Tholen @ home
808-941-3552
956-6930

FEB. 22 (UT) OBSERVING

11:47 UT = 1:47 AM HST arrive at telescope.
Seeing is ~~appear~~ ~2".
Set watch to TCS.
Switch-over time is 14:12

Overview of tonight

→ (set up) • bring over object lists ~/lyoung/objectlist/920222.6x6
• check df. Max I'll need is 8.8Mb×45 = 396Mb = 405,504 K.

→ (focus) current focus is 4775.

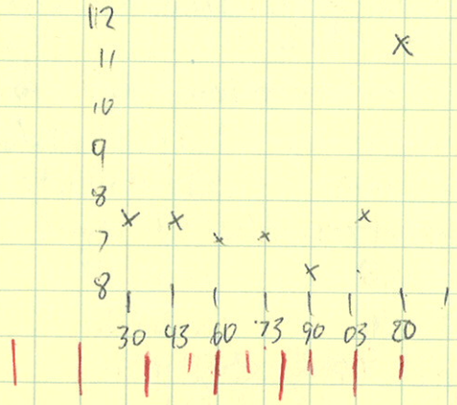
(4700) (4715) 4730 4745 4760 4775 4790 4805 4820 (4835) (4850)

• time the read out time! for 1" seeing 5.7 1.6 1.05 tonight (1" seeing)
• Focus stars SAO 140944 Mag 7.9 9.6δ/s/pix ~~0.5~~ 0.17 ~~2~~ 0.67
SAO 140935 Mag 8.9 3.9δ/s/pix ~~1.37~~ 4/s ~~5 4 5~~ 16s

→ (first frame) • bias level • sky level ~4.6 ADU/20s
pluto • V~ 11.5 ⇒ ~~13 K~~ 13,000 ADU/pix in peak pixel for 20sec, 1" ⇒ 3.3 K tonight, GOAL ~130 K
• V~ 14 ⇒ 1.3K peak for 20s, 1" ⇒ 326 tonight?

44 1st Frame
45 Focus Frame start @ 16 05 45 δ -7 05 05
~~44~~ woops, read out after 1
46 focus frame offset FWHM

4730	δ -7 05 05	0	7.51
4745	δ -7 15 05	-10	7.46
4760	δ -7 ~~20~~ 05	-25	7.16
4775	δ -7 ~~45~~ 05	-40	7.18
4790		-55	6.48
4805		-70	~~9~~ 7.87
4820		-85	11.35



~~x~~ ~~2~~ ~~fr~~

47 start at 16 05 45 -7 05 05

4700	offset 0"	7.90
4720	-15	10.25
4740	-30	6.87
4760	-47	5.10 ←
4780	-60	5.1
4800	-85	7.9

Focus 4760

48 Pluto field Forgot to flush!

bias? sky = 1600

Pluto 810

"star" 9730 ~~→8←~~

FEB 22 AFTERNOON

Check out questionable files —

- What happened between frames 47+48?
  Did an unnessesary read, but file 48 is OK.
- 51 - ok on disk dispite display error?
  NO. File appear wrapped! Don't use for flats, but the flats may help us save the file.
- 62 B there, at 1107, 195

- TCS vs no TCS
  All the keywords are present. With TCS, the following are filled:

```
XRA = '16:05:27.50'
XDEC = '-06:56:37.5'
XAIRMASS = '1.202'
XHA = '-01:23:25.41'
XEQUINOX = '2000.0'
```

  In particular, the TIME is stamped even w/o TCS, in

```
TIME-OBS = '16:14:40'
```

Make object list for tonight

950223.5x5 and 6x6.

They include the SAO star and the randomized Pluto positions.

They are in kepler:obs-5/lyoung/objl/950223.5x5 6x6

Also copied to tycho:obs/950223.5x5, 6x6

FEB 22 + 23

Also made file random.m, a mma file with the definition for randomize[list] → randomized list.
This can be run from anaconda

FEB 23 OBSERVING

~13:00 UT arrived at telescope.

Multiple exposures? Look at dss – 75" = 44.1 pixels on Digital Sky Survey.

