

8 Jan (40 test directory) TG, MR

Response tests. 16 frames at various  $\nu$  in high resolution mode looking at room.

hisen. 6000	1.4" slit, 2s int	gain = 50	$\nu = 1350$
.6001	may be at edge of filter.	order = 7	$\nu = 1250$
6002	$\nu = 1250 \text{ cm}^{-1}$	peak CVF.	1.4" slit
6003	$\nu = 1150 \text{ cm}^{-1}$	filter	
6004	$\nu = 1030 \text{ cm}^{-1}$	(not CVF), 1 sec.	Gain = 50
6005	$\nu = 1030 \text{ cm}^{-1}$	2 sec.	
6006	$\nu = 950$	1 sec	Gain = 50
6007	$\nu = 850$	Gain = 25	
6008	$\nu = 750$		
9	$\nu = 550$	2" slit	Gain of 50 comes close to AD range
10	$\nu = 510$	(500 would be $72^\circ$ )	
11	420	( $49^\circ$ echelle)	3" slit

change to medium mode. Bias - 3.8 V. Detector cooled.

hisen. 6012	$\nu = 420$	.11 sec integ.	8 nframe
13	$\nu = 510$	.22	2" slit
14	$\nu = 550$	.17	
15	$\nu = 750$	.17	1.4" slit streak near center
16	$\nu = 850$	.11 sec (fastest in opti stare 1)	$\approx 40,000$ ADU per echelle = $48^\circ$
17	950	0.28 s	
18	1030	near edge of filter	
medsen. 6019	1150	0.4 s	
20	1260	filter	
21	1250	filter	
22	1350	filter	

put detector bias back to 4V

04 Oct. 2004 UT

Set-up @ IRTF MSR, DJ, SH

In hi-res w/ gas cell only filter w/  $\text{C}_2\text{H}_2$   
/data/oct04/best

focus. 0001  $\text{C}_2\text{H}_2$  @ branch 729.15 slit, nominal focus  
 .0002 same after tipping dewar 2"  
 .0003 2 turns in on all 3 screws on echelon  
 .0004 2 turns out from zero on all 3.  
 looks like best focus is at nominal setting  
 move back to nominal.  
 .0005 check focus @ nominal (0)

C2H2. 0006 0.8" slit  
 .0007 1.0" slit  
 .0008 1.4" slit  
 .0009 2.1" slit  
 .0010 3.1" slit  
 go to 1318  $\text{C}_2\text{H}_2$  overex  
 C2H2. 0011 0.8" slit  
 .0012 1.0" slit  
 .0013 1.4" slit  
 .0014 2.1" slit  
 .0015 3.1" slit

go to 1844  $\text{H}_2\text{O}$  (No)

no. 0016 1" 3pix (140) slit 4.6" (CVF)  
 .0017 1.4" 4pix (80) slit 5.2" 59.46°

go to 777  $\text{cm}^{-1}$   $\text{H}_2\text{O}$  not seeing any lines  
 order overlap until filter at 299

go to 592.5

H2O. 0018 2.8" slit  
 0019 1.0" slit  
 0020 1.4" slit  
 0021 2.1" slit  
 0022 3.1" slit



go to 546.3 cm<sup>-1</sup>

h20.0023	0.8"	slit
.0024	1.0"	
.0025	1.4"	
.0026	2.1"	
.0027	3.1"	

go to 418.5 cm<sup>-1</sup>

h20.0028	3.1"	slit
.0029	2.1"	
.0030	1.4"	
.0031	1.0"	
.0032	0.9"	

go to 397.3 cm<sup>-1</sup>

h20.0033	3.1"	slit
.0034	2.1"	
.0035	1.4"	
.0036	1.0"	
.0037	0.8"	

redo @ 1.5° slit change

h20.0038	0.8"	(1 mod) ops (1.5° slit)
.0039	0.9"	(8 mod)
.0040	1.0"	
.0041	1.4"	
.0042	2.1"	
.0043	3.1"	

strange fringing moving by 1.5°



go to 1244 cm<sup>-1</sup>

h20.0044	0.8"	(IT TIME = 12 s)
.0045	1.0"	
.0046	1.4"	
.0047	2.1"	
.0048	3.1"	

go to 1967 cm<sup>-1</sup>

h20.0049	1.0"	(4.6")	140
.0050	1.0"	(5.7")	80

Room

go to 2000 cm<sup>-1</sup>

room.0051  
mirror.0052  
room.0053

room  
mirror

(NN00=8, IT TIME = 8 sec)  
(3rd, mod CVF?)  
(redo room)

1900 cm<sup>-1</sup>

room.0054  
mirror.0055

room  
mirror

(peaked CVF by 1°)

1700 cm<sup>-1</sup>

room.0056  
mirror.0057

room  
mirror

(peaked CVF by 1°)

1500

room.0058  
mirror.0059

room  
mirror

peaked CVF 1.5°  
(maybe called "room")

1300

room.0060  
mirror.0061

room  
mirror

peaked CVF No longer in CVF

1200

room.0062  
mirror.0063

room  
mirror

mirror show prominent light leak

1100

room.0064  
mirror.0065

room  
mirror

1000

room.0066  
mirror.0067

room  
mirror

(IT TIME = 2 sec)

900

room.0068  
mirror.0069

room  
mirror

(Misnamed room)

800

room.0070  
mirror.0071

room  
mirror

wave effect on edge of order - bright

725

room.0072  
" 0073  
mirror.0074

room  
" (NN00)  
(8 NN10)  
(called "room")

redo

550

room.0075  
mirror.0076

room  
mirror

(low slit @ 240)  
wave light effect on mirror  
used wavy filter setting



500 cm<sup>-1</sup> New to 1000  
 room. 0079  
 mirror. 0079 (called room)

450  
 440 cm<sup>-1</sup>  
 room. 0080

440 cm<sup>-1</sup>  
 room. 0079  
 mirror. 0080 (called room)

2400 500 cm<sup>-1</sup>  
 room. 0081  
 mirror. 0082 (called room)

Also 2400 550 cm<sup>-1</sup>  
 mirror. 0083  
 room. 0084

400 cm<sup>-1</sup>  
 room. 0085  
 mirror. 0086

Change to ~~700~~ 740 cm<sup>-1</sup> to check new chopper wheel.

black. 0087	stainless	
shiny. 0088	"	flat
.0089	"	20" <del>convex</del> concave
.0090	"	20" convex
91	"	3" concave
black. 0092	aluminum	black
shiny. 0093	"	flat
94	"	20" concave
95	"	20" convex
96	"	3" concave

RESO	SIME	MIRROR/ROOM	OBSERVATIONS
1300	cm <sup>-1</sup>	room. 0097 mirror. 0098	(called "room") IT TIME = 5 ~ (36,000 obs)
1200	cm <sup>-1</sup>	room. 0099 mirror. 0100	(really called mirror!) IT TIME = 5 (~34,000 obs)
1100	cm <sup>-1</sup>	room. 0101 mirror. 0102	--- What! --- light leak in mirror (2 <sup>nd</sup> order) IT TIME = 1 sec.
800	cm <sup>-1</sup>	room. 0103 mirror. 0104	(~50,000 obs) IT TIME = 1 sec ~ 34,000 obs

Go to hi-lo mode at 729 cm<sup>-1</sup>  
 Tipped x-d paraboloid diagonal to center on detector.

