June 6, 2006 Palomar LGS IPT Meeting Minutes

A. Bouchez, 6/7/06

Caltech: Cromer, Moore, Pickles
Palomar: Bouchez, Petrie, Shelton, Thicksten, Velur
JPL: Trinh

1. Announcements

- Anna Moore will be working in the AO group starting next week. Her expertise in optical design and instrument development will be very much appreciated.
- Andrew will bring pressure manifold up tomorrow for Viswa.

2. Progress on LGS tasks

Hal:

- Reassembling launch telescope for improved rigidity. This includes changes to the secondary mount, and shims in the truss connectors.
- Will installing mount for ¼-wave plate on Mon 6/12 before telescope installation.
- Also adjusting Q3 position to ease alignment of Pulnix camera for optical tests.

Viswa:

- Will switch laser on today for BTO tests.
- New pressure manifold for SFG chamber has been built; to be installed this week.
- Will begin assembling test facility for new gain modules in laser lab.

Bob:

- We need to formulate an integrated plan for the Coude lab, particularly with regards to widening the current platform and installing new lasers.
- Spotters have been arranged for the June and July runs.

Thang:

- We understand roughly what is causing LOWFP crashes, but cannot fully explain it. A combination of temporary fixes (changing the default TTM update rate to 500 Hz, and changes in the loading flat maps) will be implemented in a new software built, to be installed 6/8 or 6/9. A longer term fix will be found after this run. JA needs to make some changes to AOCP as part of this new build.
- TAO interface to IDL will be implemented later this week as well. We will summarize the changes in a document to be distributed before the run.
- Changes in telescope dithering sequences for LGS will have to be implemented for the July run.

John C:

- John has taken custody for Alan's computer and will be responsible for maintenance of the aircraft safety camera software.
- However, operation of the cameras during observing will need to be someone else's responsibility.

Chris:

- Much progress on the BTO software. We can now switch smoothly between open-loop motor control, and servo control (with the high-speed lock on any of the quad cells).
- Demonstrated an operating strategy by which we can align the BTO at any location in the sky, with only a few minutes of overhead. This involves slewing along meridian with BTO in open loop (trolley can't keep up), then slewing in HA with servo loop on.
- Will calibrate ¼-wave plate in the Coude lab on Sunday.

Jenny:

- Sent the following results of wavefront testing of the new Barr dichroic:

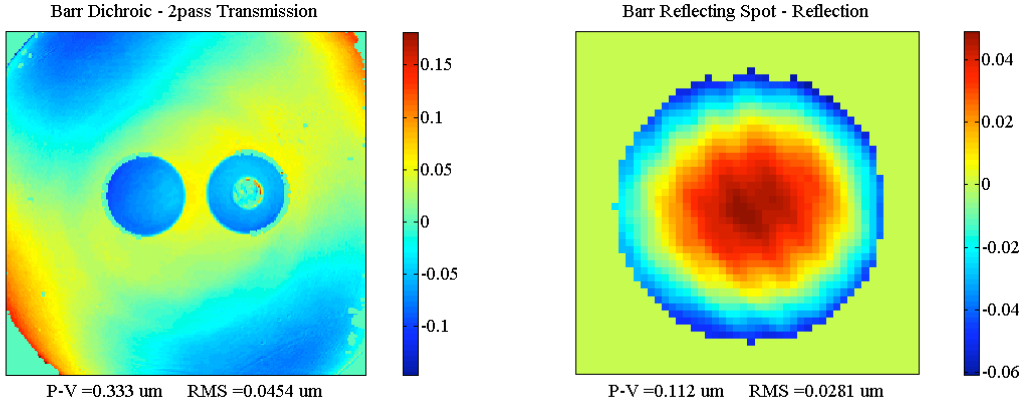

Figure 1: New Barr dichroic wavefront measurements.

Antonin -

- 18" LLT primary will be ready to ship from Precision Asphere on about 6/21. We will have them ship it directly to a coatings lab, probably L&L Optical.
- We finished aligning the optics on the new BTO bench in the Coude lab.
- Ed, Viswa and I worked out a schedule for laser work over the next 2 weeks. See Section 5 below.

3. June 12-14 engineering run schedule

Version 1.2 of the engineering run schedule is shown in Figure 2. Top priority for the run is taking first images of a star in LGS observing mode. Next highest priority is maximizing (and characterizing) the LGS return.

All agreed that LLT pointing adjustments and collimation will likely take up half of the first night. Next experiment is LGS photometry, including measuring the effect of projecting circular polarization. Viswa pointed out that return for right- and left-handed circular is likely to be different, and both should be measured. We will then move directly to demonstrating off-axis acquisition. Subsequent nights will be spent optimizing the LGS performance and taking first science (or at least PR) images.

4. Personnel schedule

The personnel schedule for the June engineering run is shown the table below. Thang will check on Steve's availability. Antonin will check on Rich's availability.