Scale of Center Pointing dss plot is $\frac{265 \text{ pix}}{19 \text{ cm}}$ = 13.942 px/cm 3.16 cm

medium Pluto Field 700 px / 18 cm 38.889 px/cm 1.134 cm

large Pluto Field 1000 / 17.9 55.866 px/cm 0.79 cm

Checking out dither:

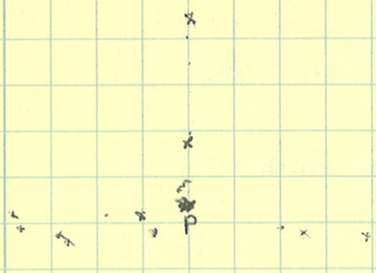
~~small scale chart~~: P @ ~~166, 46~~

~~What's near~~ ~~200, 46~~ ~~s. V" 15 star @ 205, 95~~

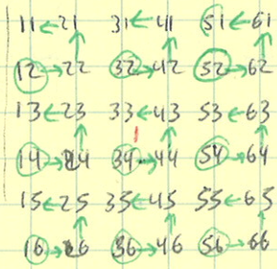
~~122, 46~~ ~~Faint~~ star 135, 35

~~166, 02~~

~~166, 90~~



Tonight is a good night for mosaicing —



OFFSET ORDER

~~W 75"~~	W 75"	N 0"
~~N 75"~~	W 75"	N 75"
E	W 0"	N 75"

Feb 23 observ.

current focus 4810 4750 4770 4790 4810
14:09 in the driver's seat

	Focus	offset dec
61	4750	- 0
	4770	- 15
14:16	4790	- 30
14:17	4810	- 45
14:18	4830	- 60
14:18	4850	- 75
	4870	- 100

ARGH - forgot to change the filter
was in R filter! Also wrong object in header
62 did READ by mistake
63 ~~62~~ SAO STAR @ 769, 443. BUT main display is gray.
Working in zoom window
64 Display GRAYED OUT - restart program
new teck 2048

64 focus frame again

14:41	4870	-100
14:42:15	4850	-75
14:42:58	4830	-60
14:43:49	4820	-45
14 45 30	4890	-30
14 46 13	4870	-15
14 46 54	4850	-0

Where's the star?

65 search frame

		offset dec
66 14:54:35	4850	0
14:55:33	4770	-15
14:56:23	4790	-30
14:57:00	4810	-45
14:57:42	4830	-60
14:58:23	4850	-75
14:59:31	4870	-100

Where's the star?

OK - Take one stare frame (normal mode) & one in focus mode
. . Star not there! call Dave Tholen.
Suggestion #1: restart program w/ newertek 2048
faster read out, but still no star.
Suggestion #2: check the shutter box!
That's it.

FEB 23 OBSERVING

Frame 71 star @ 771 253 × 1.69 = ~~427~~ = 429 ~~West~~
872 152 × 1.69 = 258 " ~~West~~

Where's the star?
72 used dss plate scale.
Want 253 × 0.22 = −52
152 × 0.22 = −33.4

star at 1009, 1008. MB's is zeroing offsets.

		focus	offset δ	FWHM	
74	~~45~~ 15	4871	0		
	~~46~~ 46	4850	−15		
		4830	−30		
		4810	−45		
		4890	−60	10.6	
→		4870	−75	5.5	5.15
		4850	−100	7.0	8.2

Temper. = −5.9

			FWHM
75	4790	0	1
	4780	−20	
	4770	−40	
	4760	−60	4.7
	4750	−80	
	4740	−100	2.8
	4730	−120	3.9

FLS 23 OBSERV. 935-2971

76 on PLUTO

		E	N
~~16 06 10~~	~~10 56~~		
~~16 06 35~~	~~07 00~~ 16 06 10	0	0
16 ~~07~~	16 07 00	-75	0
	16 07 40	-75	75
	16 08 21	0	75

16:08:35 read it out,

77

16:	12:35	0	0
16:	13:20	-75	0
16:	14:05	-75	75
16:	14:45	0	75

sky

kk

78 (0 0) sky's getting too bright. No more mosaics

-75 0

-75 75

0 75

Tonight end -6.1

Things to remember:

① erase all but the ~~right~~ obj list

② masking's a breeze. Put paddle in "2" ~~for 10"~~ for fast slew.