242.0105

Check out 925 cm<sup>-1</sup> (Henry's Venus) in hi-lo. see if pipe can handle it. Using 1.4" x 2.1" slit  
 hilo. 0106



Calte lens

Oct 5, 2004

SH, BG, TG, HR, AB, GH, MA, DG

$\tau = 0.121$

pupil mode before dinner.

pup. 1001  
pup. 1002 after dinner  
pup. 1003 after collimation

change tilt of hexpod  
using hmov  $\pm 0.0133$   
V 0.0070  
u 0.0140

0.0140 old u  
0.0088 old v

Go to 797 for sky power spectrum. Use a fake scan mode to just get access to frames every 2 seconds.

$\tau = 0.16$  sky. 1004 no data. operator error  
sky. 1005 at zenith

go to Alpha Her  
determine zero sight  
focus:  $\approx -5.0$

aher. 1006 peaking early. good at pair 6.  
falling off star  
vignetting by fold mirror clip.

KAMARA CONNECTION PROBLEM  
(hook off front plate to check connection)  
lights up 7 instead of 6 for IC mirror

~~NO ADJUSTMENTS MADE~~; fold mirror clip  
seems ok.

Go to  $\beta$  Peg at 2027  $\text{cm}^{-1}$  for Claudia  
 $z = -4.6$ . Fowler mode. peaked CVF

bpeg. 1007

Go to NGC 7538 IRS 1

n7538. 1008  
" 1009

move 5.4" W 8" N  
to find it. 0, -290 for guide star

BUGGER OF A TARGET !

n7538. 1010

.1011

11 .1012

.1013

.1014

.1015

(rate  $\approx 53$  Hz)

aand. 1016

.1017

.1018

.1019

.1020

.1021

.1022

.1023

seeing is a problem

$\tau = .11$

Change to 2045  $\text{cm}^{-1}$  Fe II @ 2045.3507  $\text{cm}^{-1}$   
Go to  $\beta$  Peg

bpeg. 1024 offset guiding. seeing is bad.  
.1025 quick look died early

change to 1975  $\text{cm}^{-1}$  Fe II @ 1975.3672  $\text{cm}^{-1}$   
No atmospheric comparison can match  $\beta$  Peg.

bpeg. 1026 not great at start  
.1027 seeing

$T = 275$

Go to  $\alpha$  And.

aand. 1028

.1029

1030

1031

seeing still poor

Go to  $\alpha$  Tau

atau. 1032

.1033

glitch pair 13



Go to  $\alpha$  Aur. May be atmos calibrator

aur. 1034  
.1035  
.1036

$Z=0.1$  Go to  $\alpha$  Ori.

ori. 1037 pair 2 is strange  
move 0.3" N during pair 4  
pair 5 is good

Changing wave#  $\rightarrow 407.85 \text{ cm}^{-1}$   
focus = -5.6

want found atm line at 405.5 to check  
ori. 1038 we want definite 4 orders  
.1039

Go to Nemesis for <sup>atmospheric</sup> flat calibration

nem. 1040 peaking pair 1-4 0.7\* mostly garbage

Nemesis wasn't good enough. Try BN.

bn. 1041 not much better than Nemesis  
1<sup>st</sup> derivative bounce

Try Mira

ocet. 1042 slightly better than  $\alpha$  Ori. see line.  
drifting N - pair 12-13  
Ended with error from sound.

.1043 Guiding at start

Change to  $557.5 \text{ cm}^{-1}$ .

ocet. 1044  $Z = -5.5$  echelon paraboloid has slipped some.

$Z=0.09$  Back to  $\alpha$  Ori.

ori. 1045 Move S during pair 2. skip pair 2

Go to Meen. shorter frametime. nodding 300" N.  
meen. 1046

Go to 119 Tau.  
119 tau. 1047

Back to  $\alpha$  Ori. peaking up through pair 6. see line  
ori. 1048  
49

Reset for  $954 \text{ cm}^{-1}$  go to Acrylonitrile ( $\beta$ -gem) gain=50  
1.4" slit  $\rightarrow$  Acrylonitrile ( $\text{C}_2\text{H}_3\text{CN}$ ) focus=-4.7  
9 orders going up to  $957.5 \text{ cm}^{-1}$  order

bgem. 1050

bgem. 1051

send scan type 8 podranis  
InstTime=2 nsum=8 mod=8  
ganged on pair 2  
a little low on the slit

Titan

tit. 1052  
.1053  
.1054  
.1055  
.1056  
.1057

naum=2 nnot=6 in case need to guide to find it  
nsum=4  
very good file  
Temp = 274.3

Venus  $925 \text{ cm}^{-1}$   
Ven. 1058

$918.5 \text{ cm}^{-1}$   $\text{H}_2\text{O}$  line on order 4  
using Matt's "venus flat" (20 blades & 1 strip)  
1 scan 30" @ 0.7" steps = 43 steps  
2 scans

sw. fold per  
to 0.5 per  
nsum=4  
1059  
1060  
1061  
1062

~~BAD~~ (forgot to pull mirror)  
possibly BAD flat, good data



Stepsizes are not set... 06-0.8"  
switch back to 150/150 = 2

.1063

.1064

.1065

.1066

.1067

.1068

.1069

.1070

.1071

.1072

.1073

done

← Slipped a lot to the south ~4"

all more N & W rate

drifted S again ~4"

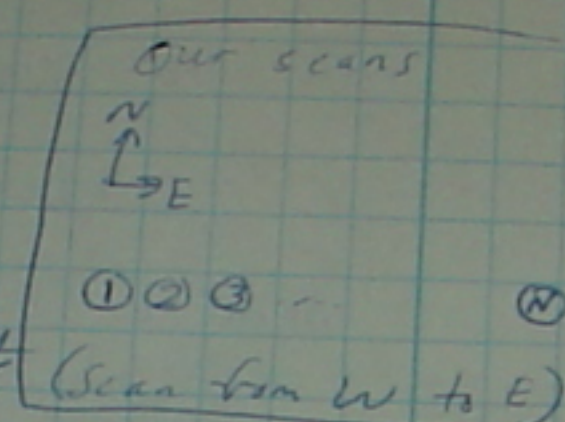
drifted S again ~2.5"

rust & add a bottle me N8

W rate

drifted a tiny bit south (~2.0")

for the night (morning)





October 6 2004

SH, BE, TG, HR, AB, EL, MA, DL

Set up on 557 cm<sup>-1</sup> FeII Go to  $\alpha$  Her.

$\tau \sim 0.06$   
T = 5°C

aher. 2001 offset guiding  
.2002  
.2003

signal looks good

Go to  $\beta$  Peg

bpeg. 2004 offset guiding  
2005  
2006  
2007

Go to NML Cyg for atmospheric  
nmlcyg. 2008

go to 416 cm<sup>-1</sup>  
changed focus z = -5.2  
T = 277 K

nmlcyg. 2009 ended @ 10 pairs  
aher. 2010 (signal ~ 40 stars)  
.2011  
.2012

change to 407  
nmlcyg. 2013 stopped after 1

To calibrate wavelength, need to move <sup>echelle</sup> to see 414.6730 cm<sup>-1</sup>  
(in bottom order, this atmospheric is 10 away from line of interest. each order is  $\sim 0.125^\circ$  on the echelle.)

