August 28, 2007 Laser IPT Meeting Minutes

A. Bouchez

Caltech: Bouchez, Petrie, Pickles, Roberts, Thicksten
Palomar: McKenna, Tripathi
Chicago: Kibblewhite

1. Coude facility

- DMK had questions regarding status of legacy Coude air handling system. Environmentally controlled sub-room may not be sufficient for future lasers. Current goal is therefore to handle air for entire room.
- AB to send first draft of specifications on laser environment (temp., particulate spec., power dissipation, air volume exchange.) RT, DM, EK to fill in details.
- DM to request quotes for full room temperature and particulate control based on these specifications.
- Currently temps peak at 30C, 40% humidity. Bench walls are heated to 22C. LBOs controlled at 42C.
- Bob estimates: 50k for air only, 100-150k for cleanroom spec.

2. Observing run debriefing

- JR: Went reasonably well. Hurt by weather on science nights. Laser was stable all but first night. LGS return was lower than past runs.
- AB: laser power dropping 10% during night, had not seen this previously. Laser setup very rapid (30min per night). Mode quality not ideal: TEM-02 seemed to dominate.
- HP: Gradual improvement in setup efficiency and reliability. Occasional BTO failures seemed to result in dome lighting up. This effect could be explained for 2 incidents when BTO was misaligned.
- LLT image quality:
  - Tests demonstrated that LLT image quality is ~1.9” FWHM.
  - Clearly apparent spherical aberration, possibly others.
  - HP: Could we test in double-pass with flat.
  - AB: Possible explanation for spherical aberration is error in LLT lens position.

3. Future laser work

- RT to measure linewidth next week (9/4-9/7).
  - Found all hardware except optics.
  - Ed: Mirrors in spectrum analyzer are in SA now. 2 pairs of mirrors are available for IR lasers. They are in mini-cabinet in the Coude lab (?), in small tubes with black caps (2.5" long, 0.75" diam.)
  - Will first test with HeNe.
- RT to clean and change out LBO crystals following week (9/10-9/14)
  - Will clean. If any marks, then replace.
  - AB: Could new crystals have higher conversion efficiency then old?
  - EK: Single crystal gave 5W, so some issue remains with conversion efficiency.
- RT also planning to test wavefront quality with AOA wavefront sensor in next 2 wks.
- JR: Concerns about beam size at laser shutter. Do we need new lenses to reduce beam diameter? Will discuss next meeting.
- Postponed until period between Sep. and Oct. observing runs:
  - Match spot sizes of IR beams. (EK: Optical isolator could be affecting this).
- Flow switches still not changed. Cooling system has been documented, and ready to go for 2 main ones. DMK and RT to determine schedule.

4. Laser safety

RT: July observing run cost 10k$ for spotters.

- If could be possible to reduce spotter numbers to 3. RT will look into this.
- No NOTAM issued this run. However, few aircraft over mountain.

meeting adjourned at 12:00pm.