etc/init.d/ittables stop
7. Start up BTO command line.
   - 7.1. ssh -X aousr@bto.palomar.caltech.edu
   - 7.2. bto_cmd
   - 7.3. > reset all (Note: this moves laser focus stage on laser bench!)
   - 7.4. > set trigger=software
8. Move trolley to +5200000 and remove optics covers.

Align BTO.

9. Connect TAO to BTO (under TAO menu bar...)
   - 9.1. Alternatively, > set hadec=tcs
10. Set Track ON to move BTO mirrors to last zenith position.
11. Open coude block.
12. Erect the BTO by closing the servo loop to Q1, then Q2, then Q3.

12.1. If no light is visible on Q1...
- Visually check Coude beam path.
- Verify that stimulus beam is precisely centered on both Coude irises.
- Verify that telescope pointing data is OK (see step 8)

13. Open servo loops and save default positions (for 660nm laser)
    13.1. > set zenith
    13.2. > save DEFAULT

Align LLT to laser (in prime focus)

14. Remove LLT primary cover.
15. Verify that UTT mirror controller is powered on.
16. Lock BTO servo loop with high speed on Q3.
17. Adjust the Q3 beamsplitter to center the laser on the UTT mirror.
18. Adjust the top fold mirror to center the laser on it.
19. Install reticles in the LLT primary mirror hole and on the LLT secondary.
20. Iterate between UTT mirror adjustments (performed by the AO operator) and adjustments of the LLT final fold mirror to center the laser on both retticles.
21. Remove the reticles and verify that the beam pattern on the dome ceiling is evenly illuminated and centered on the LLT secondary shadow.
22. Open the BTO servo loop.
23. Verify that the laser beam path in prime focus is clear of obstructions and everything appears ready for the high-power 589nm laser.

Results and conclusions