	(V)	(H)
45	-17	
50	-6	
55	-6	
60	-10	
65	-26	

V-null near 53°

grid wire were vertical within 1°.

Note ($V_{null\_relative} * 2 = HWP$ so HWP = 6) see Aug. 30 2006 memo

We've been having some hwp problems.
lost 3 files

The problem is when hwp moves from 50 to 72.5 or 72.5 to 95.0 the angle updates in PM-4 but not IRC nor analog output. So this means encoder + PM-4 know where hwp is but EDAS does not. Sometimes the subsequent move also acts as if the angle in EDAS brain has not been updated at all since the original failure.

June 19th hwp perfect with one more left to go

August 7th, 2007

Hiroko, Giles working on setup.

HWP box ~~works~~ works w/ shareClient. This is first test of Megan's new box.

Moves are good to 0.2°

This testing was done in lounge.

Lined up mark as shown on p. 11 of the NB.

We got 96.1°.

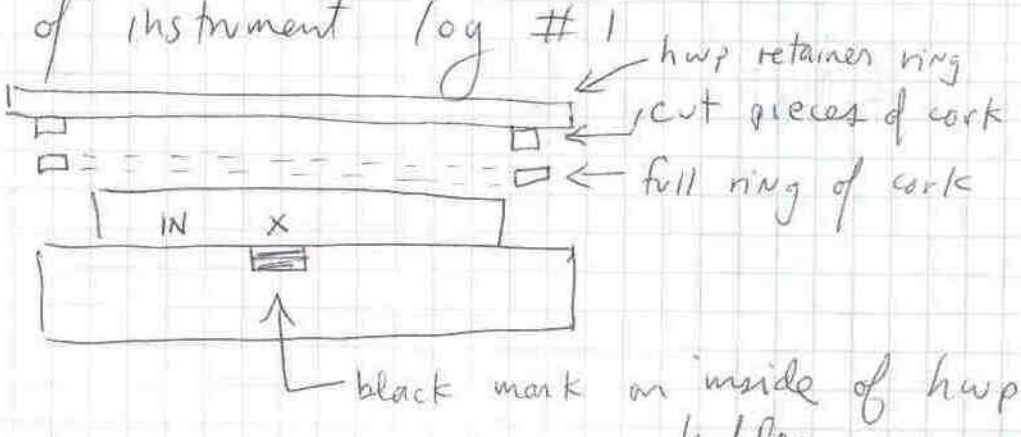
Should be 96°.

Checked pos'n of hwp wrt marks on crystal & on rotor it fits in to. Alignment is good to one degree.

→ Installed 350 μm hwp as on page 181 of instrument log # 1. But did not use the double-stick tape this time (except in one spot)

→ Put a blue "V" mark pointing at the biggest non-uniformity in the a/r coat.

→ For reference, here is the picture from p. 181 of instrument log # 1



→ exit aperture was in wooden box, should always be in SMAKC II drawer

→ box 1 was installed when we arrived. It is level to about .02°. This is excellent!

→ box 3 installed → level to .05° (front tipped down, a bit off side to side also)

→ put box 4 in for wind protection of X-grid.

→ tested hwp motion w/ SMART installed using new ethernet. It works.

→ installed everything outside - it works

Aug. 8th, 2007

- had to tighten wires ~~in~~ on EDAS analog output, as signals saved were weird (hump + skitsu, that is)
- also we plugged into a different outlet (not one used by A/D)
- what was weird about this problem is that DVM gave correct signals.
- Chopper ~~not~~ working and Sony correctly measures the throw. (midafternoon)

aligning — assuming V on left

exit aperture

V
2/3 high
1/8 ~~right~~ left

H
2/3 high
1/8 ~~right~~ ~~left~~

entrance aperture

V
1/2 high
1/3 ~~left~~ right

H
1/3 high
1/4 right

avg V 2/3 high
avg H 1/2 high

worst case parallelism 1/3 pix

---

entrance ap. 39651
(lo gain)
exit ap. 39654 (60 sec. SMARC-II int.)

NOTE: to test Lamy's code need to ~~have~~ ~~be~~ type "track" and this will track the AZ-EL.

You can see short leds, chopper efficency, etc.

	V	H
80	-62	-129
85	-38	-152
90	-18	-165
95	-9	-173
100	-10	-169
105	~~-160~~ -25	-160
110	-47	-142

gnd wires vertical to within 1°

night of Aug. 11th

Noticed weird leveling problem.
also right half of bolo. level array
is drifting erratically
but the lower display is NOT, even
on higher gain. It just shows sky
noise. My memory is that this
is the right one.

