December 11, 2006 LGS Facilty IPT Meeting Notes

A. Bouchez 12/11/06

Caltech: Angione, Bouchez, Guiwits, Moore, Petrie, Roberts, Shelton
Palomar: Doyle, Henning, Thicksten
Chicago: Kibblewhite

1. Laser

Report on laser status from Ed:

- Spent some time determining whether LBO crystal in 1.32 laser actually works. Works quite well, but not as well as the LiIO3. Went back to LiIO3, and got 8-8.5W.
- Did not have time to install laser head upgrade. Laser is in same state as for last run.
- Need to replace old LiIO3 because it has many burn marks. *Renu is pricing this.*
- Some damage noted on surface of 3rd SFG crystal noted. Moved beam slightly to make it work. Could be a problem with LBO coatings, or with temperature control. Should consider purchasing new LBO crystals.
- Fans installed in laser enclosure seemed useful for distributing heat.

Work to do before Jan:

- Insulate sides of laser enclosure.
- Check for and fix any coolant water leaks (major leak in top-right of bulkhead fixure - replace or remove bulkhead fixure).

Ed will plan to come to Palomar in Jan. for 7 days to install 2 new laser heads. Best to do work before Eng. run begins Jan 23. Provisionally: Jan 10-17.

Laser automation:

- Until LGS computer is available, we need access to laser log files on labtop. Would be best to copy files to /data directory on harbor. *Chris will coordinate with John H.*
- Temporary poor performance of frequency lock on 12/8 was due to lack of outer loop offloading to etalon temperature. Manual temp. tuning would have probably worked. Automated offloading is on LGS computer requirements list.
- To keep TE coolers from operating without water, need to add flow switch input or temp input on cold side. Let's decide which when Renu is available next week.
- Other issues: Door/sign interlock circuit should be modified to allow chillers to be run without door lock-out.

2. LGS Computer and Laser Automation

- Top priority for next run is temperature readout and setpoint control from LGS computer. This requires test hardware to be available. A spare McShane TE controller is available at Palomar. *John H. will send to Anna Marie on campus. Antonin will order a spare RS232/RS485 converter, also sent to campus.*
- Some discussion of whether we should add full software control of frequency dither lock to LGS requirements. Postponed this discussion.
- John A. requests a spare PC for BTO/LGS testbed. Will price this and coordinate with Jenny.
- Steve will look up Pleora linux support as time permits.

3. Laser Diagnostics

- Special thanks to John H., Steve, Greg, Mike, Bob, and Hal for all their help.
- Spent large fraction of preparation for last run understanding and improving LLT collimation procedure.
- Had to tilt telescope several arcminutes to boresight to 200".
- On sky, checked image quality using Pulnix. Recentered secondary by ~1mm and nulled out coma. Hal not entirely comfortable that all problems have been identified.

- *Hal will consolidate notes on LLT flexure. Antonin will analyze pointing test results.*
- Still do not understand poor image quality of Pulnix on star images.
- Would be nice to verify that there are no field-dependent aberrations.
- Diagnostics optics/hardware are stable. A few required changes remain.
- Calibration and image analysis require some more work. Will work on baffles and image calibration during the January run.

Results

- Red laser looks great. Very good calibration source.
- Spots at Coude on 589nm laser move substantially due to turbulence - *Order A/R window to put at shutter?*
- Laser spot clearly elliptical at both PF and Coude. ~20-30% elipticity.