Centered at 413.5 cm<sup>-1</sup>

nmlcyg. 2014

Move by ~~1~~<sup>+0.95</sup> degree  
nmlcyg. 2015



going to beta Peg (same wave)

bpeg. 2016  
2017  
2018  
2019  
2020

800V-E V3ALE

Change to 1872.5  $z = -4.3$   $\tau = 0.06$   $T = 3.5$   
Fiber mode.

bpeg. 2021 only positive beam  
2022 mostly ok stopped after 10 pairs  
2023

bpeg. 2024 fast compared to bpeg.  
peaking up

Change to 816 for H<sub>2</sub> J=4-2.  $\tau = 0.060$   
Gain=50  $z = -4.7$   
shift echelon so 814.0408 near edge

bpeg. 2025 looks like x-d chamber a little off

Go to ~~beta~~ BD +24 238. No continuum expected.  
Found guidestar. recentered on bore sight. set bore sight.  
on  $\beta$  Peg.

bd+24. 2026 Looks like digitization noise  
2027 chopper in wrong position. junk

Check sky level and black. Change to 25 Gain and 165 s

bd+24. 2028 still some systematic noise in diffs

Go to Mira for bore sight check

ocet. 2029 stopped after 8 pairs.  $< 0.5''$

Go to 49 Cet.

49 cet. 2030 object mislabeled. looks good <sup>on TV</sup> after done  
2031 0.4" E 0.5" S to move onto crosshair

Back to 0 cet. Bore sight was off by 0.4" E 0.4" N  
Change nod to 32" N. Focus looks good.  
ocet. 2032 stopped after 7.

Back to 49 Cet Guide star @ -48, -293

49 cet. 2033 off by 0.4" W 0" N at end  
2034 right on.

Go to RZ Ari for bore sight. Move 0.7" N, 0.3" E

$z = 0.06$  rzari. 2035 offset guiding

Go to Lkha 264. offset guide star @ 244, -36

Lkha 264. 2036 0.3" E 0.5" S  
2037 right on

Go to Capella 0.6" E off.

caur. 2038 stopped after 8

Change to 1246 cm<sup>-1</sup>. Peak CVF.  $z = -4.5$   $T = 2.8^\circ C$

caur. 2039

Go to T Tau guide \* @ 107, -293

ttau. 2040

2041

2042

2043

1<sup>st</sup> deriv bounce in pair 7. Low on slit.



Go to  $\alpha$  Ori and switch to  $1875 \text{ cm}^{-1}$   
 $z = -4.5$ , Peak C/F

aori. 2044  
. 2045

Go to  $\beta$  Ori for indicator of atmosphere, offset guiding

ber. 2046 only 8  
. 2047

Change to  $415.5$  for Fe I ( $415.99 \text{ cm}^{-1}$ ),  $z = -5.4$   
moved echelon so  $414.6730$  certainly in 1st order.

aori. 2048 pair 6 + 7 likely shifted by guider  
49  
50  
51 glitch ~4

Change to  $413.5$  so  $414.6730$  in last order.

aori. 2052

move echelle by  $0.95$  degrees and integrate. Move echelle another  $-0.03$

aori. 2053  
. 2054 end after 9 pairs

change echelon so line profile comes all the way on.

aori. 2055

move echelle back to atmospheric line

aori. 2056

October 6, 2008  
C<sub>2</sub>H<sub>2</sub> CN  
acrylonitrile

$\beta$ -gem to reset for  $971 \text{ cm}^{-1}$   
bgen. 2057 focus =  $-4.6$   
shifted wafer number  
bgen. 2058 10 orders  
guided on pairs 3 & 4  
. 2059

10 orders  
from  $969.5 \rightarrow \sim 975.5$

Titan

tit. 2060 2 sec int, 2 scans, 16 nodes  
start e pair 12 is good

tit. 2061 2 sec int, 4 scans, 16 nodes  
ended early; nod 15 too close  
increase nod by  $0.5''$

tit. 2062  
tit. 2063  
tit. 2064  
tit. 2065  
tit. 2066  
tit. 2067

guided during pairs 5-8 (but check)

. 2068  
. 2069 slight bounce

reset to high-low  $\delta$  setting for  $951 \text{ cm}^{-1}$  POCF feature  
(want to overlap one order w/ last night)

Venus run venusbleat script for 20 stacks  
do scans 86 pts  $\times 0.7''$  steps  
from  $-306$  in  $0.7''$  E steps  
2 scans per file

ven. 2070  
. 2071

check drift: drifted N  $\approx 2.4''$   
reset  $\delta$  and move W (keep N same)

. 2072  
. 2073  
. 2074

check drift: drifted S  $\approx 4.2''$

ven. 2075  
2076  
2077



check drift. drifted S & W  $\rightarrow \sim 2.6''$   
recenter

ven. 2078  
2079  
2080

check drift drifted a little N (2.4'')

ven. 2081  
2082  
2083

$\leftarrow$  only 1 scan

October 7 2004

MR, SH, DG, TB, HR, BG

Re-aligned cross-hairs + celestron  
alignment looks good now.

moved celestron paraboloid

$T \sim 0.062$   
 $T \sim 6''$

ITIME = 1.5 s  $\rightarrow$  periodic noise (interference) (the)  
"  $< 1$  or 2 seems fine

Noise-3001	STAR	} Measurement of noise @ 1.5 s ITIME	} OPTI STAR 1
3002	NOD		
3003	NOD	ITIME = 1.4 s	
3004	NOD	" = 1.0 s	

3005	NOD	OPTI RDRST	ITIME = 1.5 s
3006	NOD	(Celestron calibration wheel)	

ITIME = 1.4 s  
ITIME = 1.0 s

1.6 s  $\rightarrow$  definitely noise there

1.3 s  $\rightarrow$  no } frequency  $> 1.4$  s

1.2 s  $\rightarrow$  yes }  
ITIME = 1 s ( $\sim 300$  cts)

mic. 3008

go to AUMIC

Guide star @ 23, -293

aumic. 3009

object looks well-centered in  
visual  
 $\rightarrow$  off by 0.3 W

3010

object looks well centered in visual

3011

object well centered

3012

"

3013

"

3014

ca

~~Go to mic~~ Go to T Mic for boresight

Boresight good to  $< 0.5''$

$Z = -4.4$   $T = 4.5$   
 $Z = 0.07$



5:30 AM Back to All Mic

amic. 3015	well centered
.3016	well centered
.3017	"
.3018	"
.3019	"
.3020	"

go to hankburg

ham. 3021 (~180 ds)

go to alpha Lyra

alyr. 3022 (faint max ds ~ 30 ds)

go to A5555

A5553. 3023 Faint, but there.

.3024  
.3025  
.3026

go to beta Psc  
z = -4.6

bpsg. 3027 (cts ~ 270 ds)

T = 277K go to Vega

T = 0.057

vegg. 3028

- fixed calibration wheel alignment  
- turned off camera: sound off bad wheel

go to V1057 Cyg

V1057. 3029

(cts ~ 6-7)  
moved 0.5" S

.3030  
.3031  
.3033  
.3034  
.3035

V1057. 3036

T ~ 0.06 go to VESTA  
T ~ 277K

vesta. 3037	(cts ~ 450)
z = -4.6	
.3038	(~ 40 ds)
.3039	

Vesta done with 1" slit

Go to SVS13. Hard to find. Camera made 11 pm found it -1.5" W 7" N of coordinates in target list. Changed to 1.4" slit. Auto guiding.

