

August 22, 2006 Palomar LGS IPT Meeting Minutes

A. Bouchez, 8/22/06

Caltech: Cromer, Dekany, Petrie, Pickles, Velur
Palomar: Bouchez, Henning, Roberts, Shelton, Thicksten
Chicago: Kibblewhite

1. Announcements

- o Rich presented update on PALM-3000 MRI proposal: They haven't said no yet.
- o Please pay Antonin for LGS T-shirts if you have not already done so (\$7.28 each).
- o Briefly discussed Palomar science meeting assignments. Mitch and Antonin will share responsibility for LGS talk. Content of NGS talk will depend on whether progress is made during September run.

2. Update on laser upgrade work performed last week

Report by Ed on laser upgrade work complete last week:

- o Much better working in AO lab than in Coude.
- o Rebuilt alignment system in laser.
- o Rebuild acousto-optic modulator mounts, including TE coolers to allow independent tuning. One system is working.
- o Installed new diode laser drivers, repackaged so that all hardware is under laser bench. Laser should now be easier to service and transport.
- o Powered up both IR lasers. Got reasonable power out of 1.32 μm laser.

In summary, the servicing mission was successful, but 2-3 days of work are still needed before the laser is ready for run. Ed is coming out on 31st, possibly a day earlier, and will be joined by Viswa.

Chris: Is there rack space for LGS computer under laser? Not sufficient space for full-sized rack.

AB: How much heavier is bench? Viswa: ~100-150 lb.

Bob: Equipment above laser will need to be removed before laser move.

Viswa: Need to change small chiller plugs, and need 230V circuits installed in Coude lab.

Bob: Crane may not have sufficient reach to install chillers after platform rebuild.

Rich: Do you have diagnostic tools necessary for running laser at 1 kHz? Ed: Yes.

Mitch: Need to plan time with yellow light to align to BTO. Consensus: Will plan on finishing all laser work by Monday afternoon, then handoff to alignment team (Bouchez, Roberts, Cromer) on Monday evening.

3. Coordinate work at Palomar over next 2 weeks

- o AO bench status: Jenny got system up and running yesterday. DM doesn't work as expected: Can't load maps or lock loops. Dichroic is installed but not precisely aligned. Laser stimulus installed but not aligned (using red laser).
- o AO bench work this week (JR, CS, AB)
 - o Test/debug new DM chip.
 - o Install V filter & measure AO system transmission.
 - o Finish vibration and background testing of chopper
 - o Realign acquisition camera.
- o BTO work this week (JA, AB, CS)
 - o Install new optics (FSM, b-s cube)
 - o Test BTO software after major restructuring
 - o Test 2-D lookup table.
- o PHARO to be opened on Thur to install J. Carson's pupil masks.
- o Serabyn's group and J. Carson coming up next Mon-Tue to replace visible camera behind FM3 and take PHARO calibration data with new masks.

- Hal coming up next Thu. to install new hardware in LLT.
- Ed and Viswa coming up next Thu to complete laser work.
- Install date for AO bench? Could be done on 9/1 or 9/5. Prefer 9/1 If all work is done on AO bench, leaving more time for checkout on first day of run. Will make final decision at next week's meeting. AB to **contact observers**.

4. Tasks in support of September engineering run

Priorities for the run (updated 8/22/06)

1. Demonstrate >15% K Strehl on bright stars near zenith.
 - a. Laser power >7.0 W
 - b. BTO transmission >50%
 - c. Tel + AO transmission at 589nm same as NGS.
2. Understand and improve LGS spot size.
 - a. Design laser diagnostics package for prime focus.
 - b. Design & implement 660/589 alignment system.
3. Coude lab facility improvements.
 - a. Widen platform.
 - b. Install air filtration and sticky mats.
 - c. Install new lighting.

Task List (updated 8/22/06)

- Laser upgrades
 - Power upgrades (EK, VV)
 - Connect and test second AOM temp. controller (VV).
 - Connect and test second etalon temp. controller (VV).
 - Procure and install remote x-y lens mounts.
 - Repair coolant interlock switch. (VV)
 - Test electrical connections in Coude lab (cable length & power). (VV/RT)
 - Coude lab upgrades
 - Air filtration & mats (Pal)
 - Rebuild platform (Pal)
 - Install new 230V circuits in Coude lab (Pal)
 - Install lights above bench. (VV)
 - Diagnostics and automation
 - Design PF and Coude diagnostic benches (AM, CS)
 - Redesign Na cell (CS)
- BTO
 - Clean optics & install new parts. (CS, AB)
 - Calibrate ¼-wave plate (AB)
 - Clean up BTO software (JA).
 - Test/Optimize off-zenith alignment (AB, JA).
 - Understand optical effect of beam jitter (CS, AB)
- AO bench
 - Align dichroic reflectings spot (JR)
 - Test HOWFS alignment and transmission at 589nm, 90 km (JR)
 - Complete chopper testing (JR)
 - Complete white light controls (CS)
 - Design field stop and Na rejection filter for LOWFS (VV)
- Aircraft safety
 - Reduce IRCAM detection threshold (JC)
- AO Software
 - Implement fix for DM communication problem (CS)
 - Diagnose and fix startup problems (TT)

Caltech Optical Observatories
Palomar Adaptive Optics

- Implement full subap flux averaging (TNT)
- Implement LGS nodding (TT)
- Diagnose acquisition camera problems (?)
- New IDL tools(?)
- Organize LGS imaging with auxilliary telescope? (AB)