Palomar LGSAO test schedule — v1.2: 06/06/06 - AB

12 - 14 June 2006 (local)

Test #	PDT start	PDT end	Test Name	Obs mode	Target	Description / Prerequisites	Priority	Duration	Lead	Clear	Laser
			suns 12° LST 12° sunr								
06/12/06			20:05 21:01 17:39 4:33 5:29								
1	8:00	12:00	Install AO system & LLT	closed	zen		1	4.00		N	N
2	12:00	16:00	BTO open-loop control	closed	slew	Calibrate and test BTO open-loop control	2	4.00	CS	N	HeNe
3	14:00	14:30	Status meeting					0.50			
4	16:00	18:30	Demo BTO control	closed	slew	Demo control off-zenith with Na laser on/off.	1	2.50	CS	N	Na
	18:30	20:30	dinner					2.00			
5	20:30	21:00	AO Checkout	NGS	V=8	check seeing, NGS performance.	3	0.50	AB	N	N
6	21:00	23:00	LLT boresighting	NGS	V=3	Boresigh to 200". Check repeatability vs. elevation.	1	2.00	HP	N	N
7	23:00	0:30	LLT collimation	NGS	V=3	Collimate LLT on a bright star near zenith.	1	1.50	HP	N	N
8	0:30	1:30	LGS acquisition	LGS	zen	Project laser at zenith, focus, measure photometry.	1	1.00	AB	Y	Na
9	1:30	2:30	Laser polarization	LGS	zen	Measure effect of laser polarization on return.	2	1.00	CS	Y	Na
10	2:30	4:30	LGS off-zenith acquisition	LGS	V=12	Demonstrate LGS off-zenith acquisition procedure.	1	2.00	AB	N	Na
06/13/06			20:06 21:02 17:42 4:33 5:29								
11	12:00	14:00	Measure UTT FSM noise	closed			2	2.00	MT	N	N
12	14:00	14:30	Status meeting					0.50			
13	14:30	18:30	*contingency*					4.00			
	18:30	20:30	dinner					2.00			
14	20:30	21:00	AO Checkout	NGS	V=8	check seeing, NGS performance.	3	0.50	AB	N	N
15	21:00	22:00	LGS acquisition	LGS	zen	Project laser at zenith, focus, measure photometry.	1	1.00	AB	Y	Na
16	22:00	23:30	HO loop optimization	LGS	V=12	Optimize HO loop performance with bright NGS.	2	1.50	MT	Y	Na
17	23:30	0:00	Focus loop optimization	LGS	V=12	Optimize focus loop performance with bright NGS.	2	0.50	AB	Y	Na
18	0:00	3:00	LGS science demo observations	LGS	V=15	Image two science targets (V~15).	1	3.00	AB	Y	Na
19	3:00	4:30	Performance vs. NGS magnitude	LGS	V<16	Measure LGS performance on R~12,14,16 stars.	2	1.50	AB	Y	Na
06/14/06			20:06 21:02 17:46 4:33 5:29								
20	12:00	18:30	*contingency*	closed			2	6.50		N	N
	18:30	20:30	dinner					2.00			
21	20:30	21:00	AO Checkout	NGS	V=8	check seeing, NGS performance.	3	0.50	AB	N	N
22	21:00	22:00	HOWFS-laser TT correlation	LGS	V=8		3	1.00	MB	Y	Na
23	22:00	4:30	*contingency*					6.50			

Figure 2: June engineering run schedule, v1.2

Table 1: Personnel availability for the June engineering run.

	Sun. 6/11	Mon. 6/12	Tue. 6/13	Wed. 6/14
Angione	X	X	X	X
Bouchez	X	X	X	X
Cromer		X	X	X
Dekany		?	?	?
Guiwitz		?	?	?
Kibblewhite	X	X	X	X
Moore				X
Petrie		X	?	
Roberts				
Shelton	X	X	X	X
Troy		?	?	?
Velur	X	X	X	X

5. Laser schedule update

Caltech Optical Observatories
Palomar Adaptive Optics

6/5/06 Laser Schedule Teleconference Notes

A. Bouchez
06/06/06

Needed purchases

- New oscilloscope for spectrum analyzer. Need to choose between freestanding or PC interface. VV to determine specifications.
- New etalons for both IR lasers. EK and VV to determine specifications this week.

Laser tasks for June 6-14

Prior to observing run:

1. 6/6 10:00am: Start up CSFL at low power (<1W) for BTO experiments (VV).
2. Install new pressure manifold on CSFL pressure vessel.
3. Install dial gauge on 1.32 um etalon.
4. Reinstall near- and far-field cameras.
5. Switch back to Lyntron chiller.
6. Install LiIO3 crystal in 1.06 um laser when it arrives.
7. Optimize power output and beam quality.
8. Calibrate photodiodes and test data logging system.

Independent of observing run:

1. Clean up laser lab in preparation for optical bench setup.
2. Move Neslab chiller to laser lab.
3. Install power drivers in laser lab.
4. Assemble cooling system for testing Mach-3 gain modules.

Changes to current development schedule

- The first Mach-3 gain module will not be ready for testing next week. The review of the test setup and gain module performance, which had been scheduled for 6/14, will have to slip until mid-July.
- Automation of the etalons, scheduled to occur just after the June observing run, is delayed until the strategy for correcting the laser bandwidth has been finalized.

AB will prepare and distribute a new schedule to reflect these changes.

1