SVS13. 3040
.3041
.3042
.3043
.3044
.3045

go to capella

caur. 3046 (cts ~ 150)

go to abaur. 3047
.3048
.3049
.3050

← Mand N 3" pair 3  
Skip 1-4

Temp actually 275.5

alpha CMa

acma. 3051
.3052
.3053
.3054

CH<sub>4</sub> 1st setting ~ 1206-1211 cm<sup>-1</sup>  
1208 cm<sup>-1</sup>

Titan

tit. 3055
.3056
.3057
.3058
.3059

(orders shifted a bit from acma to titan)  
foss 1-7 (hunting for Titan)  
little bounce

seeing some pattern noise



Titan cont.  
t.e. 3060  
.3061  
.3062

15m = 6 16

α-cm  
αcmi. 3063

do 1 set for flux cal  
nsdm = 4 8

rest to 1231.5 CH4 #2 setting

α-cm  
αcmi. 3064

α-cm

αcmi. 3065  
.3066  
.3067  
.3068

Titan

t.e. 3069

(will probably get cirrus soon)

t.e. 3070

bounce

change nod to 0 3.5

t.e. 3071

.3072

.3073

.3074

.3075

lost Titan @ 1-6 good @ 7

.3076

.3077

thin clouds, but keep going

.3078

bounce

.3079

low bounce again

.3080

.3081

.3082

.3083

.3084

← Temperature was off in headers. Should be now. (was of Titan, has shifted)

275.8

October 9 2004

MR, SA, EG, TG, HR, DG,

go to 780.424 cm<sup>-1</sup> [Ne II]

TRIP around loop Titany, no improvement in interference pattern at 1.5 + 1.5

ccyg. 3025

ccyg. 4001 (ITIRK = 1.4)

changing to 4002

shifted etalon ~ 0.25 down

z = -4.2

shifted North a little, afraid about wa off slit in position beam

Nod 30"

g

garbage (cts are 3 or 4 x less than 4001)

(cts ~ 750)

T = 273K  
z = 0.05

go to 7116 G  
can't find it

go back to

ccyg. 4002

nmccyg. 4003

go to 4116 cm<sup>-1</sup> (Fe I)

nmccyg. 4004

(didn't change slit length)

hard to find optimal focus.

z = 0.02

go to AFGL 259

afgl 259. 4005

.4006

.4007

.4008

.4009

(cts ~ 87)

(high on slit)

lots of clouds!

cts: -4 to -150

shifted south some more

go to NCG 7538 (Fe I)

n7538 - 1RS1. 4010

n7538 - 1RS1. 4011

.4012

.4013

shifted down

go to 780.424 cm<sup>-1</sup>

changed focus z = 4.4

Ne [Fe II]

ccyg. 4014

go to 797 cm<sup>-1</sup>

z = -4.7

4015

vesta. 4014

4 nsum clouds

cycle 1







5-04-2004

rem. 4044	nsum = 8	nrod = 12	clouds came in
.4045	nsum = 12	nrod = 8	
.4046	nsum = 24	nrod = 4	T = .07
.4047	nsum = 4	nrod = 24	mon S 0.5"
.4048	= 8	= 12	
.49	12	8	move S 0.5"
.50	24	4	
.51	fake scan		
.52			

Change to 1246 cm<sup>-1</sup> go to Capella. Peak CVF.  
Z = -4.7 T = 2.7 C

aur. 4053 Capella

α-cma  
acma. 4054

Circus ugh!!

acma. 4055  
.4056

greatly pair 5 background still  
varying but signal very high  
really good considering ±25°

.4057

Fit

tit. 4058  
.4059  
.4060  
.4061  
.4062  
.4063  
.4064  
.4065

City 3<sup>rd</sup>  
decent @ 6  
clouds b/d down T = 2.2°C  
T = 2.1°C  
T = 2.0°C

Change Wavenumber 1280 City 4<sup>th</sup>  
tit. 4066 stopped early - change rod  
tit. 4067 ←  
.4068  
.4069 lost guiding during  
T = 1.7°C

set to 1280 = 1

City 4<sup>th</sup>

No more guiding - Sunrise  
tweak e-hill  
tit. 4070 bounia  
.4071  
.4072 " H<sub>2</sub>O varying hugely  
.4073  
.4074  
.4075  
.4076 T = 1.4  
.4077  
.4078  
.4079 - not much worth keeping

Venus scans at 1280 cm<sup>-1</sup>

ven. 4080 - normal flat  
.4081 - venus flat

cut to 1162 cm<sup>-1</sup> ClO

ven. 4082  
.4083  
.4084

What are the lines??

Moon  
ven. 4085 move S a bit  
ven. 4086

same setup as Venus  
setup on east limb  
Scan from 30° E ON  
in -0.7° E ON stars

→ OOPS! it's really the moon!!  
moon. 4087



Oct 9 2004

MR, SH, MB, TG, HR

78.424 B = -4.5  
offset moved: 0.1W  
2.95  
5.7°C  
T = 0.2

WSUM = 4 (off)  
NNOD = 16 (CS ~ 400)  
typed celium parallel  
red used a bunch

W499.5001 shifted N 0.5"

.5002

ragl.5003

pointing check came 1" off  
on way to W495

W499.5004

doing scan of W496

offset = -8E ON  
nod OE SN  
telstep 0.7E ON  
NFRAME = 2  
NNOD = 5

ragl.5005

off by 1.6" (E)

(BRIGHT 7243  
STAR POINTING SQUEEZE)  
3" E offset  
1.5" S

check star came right on

W499.5006

W495.5007

offset +12W ON  
NNOD 5  
telstep 0.7E ON  
nod OE SN  
36 apoints

Not far enough  
ended after 2

W495.5008

offset 6W ON

(Not a check star  
moved 1" E at END)

Not quite off of [N2E] emission

.5009

has to stay at 6W, ON offset  
offset 4W ON  
42 apoint 50 apoints

(moved 1.2" E  
0.9" S  
@ end)

W495.5010

Emission did around 90 apoints  
DRIFTING EAST MAY HAVE TO  
ADJUST / CROSS-CORRELATE  
SCANS

NFRAME =  
NPOINTS = 45  
offset = -6E 4N

MORE GUIDE STAR  
0.6" S  
1" S 1.5" W

.5011 offset = -6E -4N

MOVED 0.6" E  
0.9" S

.5012

offset = -6E  
-8N

readjust 2" W, 0.3" S  
check star

off by 5" W

go to VESTA

T = 276K

Z = 0.14

B = -4.7

Vesta. 5013

Vesta. 5014

shift a little south  
+ ~ 225

go to W3 IRS 5

HARD TO FIND → going to bare sight

go to V370 ANDROMEDA

V370. 5015

go to W3 IRS 2

SCAN:

NNOD = 4

NFRAME = 2

OFFSET = -5E ON

TELSTEP = 0.4E ON

NPOINTS = 26

Before SCAN 3

MOVED 1" E BTWN

SCANS

MAY HAVE GONE

WRONG WAY

LAST 2 SCANS MAY

be contaminated

W311.5016

Peaked up + ZERO OFFSETS

.5017

NNOD = 2

recentered

.5018

NNOD = 4

.5019

"

moved check star

0.4" W

2.2" N



NIS 3020  
 NNO24  
 STATE  
 SCHW  
 AS ABOVE  
 STATE 5.8 W  
 2.2 N  
 max  
 0.7" W  
 0.7" N

W.S.S. 5021

.5022

moved echelon drop screwdriver  
 a bit to compensate for  
 -60 um/s shift in [etc II.]  
 CCD line 780.5 is now  
 in center (4th order  
 down)

.5023

check  
 shifted guide star 0.1 E  
 0.6 N

(4.9 W  
 0.6 N)

.5024

0.2 W

1.3 N

.5025

N. need to ~~front~~  
 change check star;  
 tracked well.

go to nemisid .5026

8 NSUM  
 6 NNO

Nemisid .5027

junk

lots of clouds

.5028

NSUM=8  
 NNO=16

garbage

Not tracking well

go to vesta

Vesta .5029

NNO=12

NSUM=4

.5030

"

WNo = 1246 cm<sup>-1</sup>

Matt's cell  
 530-702-9259

Fits  
 T=275 K  
 b=0.145

avr. 5031

z=4.9

(cts=250)

T=274.8 K

go to titan

tau. 5032

faint source  
 NNO=16  
 NSUM=6

.5033

lost it found it around pair 13  
 moved S ~ 1"

.5034

.5035

.5036

.5037

.5038

.5039

5040

41

42

Bounce - pairs 7 & 8  
 skip pair 1-2 skip 5. bounce  
 might be clouds showing order dye, not bounce  
 T=1.1°C

### Alpha CMA

alpha. 5043

.5044

.5045

.5046

peaking to make sure we get all the flux

### Titan

tit. 5047

48

49

50

51

52

53

peaking up until pair 9

T=1.0°C

T=0.7°C

H<sub>2</sub>O going nuts



Adma. 1280 cm<sup>-1</sup>

- Adma. 5055
- 5056
- 5057
- 5058

crappy ended early

- Titan
- td. 5059
  - 5060
  - 5061
  - 5062
  - 5063
  - 64
  - 65
  - 66
  - 67
  - 68
  - 69

Source track but found it  
crap  
step 1-8  
step 1-6  
it is coming

really chassing to find & keep Titan  
(No guiding b/c day time)  
(were occasional frames w/ titan)  
finally on it (same in 66)  
Dance is a big pain!

totally shinking  
give up & try a scan  
on Saturn

Saturn

- 5070
- 5071
- 5072
- 5073
- 5074
- 5075
- 5076
- 5077
- 5078
- 5079
- 5080
- 5081

num = 1  
num = 1  
num = 2  
scan NFrame = 1  
scan NFrame = 2 to long  
offset -3N

2N  
NFrame = 2  
6N 1 frame  
rod flipped - why?  
pair 4 moved west  
moved west pair 9

I think → moved west pair 13  
5082 where I think the North pole is  
ended early

z ~ 0.13  
T = 3.7C

go to WMO: 720.424 cm<sup>-1</sup> moved when paraboloid significantly  
going to raquila (ID 177940) to center [No II]

z = -4.7

- ragl. 6001
- ragl. 6002

(SCAN) 0.7 telstop  
11 step  
-3.5 E ON  
4 NNOOS

.6003

Not quite off to star  
garbage → off orbit

- .6004
- .6005

good scan (-4 E ON)

go to W49 South

W49S. 6006

0.7E ON telstop  
-6E ON offset  
45 pts.  
NNOOS

glitch in 1<sup>st</sup> scan

.6007

offset -6E 4N  
glitch scan 2

.6008

-6E SN 0.9W  
2.9 S off from ragl

go to

RAQUILA

ragl. 6009

0.7 telstop  
-3.5 E ON  
4 NNOOS

from z = 5.1

checked frame in NOB mode

ragl. 6010

T = 274.8 K  
z ~ 0.09



go to W49 E  
W49 - 6011

N400=5  
step= 0.2E 0N  
offset= -8E 0N  
LS scan pt.  
1 scan

(pointing looks great)

.6012

N400=5  
offset = -8E 4N 3.5N

.6015

pointing looks good  
had to move 0.9" E @ end

.6014

-6E -3.5N  
pointing good.

.6015

{ 1.7E offset }  
0.4N  
saw bright line at end of scan  
-6E 0N

.6016

offset 2" W (misread header)  
0

NPTS = 35

1.9 + 0.3 = 2.1" W  
0.4N

.6017

-6E 3.5N  
35 NPTS  
5 N400

expect to end earlier @ L  
only use begin to skew  
subtraction

.6018

0.4" W offset

23 9 3.45.4  
61 23.1

.6019

offset star  
3.1" W 0.3N

.6020

offset -6E 7N  
stopped after 2 not much error

offset star 0.7" W

off by 1.5W

go to V83CA

.6021

go to R CAS  
Z = -4.9

T = 1.4" C R CAS 6021  
U = 0.068

go to N7538 IKI

3 W } found source here  
3 N }

RA 23:13:44.9 COLOS  
DEC 61:28:11.5

going back to check star

0.5W  
0N

WENT back; placed deck stars on crosses  
from tarp-list  
3.1 W  
2.3 N

N7538:1 .6022

N SUM = 8

.6023

NNOD = 16

.6024

Setup for scan N7538:1

offset = -10E 0N  
Step = 1" 0  
21 NPTS

.6025

.6026

offset = -10E 6N



0258:1.6022  
z = -5.1

check star 4.5 S  
to get to slit cards

go to ACAS  
try to work backwards (change WIS → 280 + see if we  
have an effect. Box right by 4.55)

go to 780-429 <sup>offset</sup>  $\text{m}^{-1}$  0.8 E  
4.5 N

go back to N7538 rec 1  
realign on crosshairs

go to NEMESIS 777  $\text{m}^{-1}$  (H<sub>2</sub>O)

but clouds  
went to capella  
but clouds

go to 1046  $\text{m}^{-1}$   
capella  $\text{Nsum} = 4$  (cloud)  
 $\text{NNO} = 12$

capella  
aur. 6028

.6029 → Shift N 0.3"

go to AB AUC.  
H2 J=6-4  
ITIME = 2

gain 50 (was at 25  
+ 15 ITIME  
FOR CAPSULE)

Aur. 6030  $\text{NNO} = 16$   
 $\text{Nsum} = 4$

.6031

.6032

.6033

.6034

.6035

pair 11/12 might  
be back  
bounce pair 14

← cloud

clouds pair 1-3  
pair 4 Bounce  
Clouds all  
the way through  
GARBAGE

AB AUC (cont'd)

.6036 clouds have settled down

.6037

.6038

.6039 change  $\text{Nsum} = 6$ , keep  $\text{NNO} = 16$

.6040 pair 1 bounce

go to BS 2491

z = -5.0

acma .6041

6 Nsum  
12 NNO (cls ~ 145)

go to fuori

fuori .6042

(cls ~ 125)

6 Nsum  
16 NNO  
pair 14 bounce

.6043

bounce noted in pair 2 or 3?  
pair 5 bounce

pair 7  
8  
11  
14

.6044

bounce pair 2, 5, 6, 7, 9, 10, 12, 13, 16

.6045

bounce pair 1 also in other pairs  
but we were in acma

.6046

bounce 1, 2, 3, 4, 5, 7, 8, 10, 13, 14, 15,

.6047

bounce 1, 4, 5, 6, 7, 8, 9, 10, 12, 13

go to acma  
never happened 6048

guide crapped out + lost the star ended early



Oct 10, 2007

acme. 6048

next to NO

WNO = 185.3    order = 10

T = 0.3°C

back bias to  $\bar{z} = -4.8$

area 6049

set gain = 100

acme. 6050

seeing somewhat variable

set time = 2.0 sec

area. 6051

Moon

~~moon. 6052~~

Never ~~saw~~ <sup>saw</sup> moon in Texas

Wait for Venus to be high enough

Venus

ven. 6052

Set up on dark side, drifted  $\frac{1}{2}$  to sunny side

← probably all sunlit Venus

18.1" W

add 0.002 m-e west rate

.6053 with sun lit again!