Any way Q and U errors are
~1 x 10^{-4} as always. This was
about twice as big for DG Tau
(but bolo gain was bigger as sky
was ~~quite~~ more transparent

Grid test
wires Vertical @ exit aperture
nylon @ entrance aperture
60 sec. integrations @ ea. Hwp
HI gain

File	Hwp	V	H
039853	50	-165	12
54	60	-153	-4.6
55	70	-132	-7.1
56	80	-56	-2.3
57	90	-18.4	-4.7
58	100	+4.8	-4.1
59	110	+6.1	-3.5
60	120	-112	-16
61	130	-168	-2
62	50	-142	+0
	85	-43	
no file taken no Hwp in 10 sec	40	-19	
	95	-10	
	100	-16	
	105	-28	

Rotate hwp so that $\vec{J}$ points to SHARC-II; Angle goes up.

night of Aug. 12th

the weird erratic drifts are gone!

HWP behavior:

offset is just under 80

50 → 80

this has been going on for a while.

It started after I did preamp upgrade on night 3.

I have a recollection of stressing the $NC5 with the ladder.

A more serious problem which has caused us to lose 2 files out of about 20 is the same as Tony saw last run. Repeating angles. This time it's followed by an extra-long move, but for "file 14" in June it was not.

My theory is that for file 14 it immediately ~~recovered~~ recovered from the PMT-EDAS communication problem, but for tonight's failure the problem persisted for the next read, so it over-shot

END RUN

Nov. 3, 2007 JV. HS. MH

040493 test HWP 5.6 45 sec / HWP, 4 steps, start = 50°

SHARC - II alignment

@ entrance aperture ~ $\frac{1}{2}$ pix up
$\frac{1}{3}$ - $\frac{1}{4}$ pix L

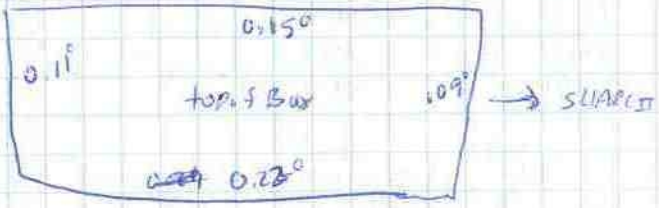
file 040494 0.3 pix R = +0.3 R
0.4 pix U = −0.4 D
} units of arcsec

@ exit aperture $\frac{1}{3}$ pix up
$\frac{1}{3}$ - $\frac{1}{4}$ L

file 040495 0.1 pix R = +0.1 R
0.4 pix U = −0.4 D
} units of arcsec
1 pix = 2.425 arcsec

parallelism = 0.2 L-R
0 U-D

Box 4 leveling



Laser check - laser centered ~ 1 aperture radius from aperture center @ nasmyth exit

SHARP alignment

exit aperture V array 0 L
3/4 pix U
file 040496 0.28 R
0.8 pix U
alignment = 0.02 pix L-R
0.10 pix U-D

H array 1/3 pix L
3/4 pix U
0.36 pix R
0.9 pix U

entrance aperture: V 3/4 pix U
0 pix L
file = 040497 0.8 pix U
0 R
alignment = 0.2 pix U-D
0.1 pix L-R

H 1 pix U
1/4 pix L
1 pix U
0.13 pix R
parallelism = (0.1 pix UD H)(0 L-R V)
(0.1 pix L-R H)(0.28 L-R V)

Five hole aperture plate @ exit aperture

040498 – 45 sec. integration
99 – 180

HWP angle check — rough check of $V_{max} \sim 95°$ good

1/16 inch nylon on SHARC-II window

Files 040500 – 09 — 60 sec / HWP, 10° steps per file

040510 — single file @ HWP = 50°

040511 — 120 sec / HWP, ~~20° steps per file~~ HWP = ~~50°~~ 70°

040512

	H	V
80	-140	-59
85	-156	-47
90	-161	(-32)
95	(-164)	-37
100	-161	-49
105	-151	-35
110	-142	-56

all measurements above – ice on SHARC-II window

wipe ~~frost~~ off ice

040513 — 60 sec. int. HWP = 70° gun h. 1/16" nylon on SHARC-II

040514 – 18 — 60 sec. int. start HWP = 50°, 20° steps

Remove Nylon

File	HWP angle	H	V	H-V	H+V
040519	50	~~-~~	-227		
20	60	-47	-209		
21	70	-99	-154		
22	80	-149	-82		
23	90	-187	-31	156	218
24	100	-183	-07		
25	110	-154	-74		
26	120	-100	-145		
27	130	-52	-204		
28	140	-28	-225		
29	50	-29	-224		

hwp angle tilt, grids vertical

-143	15	040563	50
-175		040564	60
		040565	60
-134		040566	70
-90	-120	040567	80
-27	-156	040568	90
20	-178	040569	100
-40	-115	040570	110
-120	-80	040571	120
-140	-40	040572	130
-193	-19	040573	140

these are not very accurate!

