

Palomar Adaptive Optics Test Plan

Title	Rayleigh Scatter in LOWFS
Date	12/05/06
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Time requested	1 hour
Required conditions	Photometric.

Purpose

To determine the effect of Rayleigh scatter in the LOWFS without a filter and using the dichroic as a filter.

Test procedure

1. Setup (standard LGS setup):
 - a. Telescope at zenith.
 - b. HOWFS at 90km conjugate.
 - c. UTT mirror at
 - d. LOWFS centered behind dichroic spot.
 - e. Set LOWFS framerate to 30 Hz.
2. Offset the LOWFS 15" east (offset lowfs_x -XXXXX).
3. Take a LOWFS background, rename and note filename in Table 1.
4. Take a HOWFS background at the framerate previously used.
5. Propagate laser at zenith.
6. Acquire laser in HOWFS.
7. Close UTT loop.
8. Record a LOWFS background with the LOWFS 15", 25" and 35" to the East of the dichroic spot. Rename each file and note the name and approximate signal level in Table 1.
9. Open the UTT and shutter the laser.
10. Recenter the LOWFS behind the dichroic spot.
11. Take a LOWFS background, rename and note filename in Table 2.
12. Propagate the laser.
13. Record a LOWFS background at UTT mirror positions 0", 15", 25", and 35" to the West of the dichroic spot. Rename each file and note the name and approximate signal level in Table 2.
14. Shutter the laser.
15. Slew to a photometric calibrator near zenith.
16. Move the LOWFS out of the way...
17. Center the star behind the dichroic spot.
18. Acquire the star with the LOWFS.
19. Offset to sky and record a LOWFS background. Copy to a different name (referred to below as *bkg1*) and note name in Table 3.
20. Return to star. Close TT loop.
21. Open TT loop.
22. Record a LOWFS background. Move to a different name and note in Table 3.
23. Load *bkg1*.
24. Perform photometric calibration using the LOWFS at each of three field points.

- a. Offset the star to the field position listed in Table 3.
- b. Acquire the star with the LOWFS.
- c. Close the TT loop.
- d. Record a LOWFS background. Rename and note new name in Table 3.
- e. Load *bkg1*.

Results and conclusions

Table 1: Rayleigh background without dichroic (step 6)

lowfs_x offset (")	lowfs_x (μm)	lowfs_y (μm)	File name	DN/subap
15.0, laser off				
15.0				
25.0				
35.0				

Table 2: Rayleigh background behind the dichroic (step 9)

lft_a offset (")	lft_a (μm)	lft_b (μm)	File name	DN/subap
0.0, laser off				
0.0				
15.0				
25.0				
35.0				

Table 3: Photometric calibrator (step 9)

lowfs_x offset (")	lowfs_x (μm)	lowfs_y (μm)	File name	DN/subap
0.0				
15.0				
25.0				
35.0				

Notes:

