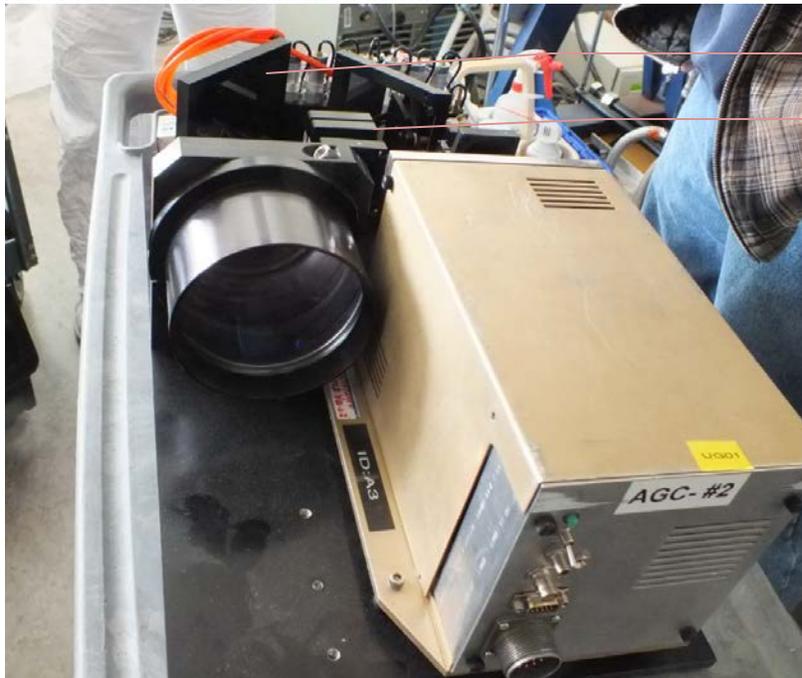


Mt. Hamilton Optics Cleaning Trip

David Hilyard and Brian DuPraw
11/27/12

Cassegrain Guider Camera

The Cassegrain Guider camera was brought into the Gemini room where we had set up our cleaning supplies. All the exposed optics were quite dusty. In addition, light from a high-intensity lamp could be seen through pinholes and scratches on the two 1/4" thick folding mirrors. We measured their dimensions in case the decision is made to replace them... one was 4.0" x 3.0" and the other was 4.625" x 3.5". For the time being, Dave removed them and cleaned them.



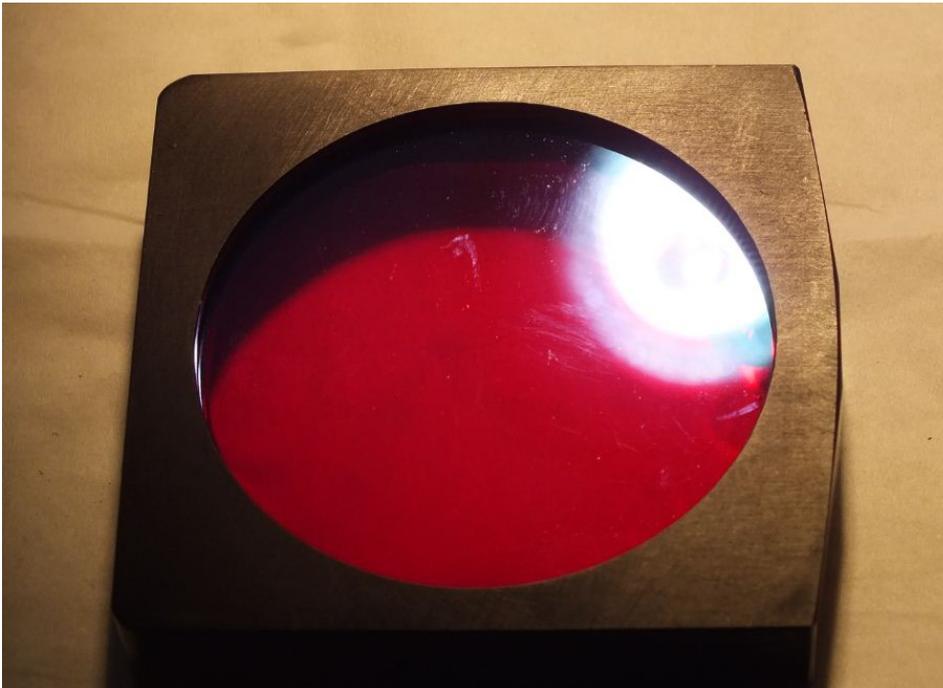
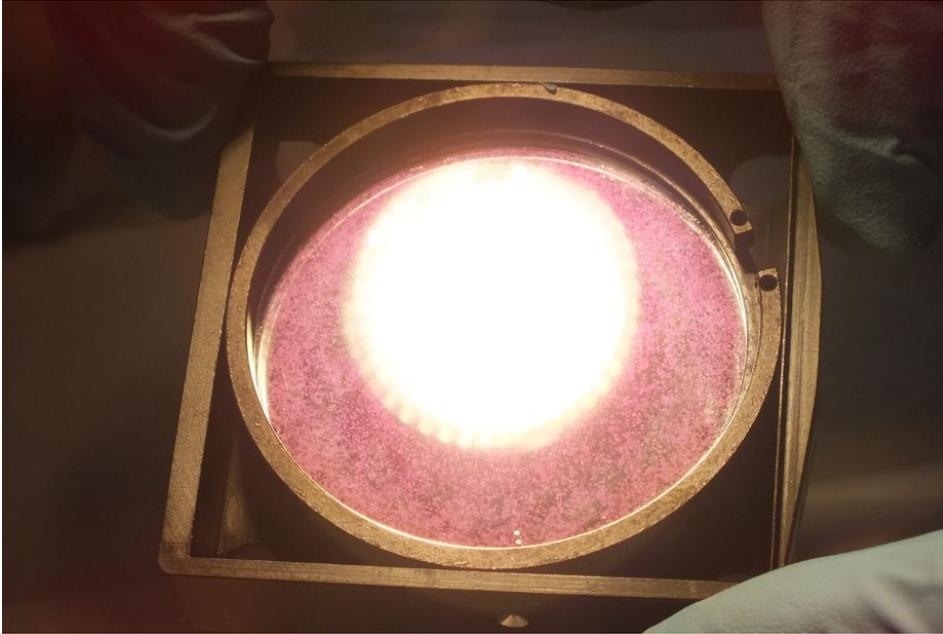
Folding Mirrors

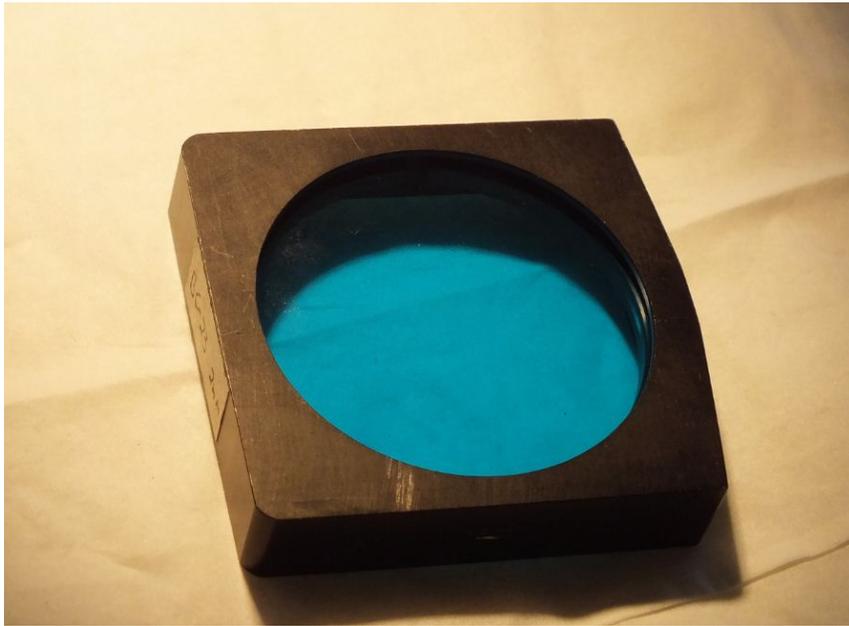
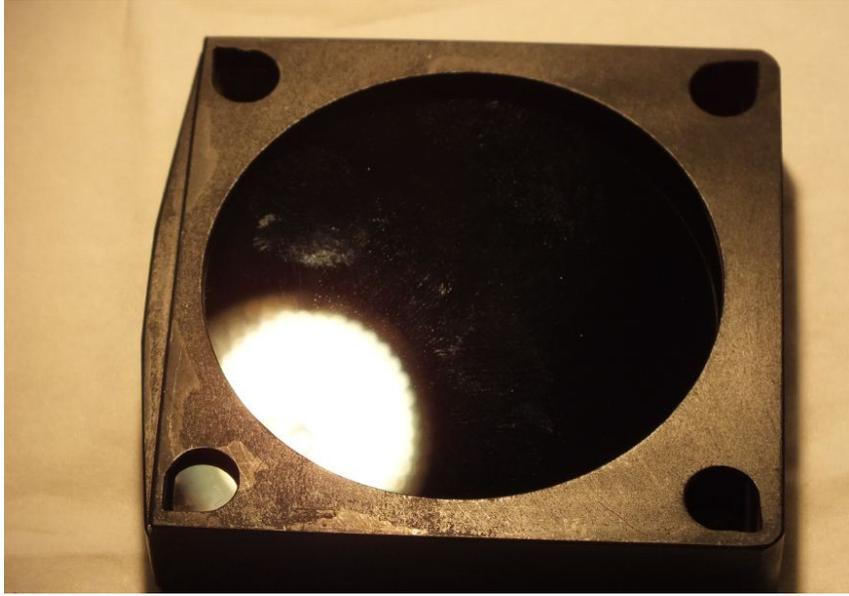
Filters



Backlit scratches

Dave also unscrewed, one at a time, the handful of filters from the holders that flipped them into position and cleaned those, as well. One in particular (4625/100 HES) showed degradation. The others weren't too bad, but each still had one or two lightly scratched areas.





Dave also cleaned the focusing lens on the front of the guider camera and the large lens next to it (see the first photo in this write-up) using acetone. The large lens appeared to have a scuff mark in its center.

Cassegrain Secondary

The 120" telescope's Cassegrain secondary mirror was examined and found to still have a large number of spots in its coating, as well as a few scratches. The surface was not cleanable, although Dave wiped a small area to ascertain that. At least it was found not to sleek easily.



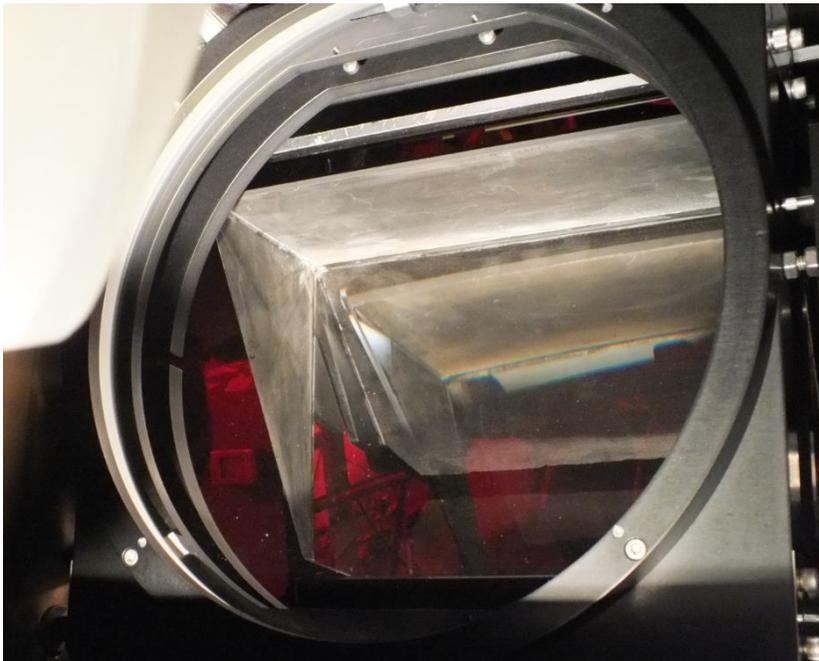
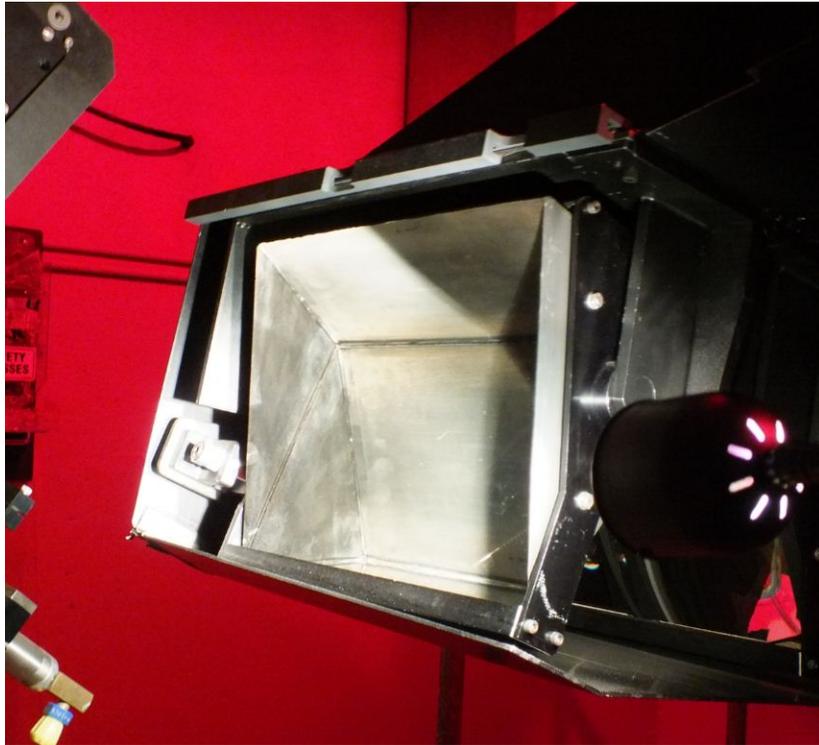
Hamilton Collimator

The Hamilton collimator mirror was examined and found to have a large brown-looking area covering the top third of the optic, in addition to the known bad patch on the right side. When lit from behind we could see pinholes through the brown area.



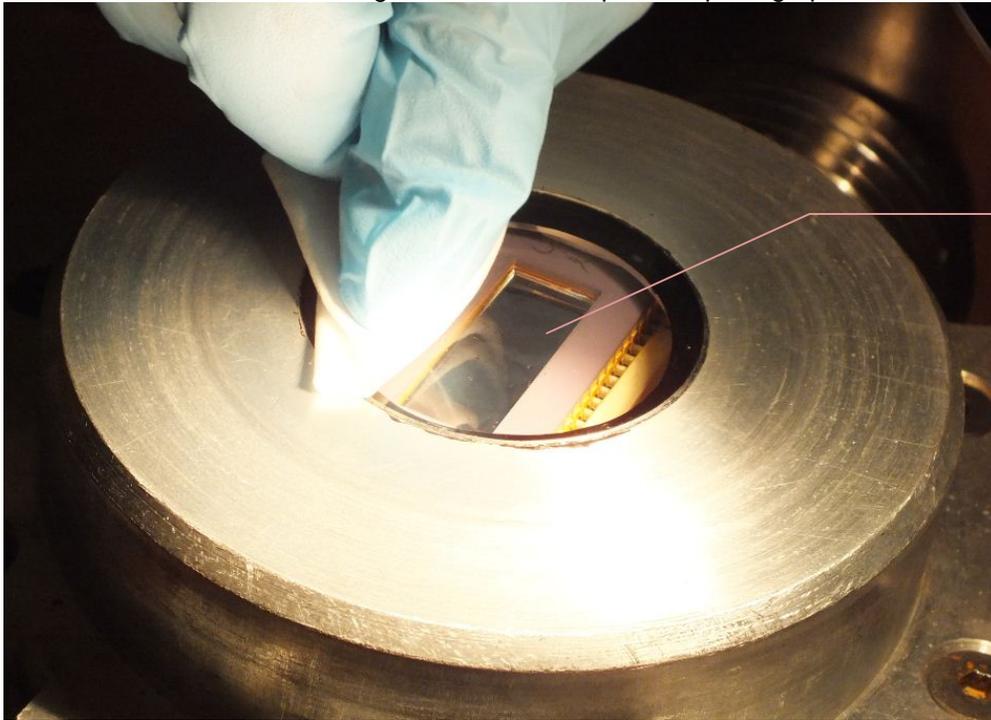
Dave blew the optic off with canned air but decided the coating was too fragile to safely clean. What was surprising was that the bottom part of the optic didn't look too bad, considering we had seen what looked like degradation on a previous trip. It turns out the optic with the degradation on the bottom was a different mirror that had been positioned in front of the Hamilton Collimator at that time (August).

We also examined the prism and the lens in the housing nearby and found they looked good.

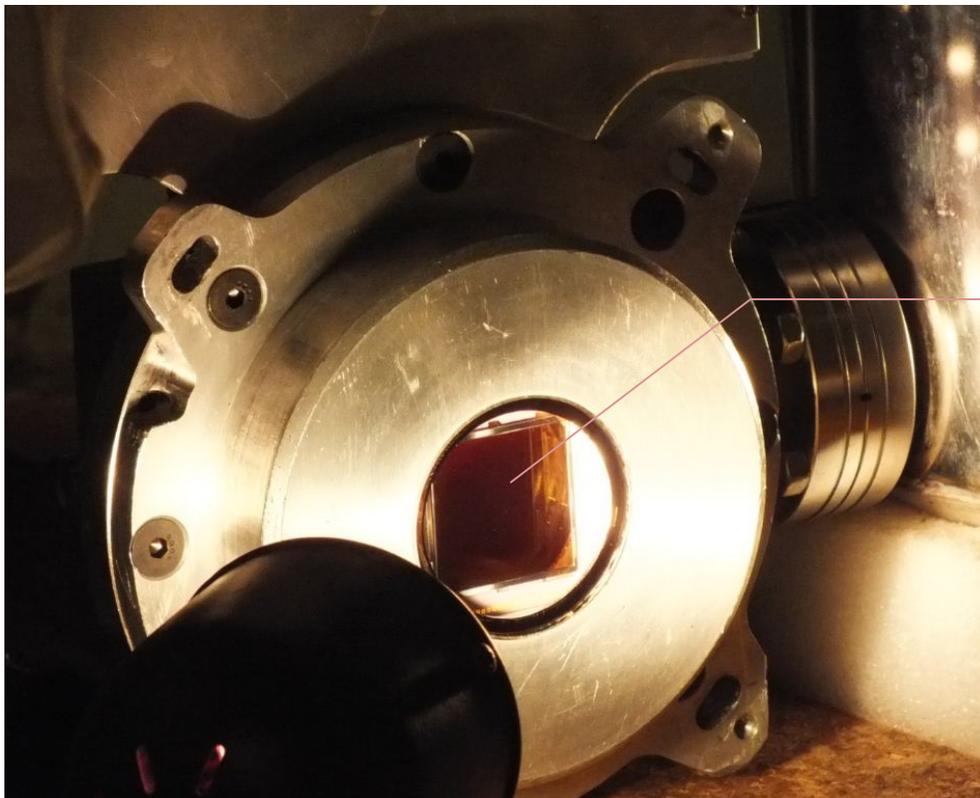


KAST Red and Blue CCDs

The CCDs for the KAST red and blue cameras were in the “nursery.” Dave cleaned their glass covers. The previously-noted stain on the inside of the red CCD’s cover did not appear any worse, but was still there, since it was unreachable for cleaning. It doesn’t show up well in photographs.