(2) Was not consistent w/ pixel readings

Begin Dec. 2007 Run

Dec. 17, Giles, Ed, Steve

installing boxes 2, 3, 4

removed Zspec rails w/ Steve

Box 1 level to ±.1°

Installed boxes 2 & 3 ; Ed & Giles

Installed cabling ; HWP works from client

-lunch-

Strained relieved cabling & hooked up heaters

(Q:) can run server w/ SHARC-II off?
how to proceed?

set to fixed az and el.

take a SHARP_single_file 040855

chop throw = 120. Not registering the azoff

hwp moving fine - all angles good
looked at the data. hwp angles are fine
NO OFFSET
note: to run John's IDL command
"readshare" you have to ssh
sharp@pu00.

You can't su, as the permissions are
wrong.

Also, have to analyze data on Kilauea
since IDL licence on pu00 is a
demo only
started vip daemon and now ~~tel~~ telescope
is nodding.
left -60
right +60

alignment mark @ 96.3°. Good. ~~Set it~~
(see p. 11)

Did 5 perfect cycles by hand. (±0.1°)
The moves by computer had one -4
(on return to zero) but the angle seemed
fine. (a timing thing?)

Sharc-ii alignment

To gain

exit aperture

-330	-370
-380	-420

Balanced to 15%. Excellent

Note: I used Bolometer Array

Signals in adjacent pixels ~ -100

entrance aperture

-380	-420
-400	-410

Balanced to 10% Excellent

* Signal in adjacent pixels ~ -115

SHARP alignment

entrance aperture

(V)	(H)
$\frac{1}{2}$ pixel Right	perfect
$\frac{3}{4}$ pixel High	1 pixel high

signal ~~~220~~ ~220 for (H) where its split 4 ways
Forgot to note signals in "adjacent pixels"

exit aperture

(V)	(H)
perfect L/R	perfect
$\frac{3}{4}$ pixel high	1 pixel high

signals lower ~~than~~; about -160

outlying pixels ~ -60

parallelism $\frac{1}{2}$ pixel worst case
H-V $\frac{1}{4}$ pixel in each direction

But, overall we are high.

18 DEC 2007

SHARP ALIGNMENT

ENTRANCE APERTURE

(V)	(H)
1/4 PIXEL RIGHT	PERFECT 4/R
3/4 PIXEL HIGH	3/4 PIXEL HIGH

EXIT APERTURE

(V)	(H)
PERFECT 4/R	PERFECT 4/R
3/4 PIXEL HIGH	1/2 PIXEL HIGH

FILE 040857 → INT. ON EXIT APERTURE
TC SEC
EJ8 back to entrance

FILE 040858 → INTER ON ENTRANCE APERTURE

Note: laptop froze up so we used version that doesn't communicate w/ fellrcope

NOTE; we had to put "s" in "https"

NOTE: color map thing → you have to do this → it wakes up on an "autorange"

NOTE: AFTER TIGHTENING SCREWS, NO CHANGE MORE THAN 1/8 PIXEL

29 Dec 2007 John Hinkle

Grid Test (at 350 μm) 2 yields parallel

wires vertical at exit aperture

No nylon sheet

File	HWP	V (8.26)	H (6.5)
~~40912~~	~~85~~	-28	-139
	90	-12	-150
	95	-2	-153
	100	-3	-150
	105	-17	-142
	110	-37	-125

Throughput + Vignetting test

Box 3 and 4 off

1/16-inch nylon on SHARC-II down entrance, to guard cold load @ entrance aperture

no aperture plate

~~HWP=50~~

File no	Filter	
40912	350	
40913	450	60 sec files,
~~40914~~	~~850~~	10 sec manual chop w/ hot load

Box 3 or w/ HWP=450, Box 4 off

cold load @ entrance aperture, no aperture plate, 10 gain

File	Filter	
		~~HWP=50~~
~~450~~ ~~40914~~ 40915	450	60 sec files
~~850~~ 40916	350	~10 sec manual chop w/ hot load