

April 25, 2006 Palomar LGS IPT Meeting Minutes

A. Bouchez, 4/25/06

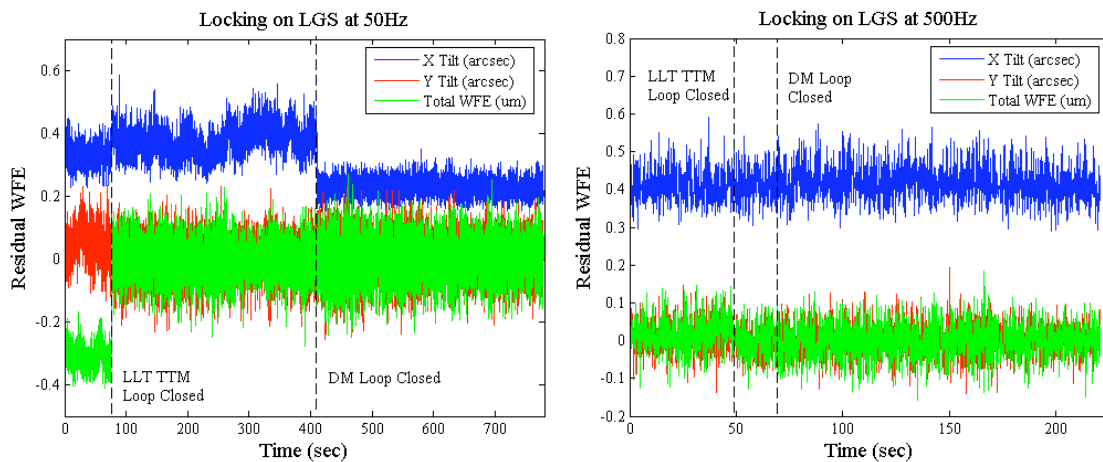
Caltech: Bouchez, Roberts, Shelton, Troy, Velur
Palomar: Henning, Thicksten
Chicago: Kibblewhite

1. Review of April 13-15 LGS engineering run

One and a half of three nights were lost to weather. We collimated and tested the LLT with the new 10" primary, and found its image quality to be limited only by atmospheric seeing. However, apparent flexure of 5' over $\sim 30^\circ$ zenith angle needs to be investigated further. On the final night, we successfully closed the HOWFS servo loop on the LGS at zenith. This was facilitated by 1) A smaller LGS ($\sim 2.4''$ FWHM), 2) A new dichroic with uniform reflectivity, 3) A stabilized laser beam on the LLT. We also tested a new aircraft-detection algorithm on the IRCAM, and gathered data comparing the sensitivity of the ASCAM to spotters. The hired spotters performed well, allowing control room personnel to focus on engineering experiments with unprecedented concentration.

Data analysis:

Jenny has begun analysis of the HOWFS telemetry while locked on the LGS. Data taken at 50Hz framerate clearly show reduction of mean centroids on closing UTT loop, and reduction of RMS residuals by ~ 2 on closing HO loop. At 500 Hz closing the loop had no obvious effect on residuals. See plots below.



2. Priorities for June 12-14 engineering run

1. LLT flexure
 - Investigate cause of apparent 5' flexure of LLT (HP)
2. More laser photons on the HOWFS
 - Increase laser power to $>8W$ and document trouble-shooting steps. (VV, EK)
Ed is coming to Palomar 5/18-5/22, check out laser and fix things.
 - Measure and document the laser bandwidth (EK, VV)
Also 5/18-5/22
 - Optimize launched polarization (CS)
Design and install $\frac{1}{2}$ -wave plate fixture for LLT optical axis.
 - HOWFS optimization for LGS (MT?)

Several possible paths forward. Need to organize a dedicated meeting to agree on where to put our effort. (MT)

- o Electronic or mechanical gating at lower frame rates.
 - o Pixel scale modifications.
 - o Adjustable field stop.
3. BTO control off zenith
 - Implement reproducible laser stimulus (AB)
 - Perform open-loop calibration of BTO (AB)
 - Implement self-erecting BTO (CS, JA)
 - Implement safety/alignment stops (mech), with possible webcam feedback (AB).
 - Investigate possible shutter at prime focus (CS)
 4. AO software improvements (TT)
 5. Aircraft safety systems (AM)
 - Eliminate IRCAM spurious detections.
 6. Laser maintenance/optimization/automation (VV)
 - a. Install near & far-field cameras (VV)
 - b. Automate laser focus adjustment. (VV)
 - c. Build new 1.06 laser head (EK, in Chicago)
 - d. Agree on LGS automation scheme.

3. Task scheduling

Run begins 7 weeks from yesterday. SPIE is 24-31 May, taking 1-1.5wks from most of us.

Meeting adjourned at 10:00am.