May 21, 2007 LGS Facilty IPT Meeting Minutes

A. Bouchez

Caltech: Bouchez, Cromer, Petrie, Pickles, Roberts, Shelton
Palomar: Tripathi, Merle, Bob, Dan.
Chicago: Kibblewhite
JPL: Angione

1. Laser status

Laser status

Emphasis on Thu.-Fri. was on controlling the parasitic modes in the 1.06 um laser. Chris and Renu checked the diode alignment to the Nd:YAG crystal, and installed one high-power polarizer between the gain module and HR, with a beam block. This significantly improved the intracavity non-linear crystal alignment tolerance. Next, installed and iris on retro leg, which cleaned up most of the remaining power in the parasitic modes. Final powers:

- Before mode control: 14.1 W total; 3.3 W cross-polarized, 10.5 W desired polarization.
- After mode control: 12.0 W total; 1.0 W cross-polarize,d 10.5 W desired polarization.

Chris and Renu developed a plan for improving the Na cell SNR. Renu began alignment of SFG on Friday afternoon, will continue today and will send out an update at the end of the day.

Notes and comments

In the longer term, Chris recommends installing two apertures on each side of the gain module to enforce alignment and further improve mode control. Alignment technique for pump diodes very successful (could purchase a focusing lens to make it even easier). Still need cylindrical lens to clean up the 1.06 um laser beam profile. Some beam motion was still seen when going from 100Hz to 400Hz, implying imperfect diode alignment. Ed suggested developing a semi-permanent Pulnix mount on top of each gain module, to simplify deployment of the cameras.

Future work

- Bruce working of strengthening the utility shelf above the laser.
- Pulnix power supplies still missing. Jenny will check for extras at JPL. AB will ask Anna.
- Chris and Renu will prepare a detailed alignment plan and get Ed's input.
- Replace Nd:YAG slabs with correct face angle.
  Should have 2deg in vertical direction, on retro leg. Measured to be 4 deg. AR coat not specified for incidence angle? Could be a big problem if true. Will discuss later in week.
- Replace LBO crystals.
- Match spot sizes at the SFG.
- Improve SNR on sodium cell.
- Improve diode aligment hardware (focusing lens, permanent mount).
- Install micrometers on HR and OC, to keep track of absolute angles. Renu to order parts.
- Install cabinet in Coude lab for clean optical assemblies. AB to look Wed.
- Ed will come to Palomar in June. Perhaps second week.

2. Laser safety

A "near-miss" occurred over the weekend. An individual opened the Coude room door while laser was on, by forcing the magnetic lock. The laser remained on. There is disagreement over whether laser power-down was the intended consequence of unauthorized entry.

- Bob will write up the incident.
- Bob will check regulations and prepare a proposal for changes.

Spotters have been scheduled for May and July observing runs.
Bob working on a scheme to reduce the number of spotters.

Antonin proposed changes to the responsibilities of the telescope operator during LGS observations: That the TO no longer log projection times (we rely on the automated TCS logging), and that the lead spotter (Jennifer) take over logging spotter shifts.

- AB to verify that FAA and Space Command don't require a redundant manual log.
- AB to make a form for Jennifer to use.

Other future work

- John C. will make changes to SOP.
- Bob will talk with Fred Battle in next few weeks to plan IR camera demo at TMO or Palomar.

3. BTO and LLT

We held a meeting on finalizing the BTO command set at JPL last week. John A. moving ahead with plans to implement separate 589nm and stimulus laser zenith positions.

We received the spotting scope for the LLT. Drawings have been submitted to shop, but it's unclear if the parts will be ready in time. This finder scope will only allow us to align the mechanical structure of LLT, not the optics.

Other new parts for the BTO and LLT to be installed this run:

- New LLT mirror cover ready.
- New coude window assembly (includes alignment iris).
- New anodized sheet-metal enclosure for the Coude BTO bench.

4. Engineering Schedule for May 23-26 Observing Run

The priorities for the observing run, and the engineering test schedule (v1.0) were briefly discussed. Priorities are:

1. Understand the high-order errors observed during the last run.
2. Characterize the low-order (tip-tilt) performance of the LOWFS.
3. Characterize the LGS return versus laser power and polarization.

All generally agreed on these priorities.

Meeting adjourned at 9:50am.