③ Shorter exposures for STC stars

④ Call before coming up 935-2971

⑤ use newertek2048.lod faster readout!

⑥ GET SOME SLEEP B1950 J2000

SAO 140944	16 03 03.7	-6 57 02.0	16 05 44.63 -7 05 06.36
SAO 140935	16 02 12.807	-6 42 06.54	16 04 53.46 -6 50 14.16

Feb 23 late AM / early afternoon

Backing up

① make comparison ~~of~~ tar list

> tar cvf - 950223 | tar tvf - > ../tarlists/raw_950223

> more ../tarlists/raw_950223

② skip to the right place

(insert tape)

> mt stat

file no = 0 block no = 0

> mt fsf or mt fsf 1

> mt stat

file no = 1 block no = 0

③ tar it

> tar cv 950223

④ where are we?

>mt stat

file no 2 block no 0

⑤ rewind one file and tar tv

> mt bsf 1

> mt stat

file no 1 block no 1000000000

~~> tar tv > ../tarlists/raw_950223.t1~~

> mt bsf 1

> mt stat

file no 0 block no 1000000000

OK, just mt-rew

> mt rew

~~> mt fsf~~

⑥ Let's check the tars

>tar tv > ../tarlists/raw_950222.t1

> mt stat

file 0 block 26430

> diff ../tarlists/raw_950222 *

> mt fsf

> mt stat

file 1 block 0

> tar tv > ../tarlists/raw-950223.t1

FEB 23 ANAL.

tar the second one
mt stat
mt fsf ; mt stat ⟶ file 1 block 0
tar cv 950223 ; mt stat ⟶ file 2 block 0
mt bsf 2 ; mt stat ⟶ file 1 block 1000000000
mt fsf ; mt stat ⟶ file 1 block 0
tar tv > ~~tarr~~ ../tarlists/raw_950223.t2

today, R ~~@ 16 05 19.58, -6 55 37.23~~ ~ 16 05 19.5

$\Delta\alpha = 5^s = 2 \times 2^s.5$
$\Delta\delta = 75'' = 1'15'' = 2 \times 37.''5$

	~~α~~	~~δ~~
1	~~16 05 07.0~~	
2	~~16 05 12.0~~	
3	~~16 05 17.0~~	
4	~~16 05 22.0~~	
5	~~16 05 27.0~~	
6	~~16 05 32.0~~	

α 16 05 18.33 ~ 16 05 18.5 δ -6 55 57.69 ~ -6 55 57.5

1	16 05 06	-6 52 50.0
2	16 05 11	-6 54 05.0
3	16 05 16	-6 55 20.0
4	16 05 21	-6 56 35.0
5	16 05 26	-6 57 50.0
6	16 05 31	-6 59 05.0

FEB 24 OBSERVING

pix Δ arc sec

Arrive telescope ~13:00

Temp = -2.89 Humidity = 28% newer tek 2048

Focus 29820, Fwhm ~ 0.8

TO DO TONIGHT:

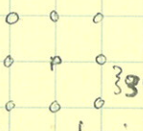
SET UP - ~obj/objlist.lyoung
- FILTER - wheel, comment - check TCS
- Object
- name (prefix), number
- newer-tek 2048
- paddle to FAST slow

FOCUS → 0.25s NO - too much speckle. 5s + SAO 140935
→ slew to SAO 140944
→ normal read - saturation? - time the readout
centering
→ center the SAO star; adjust exp. time
→ Focus - step Focus by 5, δ by 20" (last by 40")
UNCLICK read, flush
MANUAL FLUSH
EXPOSE
(paddle, expose) → read

PLUTO → ~~2~~ 10s

arcsec	75"	80"
pixel	341	364

→ stare to pluto 32
→ stare frame (read, flush. checked)
- Placement?
Exposure? Bright star near Pluto ~ 20K?
Pluto @ clear at



- How hosed by bright star?
- stay on Pluto? No, if seeing > 1" or Pluto hosed by bright star.
- Pluto mosaic

M12 - stare 10s
- saturation? Density? Find placement + exp time.