5.5W ~~6.0W~~ 7.0N

Trying to reduce # of flats

add more W & less S

→ 14.9985W    0.0145 ←

use Fowler mas flat. tel  
still too many flats

drifted 1.5N (in a long time)

so rates are finally good!

Normal flats working again

finally get

.6055

.6056

Moon

moon. 6057

East limb (20" west from limb

jumping over sunlit side we hope

Moon. 6058

240" in from sunlit side  
nod 300 0  
drifting to colder parts of moon??

Ven. 6059

.6060

.6061

.6062

.6063

.6064

drifted a little

may be drifting onto warm side - it looked good on TV though

.6065

.6066

.6067



October 11, 2008

MR, PS, MB, 11, JG, HA

messing around with oscilloscope to  
detect PULSED NOISE  
NO OBVIOUS DETECTION

T=240  
K=205

go to 12th km<sup>2</sup>  
Beta Andromedae

band .7001 killed → need to peak up CUF

.7002 garbage (N.O. DATA)

.7003 garbage → calibrate wheel manually

.7004 peaking around pair 5-10

go to aaur

.7005

go to HL Tau

.7006

H<sub>2</sub> J=6-4

Shooting blind  
accumulating  
ended, too high in slit

.7007

N<sub>sum</sub> = 6  
N<sub>nod</sub> = 16

cloud came in on pair 1  
back on pair 4 - looked good

.7008

try to  
pair 8 peak up

pair 9 - worse  
pair 10 back to no offset

pair 11 - worse  
pair 12... back to no offset

.7009

.7010

pair 8 - cloud 9-12, 16

.7011

cloud 11-16

October 11, 2008

.7012

change n<sub>sum</sub> = 3 clouds pair 1-2, 4-16

go to Alpha Ori

u<sub>aveno</sub> = 816 n<sub>sum</sub> = 3 n<sub>nod</sub> = 4

.7013

order = 4

.7014

changed u<sub>aveno</sub> = 408

.7015

.7016

pair 8 out? got lost

.7017

.7018

Alpha Cma

1237 cm<sup>-1</sup>

called aori .7019

called aori .7020

(oops)

acma .7021

↓ .7022

↓ .7023

acma ~~.7023~~ .7024

Titan

tit. ~~.7025~~ .7025

→ trash

telescope wasn't on Titan.

.7026

.7027

.7028

.7029

.7030

trash... accuracy

n<sub>nod</sub> = 16 & try to find

trash also

having

trouble finding Titan...

so check

tit. ~~.7031~~ .7031

pointing on β-gem

n<sub>sum</sub> = 6 it's there, but hard

moved 50.6" on first pair

.7032

.7033

.7034

.7035

.7036

.7037

.7038

-junk but sky variation

starting to get bounce as we near zenith



fit .7039  
.7040  
.7041  
.7042

ACMA  
acma .7043

.7044  
.7045  
.7046

Titan  
tit .7047

.7048  
.7049

subsky = very true

← sky variation  
ACMA still seems lower flux than previous nights. We think sky opacity is up from ~~previous~~ previous nights.

Seeing sucks

don't throw away first pair  
first pair is great

Seeing is crummy

having problems finding Titan  
start taking data before acquisition

conditions (crummy) ~  
seeing bad  
quick  
we quit

October 12, 2004

MR, MB, P, TG, HR

(18:30)  
 $\tau = 0.153$

wind = 760

temp = 277.8

Beta Peg

nsum = 3

nmod = 12

Gain = 50

clouds varying

.8001

high in slit

high in slit

.8002

moved 1" S

, more centered now

go to R Cas

.8003

nsum = 3 nmod = 12

$\tau = 0.179$

varying clouds

go to NGC 7538 IRS 1

did 2 check stars,

2nd was ~1" away

.8004

nsum = 3 nmod = 16

offsets (+ beam) 2.5 N  
5.5 W

RA: 23:13:43.77

Dec: 61:28:14.7

.8005

clouds

.8006

go to R Cas

.8007

Fowler mode

nmod = 2

waveno = 2024.5

integration time = 9s

nmod 0 E 10 W

pixel + beam in center of slit

not offset guiding

go to NGC 7538 IRS 1

.8008

going blind

didn't see anything  
possibly negative

.8009

set up a scan  
in medium mode

int time = 2 sec.

quicklook died



.8010 medium mode int. time = 2s  
 think 7538 is on boresight b/c of stars or  
 pair 3, 4 off on pairs  
 peak at offset 2" W  
 1.5" E 1.5" N to get back on  
 boresight

go to RCas

.8011 came right in on boresight nod 0 45 N  
 .8012 nod 0 5 N stopped!  
 .8013 nod 0 20 N

go to NGC 7538 IRS 1

.8014 Good at pair 5  
 .8015

go to Alpha Aurigae

.8016 Fowler mode  
 .8017  
 .8018  
 .8019

go to Alpha Tau

.8020  
 go to HL Tau  
 .8021 nsm too small, stopped - no data

go to T Tau  $H_{\alpha} 5=6-4$   $w_{no} = 12.46$

.8022 trying to peak up most of the time  
 .8023  
 .8024 ~~more~~ offset 0.5" E, see if signal improves peaked up at pair 7

Oct. 12, 2004 (cont'd)

.8025  
 .8026 clouds 2-15  
 .8027 varying clouds  
 .8028  
 .8029  
 .8030  
 .8031  
 .8032 clouds 12  
 .8033  
 .8034  
 .8035  
 .8036

go to  $\alpha$  CMa

.8037 peaked up at pair 4

~~Tommy & Henry stage the nightly coup d'etat~~  
 acma  $w_{no} = 12.30$  8 orders  
 acma. 8038  
 .8039

Titan

tit .8040  
 .8041  
 .8042  
 .8043 slight bounce pair 9  
 .8044  
 .8045  
 .8046



titan cont'd  
.8047  
.8048  
.8049

ACMA  
acma.8050  
.8051  
.8052

Reset to HiLo @ 1240 WNO  
~ 24 orders

acma.8053  
.8054 very low counts b/c of  
old setup...

acma Hi-lo b/c just can't get  
enough light in 2nd order  
1st order had light leaks

Venus w/ variable WNO = 1233  
ven.8055 OH & etc.  
Scan 86 x 0.7" steps  
Moves: -30 E  
& then 86 x 0.7" E steps

.8056 ← adjust order  
.8057  
.8058

acmi turn off venus flat

acmi.8059  
.8060  
.8061

WNO = 1251 9 orders

acmi.8062  
.8063 CLOUD @ pair 10

Venus  
ven.8064 scan  
ven.8065 clouds!  
.8066 ↓  
.8067

note: changed slit to East-West, looks good  
Focus z = 5.1 West Node keeps bore-sight orientation same

Go to 587 cm<sup>-1</sup> Move echelon to see blue.  
Start on Chi Cyp.

ccyg.9001 little high in slit

Go to A5353 A. Offset guiding. Can't see in diff, so  
watch accum.