Red CCD



Blue CCD

KAST Gratings and Dichroic Filters

We had been asked to measure the dimensions of the KAST gratings and filters, for eventual replacement. I didn't take any new photos, but these old ones are included for a visual aid:



Dichroics (optic): 2.5" x 4.4"

Gratings:

Optic: 4.4" x 5.3"

Holder ID: 4.44" x 5.38"

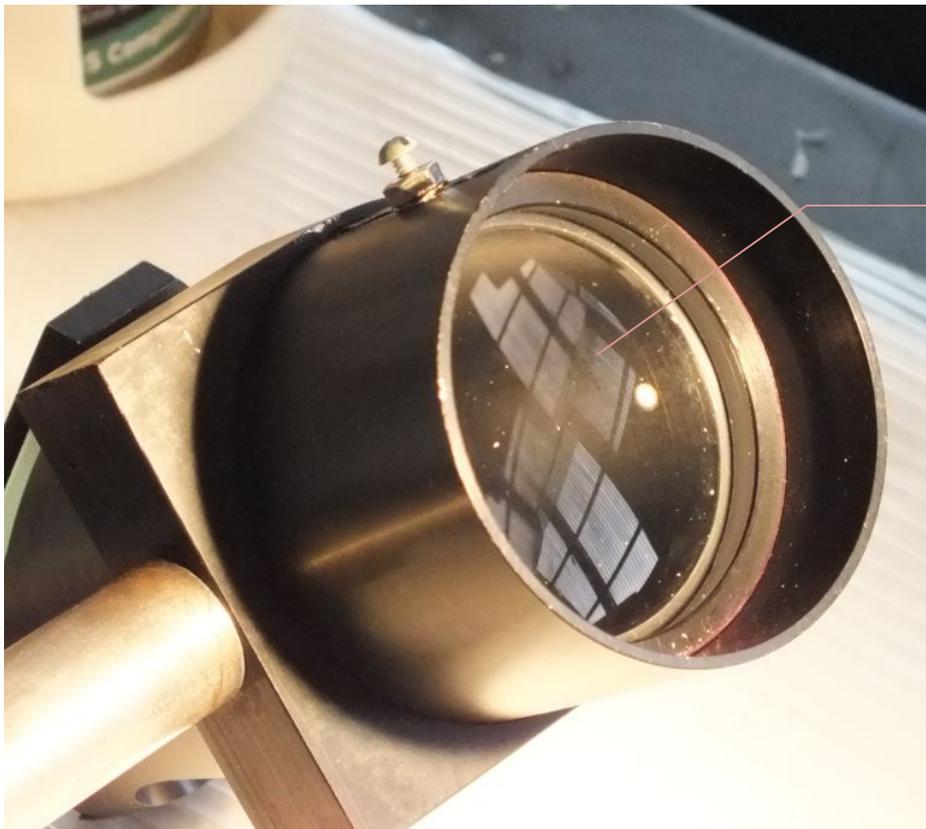
Cassegraine Diagonal Mirror

This mirror was cleaned on a recent trip, including the periscope attached to it. This time we just blew it off and measured it in case it ever gets replaced. It was $\frac{1}{2}$ " thick and 12.0" x 13.375" in size. Oh yes, and it has a large oval-shaped hole in it, so is not an off-the-shelf item. There were two thick lines in the middle of the mirror that had been noted on a previous trip.





Lines on mirror surface



Periscope Lens

120" Primary

The 120" primary did not look too bad. There was one oil spot of note, visible in the picture below, that was too far in to reach while standing on the mirror's edge, outside the fence formed by the cover pieces. Unless CO2 can help, it may have to wait until the next time the scaffold is used for a full cleaning.



Oil Spot

CAT Primary

The Coude Auxiliary telescope's up-facing primary is almost always dusty, and this trip was no exception. Dave cleaned it with sprayed on de-ionized water, followed by ethanol or acetone.



Dome Samples

Here are some pictures of the upward-facing 2" Zerodur disks undergoing long-term environmental testing in the dome. The downward-facing ones were not photographed because, without removing the rack the angle makes it difficult to get a decent shot.



