

2/21/07 Beam Transfer Optics Cleaning Log

A. Bouchez 2/21/07

1. M1a

Very dusty, with some discolored spots where dust had been ablated. Removed mirror, dusted it, and cleaned it with isopropanol. Cleaning appeared successful.

2. M1b

Removed mirror (actually 99.5%/0.5% beamsplitter), installed new mount (Newport U200-A2K), dusted mirror. Hardly needed dusting, as it faces downward.

3. Coude FSM

Very dusty. Dusted with compressed air. Appears OK now.

4. Half-wave plate

Very dusty, with a big gooey fingerprint on one side. Removed rotary stage from Coude bench, dusted, and cleaned by Renu with a mixture of ethanol and acetone. Cleaning appeared successful.

5. Coude window

Moderately dusty, with several large blemishes in AR coating. Attempted unsuccessfully to clean with isopropanol, then replaced it with a spare Newport 20BW20-30AR.14 window. Need to order another spare, and design a new, hermetically sealed mounting plate.

6. Trolley mirror

Inspection still needed.

7. Q1 beamsplitter

Inspection still needed.

8. Boresight mirror

Cleaned by Renu on Feb 5.

9. Top fold mirror

Slightly dusty. Removed and dusted, but could have done it in situ.

10. Diagnostics beamsplitter

Ignored, as it will be replaced tomorrow.

11. Q3 beamsplitter

Very dusty, with some small blemishes in the AR coat. Removed, dusted, and cleaned with Isopropanol. Condition is acceptable for now, but should order a replacement soon.

12. LLT FSM

Very dusty, with some scratches around the edge. Removed the FSM-300 unit and attempted to remove the mirror assembly. 0.05" hex key hole of one of the retaining screws stripped while attempting to remove it. Gave up, dusted, and reinstalled. May need adjustment on the first night of the run.

13. LLT lens

The LLT lens, final fold mirror, and quarter-wave plate were all removed from the LLT as one assembly, in which the lens was cleaned in situ. The lens was found to be moderately dusty on the lens tube side, with some grease marks on external side. Dusted with compressed air, and cleaned external side with isopropanol. Cleaning appeared successful. Note on reinstallation of the lens/mirror/waveplate assembly: need to allow temperature of assembly to equilibrate with LLT before insertion.

14. Final fold mirror

Very dusty. Removed from mount, dusted, and cleaned with isopropanol. Cleaning mostly successful, with a few small blemishes left in coating.

15. Quarter-wave plate

Very dusty, with lint, small bugs, and other debris on the top surface. Burned spots near center of on top surface where dust (or something else) had ablated. Removed rotary stage from assembly, dusted, and cleaned with isopropanol. Cleaning appeared successful.

16. LLT secondary

Slightly dusty, with a small finger print on one side. Dusted and cleaned with isopropanol in situ (with LLT tipped on its side). Cleaning appeared successful.

17. LLT primary

Dusted with compressed air. Request that it be cleaned with CO₂ on 2/26/07.

Recommendations:

- (1) All Coude room optics should be dusted before each observing night. The dust deposition rate in there is really quite astounding.
- (2) Exposed LLT optics, particularly the quarter-wave plate, should be dusted before each observing run (preferably at prime focus)
- (3) The LLT primary should be cleaned with CO₂ prior to each run's installation.
- (4) Complete inspection and cleaning as described here should probably be performed every 6 months.
- (5) We should take another look at the LLT FSM with the stuck, slightly scratched mirror after the Feb. engineering run.