a353.9002 Flying blind 1.3W, 13.6" S

.9003 moved N 0.7" to 12.9" S

.9004 moved to offset 0.3W, 14.3 S  
we think we're high in slit on obs. .9003

.9005 stay at offset 0.3W, 14.3 S RA: 19:20:30.76  
Dec: 11:01:38.1

.9006 " " " "

.9007 not sure we see it, but stay here anyway  
move 0.5" S RA: 19:20:30.76 Dec: 11:01:36.9  
in pair 6, moved back 0.5" N Dec: 11:01:37.3

go to Lk Hd 225

Lk 225.9008 offset guiding. Faint

.9009 changed nod to nod -4 0 and offset 0.5" more to west

.9010

.9011

.9012

.9013

.9014 changed nod = 24

.9015



LK Ha 225 (cont'd)  
.9016

go to Vesta  
can't find it

go to Vesta

.9017

peaked up at pair 9

go to Bonberg

bumpy!

go to Beta Peg

varying clouds

go to Gamma Aql

back to Beta Peg

$\tau = 0.13$

.9018

pair 6 - moved up 0.5" on slit pair 15, 16 clouds

.9019

varying clouds

go to Mira

$w_{no} = 797$

moved Echelon back to center

oct. 9020

oct. 9021

focus  $z = -5.1$

go to Vesta

set up a scan

offset 0 0

some clouds, but thin.  
 $\tau = 0.18$

moved off target 10" N

vest, 9022

is garbage

.9023

.9024

.9025

.9026

$n_{sun} = 4$

$n_{nod} = 30$

.9027

$n_{sun} = 8$

$n_{nod} = 15$

seeing not very good

.9028

$n_{sun} = 15$

$n_{nod} = 8$

big cloud

.9029

$n_{sun} = 30$

$n_{nod} = 4$

$\tau = 0.5$  but plot shows 0.18 clouds!

After closing for clouds, open up at 1246 cm<sup>-1</sup>.  
Move echelon to center orders.

Go to  $\alpha$  Tau.

$z = -5.0$  Gain = 50

atau. 9030

moved down on slit during pair 3.  
peaking from pair 5-8 not saved.

atau. 9030

astereid rates moved us along slit  
moved down on slit before pair 5.  
peaking

go to HL Tau.

Too much bounce. -244 \* 188 for guide star  
Rotate back to N-S slit. Go to Capella for barsight

go to Alpha Aur

aur. 9031

peaked up on pair 4

go to HL Tau

Close ~~data~~ due to cloud

~~HL Tau. 9032~~

$w_{no} = 1281$

Tommy & Henry take over & reopen

$\alpha$  Cma:

acma. 9032

.9033

seeing terrible  
big cloud  
try only 1-3  
all bad

.9034

Saturn South pole

30" North south

tried to put slit partly on pole  
little too far north

sat. ~~9035~~

9035

9036

9037

9038

9039

← move South 2" 1/2 way through file  
moving around looking for S. pole  
try only = 5 16  
setting it all now 3N from start  
skip = 10 (glitch)  
a glitch before pair 4? 3N " "  
3N " "



Sat. 9040 3N from pole pt. after 39-40 moved 3.5E 1N 3N 3N  
 .9041 skip pair 1 after 41-42 4.1E 0.3N 3N 3N  
 .9042  
 .9043 bounce after 43-44 no change 15.0380 W 0.015N 3N 3N  
 .9044  
 .9045 skip pair 1-3 didn't move 3N before pair 3 T=0.4°C

Alma out to WNO = 1308  
 .9046 garbage - ends early  
 .9047

Saturn  
 Sat. 9048 bounce 3N from South pole no move  
 Sat. 9049 clouds nothing but cloud skip 4, 5, 6, 7, 8 only 3, 9 - this one has a lot of data  
 .9050  
 .9051 skip 3, 4, 5, 6, 7, 8 after 51+52  
 .9052 moved .8W .2S  
 .9053 crappy  
 .9054  
 .9055  
 .9056  
 .9057

Moving to East side

.9058 ≈ 2 arrivals (Saturn) clouds  
 .9059 only = 1 - 22  
 .9060  
 .9061  
 .9062

MR, MB, TG, HR

WNO = 780.424 moved echelon to the red (wind 21 mph)  
 go to R Aq1 focus T = 0.135 @ 225 GHz  
 Raq1.501 peaked up pair 9  
 go to W 49F set up a scan: offset: -5.0 step: 0.7E ON  
 W49F.502 nothing obvious npoints: 21  
 change offset -7.3 telstep 1.0 nothing  
 W49F.503 dump offset -7.8 npoints: 31  
 offset -4.6 telstep .70 npoints: 35  
 at end, go .4E .7S to get back reference star on mark  
 W49F.504 got "warning: calibration wheel may not be centered" in the window I shows line emission, nothing obvious from F J1, J2 at end of scan show line at end, move 1.2E 1.5S  
 W49F.505 got same warning about calibration wheel stopped after 2 scans checked chopper wheel - no problem  
 W49F.506 moved ~~0.1E~~ .3W .2S at end  
 W49F.507 moved .6S at end  
 W49F.508 moved .6E at end  
 W49F.509 moved 1.2E at end  
 W49F.510 moved ~~0.6E~~ .6E at end



w 49: .511 moved 1.5 E

w 49: .512

w 49: .513 moved 0.5 E at end

go to Vesta

vesta. 514

change to

vesta. 515 oops, no data

vesta. 516 nsm=4 nnod=30  $\tau \sim 3 \text{ mm} = 0.12$

.517 " 8 " 15

.518 " 15 " 8

$\tau = 0.148$  cloud pair # -

.519 " 15 " 8

clouds pair 1 - Stopped, crap

.520 " 4 " 30

$\tau \sim 0.166$

.521 " 8 " 15

.522 " 15 " 8

some clouds

.523 " 30 " 4

.524 " 4 " 30

.525 " 8 " 15

.526 " 15 " 8

moved south during pair 3

.527 " 30 " 4

set up a scan offset 10 0 stepsize 0 0 #points 150 #scan 1  
vesta.0528

.0529

back to nod mode

.0530 nsm=4 nnod=30

.0531 " 8 " 15

Stopped, calibration wheel not centered

.0532 " 8 " 15

warning: calibration wheel not centered  
Stopped

Re open after playing with chopper wheel.  
Switch to 12.46  $\text{cm}^{-1}$  and Capella.  $Z = -5.1$   $T = 0.3^\circ\text{C}$

aur. 0533

move N 0.3" during pair 9.  
N 0.4" 12

gain = 50

aur. 0534

guiding + peaking through pair 5

Go to HL Tau

can't find it

Go to AB Aur

abaur. 0535

peaked up at pair 9, but all have data  
cloud pair 10-14

.0536

warning: calibration wheel not centered, cal wheel 0.777 V  
then .551 V

.0537

warning ...

.0538

warning ... cloud pair 6

.0539

bounce pair 14-16

.0540

warning col wheel .048 V bounce pair 1-5  
moved chopper 4 steps to get back  
bounce pair 12-13, 15



14-Oct-2004

above .0541 home pair 1

.0542 base pair #14

.0543 skip pair 7

.0544 skip pair 6

Tommy & Henry stuff the ballot box & take over the telescope

Wrs = 123  
acna.0545

.0546  
.0547

9 orders  
poor seeing

rotated slit east west - North pt of slit is now west

Saturn

Sat. 0548 2 scans OE - 12.5N  
drifted - moved 1.3W ON  
no need to move

- 6 .0549 4 scans
- 10 .0550 4 scans
- 14 .0551
- 18 .0552
- 22 .0553
- 26 .0554
- 30 .0555
- 34 .0556
- 38 .0557
- 42 .0558
- 46 .0559
- 50 .0560

moved 3.6W 1N

moved 1S 3.1W

moved 3.0W 1.1N

increase scan length - 32 steps

1.8E ON

some sky variation is 1st scan  
orig sky 4th  
closing dome

pt to S limb - slit N15

- Sat. 0561
- Sat. 0562
- Sat. 0563
- .0564

moved 3N from limb  
moved .7S after 2  
skip 1-3 moved 3 North after pair 3  
moved .6S after 2

- Sat. 0565
- .0566
- .0567

+ 6N from limb  
moved 2E + 2.9S after 3

- .0568
- .0569
- .0570

moved 1.3S 0E after 2

.0571

~~moved~~ + 9N from limb  
.9S .4E after 2

- .0572
- .0573
- .0574
- .0575

moved 2.5E 0.7S after 4



15 October 2004 MB MR, TG, HR

wno = 1310.5

go to Chi Cyg focus  $z = -4.5$   
 warnings: calibration wheel may not be centered  
 col wheel .021 V seeing sky

go to Nml Cyg

nmlyg. 1502 got some warnings as above nsum = 4 nrod = 16

.1503

go to AFGL 2591

afgl. 1504 peaked up on pair 6

.1505

.1506

.1507

go to NGC 7538 IRS 1  
 trouble finding it

go to R Cas

rcas. 1508 peaked up pair 3? started losing it near end

back to NGC 7538 IRS 1

ngc7538; 1. 1509

.1510

.1511

.1512

.1513

.1514

peaking pair 6-9

go to wno = 1184.

$z = -4.7$   $T = 2.0^\circ\text{C}$

ngc7538; 1. 1515

move S  $0.3''$  during 2  
 peaking pair 4-6

.1516

during flats, had a couple of buffer toggle errors

.1517

.1518

glitch pair 1

go to NML Cygni

nmlyg. 1519

moved S  $.6''$  during pair 3, opp way was  
 moved N  $-1.2''$  during pair 5

.1520

moved N  $-1.5''$  during flats

go to AFGL 2591

afgl. 1521

peaked up at pair 5, focus may be a bit soft

change focus to  $z = -4.8$

.1522

peaked up at pair 3

.1523

.1524

~~go to Vesta~~

go to Vesta

vesta. 1525

peaked up on pair 4

.1526

change to wave no = 797

gain = 25 exp time = 1 sec

vesta. 1527

nsum = 4 nrod = 30



15 Oct. 2004 (cont'd)

.1528  $nsm = 8$   $mod = 15$   $\tau = .127$   
cloud pair 4  $\rightarrow$

change wave no = 812.5  
go to Alph Per *varying clouds!*

change wave no = 1246  
go to Alpha Tau *gain = 25 int time = 1 sec.*  
peaked up on pair 4  
atav.1529 *cloud pair 5 - small variations*

go to HL Tau *gain = 50 at time + 2 sec.*  $T = 1.7^\circ C$   
 $\tau = 0.122$   
hltau.1530 *dring pair 8, moved .5" S*

.1531 *clouds start in pair 2-3*  
*peaking pair 4-6*

.1532

.1533

.1534

.1535 *moved 0.5" S before starting*

.1536

.1537

.1538

.1539

go to Alpha Arigae  $Z = 4.9$   
aar.1540 *peaked up on pair 9*  
.1541

go to AB Arr  
abarr.1542 *cloud pair 8*

.1543

.1544

.1545

.1546

.1547

.1548

go to Alpha CMa

aema.1549

.1550

.1551

.1552

Saturn

sat.1553

sat.1554

sat.1555

.1556

.1557

.1558

.1559

.1560

.1561

.1562

.1563

.1564

*3N from S limb*  
*moved 1.8W*

*3N moved 0E ON*

*4N moved 3.5W 0.9N*

*4N moved 0.6W 0.6N*

*4N moved 0.3E ON*

*7N " 1.1E ON*

*7N moved 2.4E 0.15*

*7N ~~moved~~*

*7N moved 1.7E ON*



sat cent.				
.1565	10N	moved	OE	0N
.1566	10N	moved	OE	0.85
.1567	"			
.1568	"	moved	OE	0.95
.1569	"			
.1570	"	moved	OE	0.5
.1571	"			
.1572	"			
.1573	13N	source moved	3.4W	0.95
.1574	"	"	2.1E	0.35
.1575	"	"	OE	1.05
.1576	"			
.1577	4		0.4E	0.75
.1578	"			
.1579	"	moved	.4E	1.85
.1580	"			
.1581	"	moved	OE	0.45
.1582	"			
.1583	"		3.8E	0.95
<del>.1584</del>				
.1584	10N			
.1585	"			
.1586	"	moved	0.6E	0.55

16 Oct 2004

MA, MB

End test

Optisture I

dark .2501	1 sec	gain 25
.2502	1.4	"
.2503	1.5	"
.2504	2	gain 25
.2505	2	gain 50
.2506	4	gain 25
.2507	5	
.2508	8	
.2509	12	

Fowler mode

.2510	9 sec	gain 25
.2511	20 sec	

Optixdrst

.2512	1 sec	gain = 25
.2513	1.4 sec	
.2514	1.5	

go to 1318 C<sub>2</sub>H<sub>2</sub> over-tone

C <sub>2</sub> H <sub>2</sub> over. 2515	0.8" slit
2516	1.0" slit
.2517	1.4" slit
.2518	2.1"
.2519	3.1"

go to 1844 cm<sup>-1</sup> H<sub>2</sub>O (NO)

no. 2520	1" slit	3 pix (140)	4.6"	CVF
.2521	1.4"	4 pix (80)	5.7"	60.420

go to 592.5 cm<sup>-1</sup>

h2o. 2522	0.8" slit
.2523	1.0"
.2524	1.4"
.2525	2.1"
.2526	3.1"

} Oops, all still for 1844 cm<sup>-1</sup>



go to ~~546.3~~  $546.3 \text{ cm}^{-1}$   
~~h20.2527~~ order overlap  
 go to  $592.5 \text{ cm}^{-1}$   
 h20.2537 0.8" slit, line on edge of chip  
 h20.2528 0.8" slit re-do after every  
 .2529 1.0"  
 .2530 1.4" fringes  
 .2531 1.4" re-do w/ slit @  $1.5^\circ$  offset  
 .2532 2.1" "  
 .2533 3.1" "

go to  $546.3 \text{ cm}^{-1}$   
 orders overlapping { h20.2534 0.8" slit  
 .2535 1.0" slit,  $1.5^\circ$  offset for slit  
 2536 1.4" slit  
 2537 2.1"  
 2538 3.1"

go to  $418.5 \text{ cm}^{-1}$   
 h20.2539 3.1" slit  
 .2540 2.1"  
 .2541 1.4"  
 .2542 1.0"  
 .2543 0.8"

go to  $397.8 \text{ cm}^{-1}$   
 .2544 0.8"  
 .2545 1.0"  
 .2546 1.4" buffer toggle error in last frame  
 .2547 2.1"  
 .2548 3.1"

go to  $1244 \text{ cm}^{-1}$  no  $1.5^\circ$  offset int time = 4 sec.  
 .2549 0.8"  
 .2550 1.0"  
 .2551 1.4"  
 .2552 2.1"  
 .2553 3.1"