9/14

Taking darks, 1 s darks, using auto grab, will use o dark subtract the data

Need to have ccd shielded b/c of light leaks

Set up of collimator – fiber feeds in, collimated rays coming out. End of fiber point source so no conversion beam. Want collimated light coming through detector

Focusing mode – want it vertically aligned, have sep horizontal lines

In solar spectra they were slanted

Rip paper and put into pepito

If lined up correctly laser beam shows up on paper

Nice not great circle showed up on page

Sine halogen lamp ito fibers, mark centimeters on paper in pepito

Measurement of diameter of light circle on paper ~ 1.95 cm

Instrument sensitive to being squeezed

When focusing camera the image moves transversely along the diagonal of the screen

Take solar spectrum – put on cover, don’t touch spectrograph

Open up blinds, point fiber at back wall not directly into light

Peaking at 40,000 counts, between 20,000 and 40,000

Take 5 .1 second exposures

Maximum counts from histogram shows,

Peak is from read noise

Max value showing 13,000

Pointing fiber into light now

Taking 5 exposures 0.4 seconds - Sun\_040ms

Now taking 5 1 second exposures -

Question – how much of whole spectrum can be eliminated in total? If we max out light where does it cut off?

Will start characterizing our filters – go through each filter and take exposures w/ fiber pointed into sun

Starting with red – expecting it to be dark

Taking red – peak 65,000 at .1 seconds, spectrum “not terrible”

65,535 0.4 s

Pointing fiber back to wall

Plugged fiber into hard piece and set against a chair

When taking exposures it set to .09 seconds – diff min time?

5 1 second exposures peaking around 23,000 in red filter pointed at wall

Now using halogen lamp on a fainter intensity

1 second exposures – oversaturated

Min time – still oversaturated (at min light intensity for halogen lamp)

Adjusting halogen lamp set up so fiber isn’t directly pointing at the lamp

No photons, set up didn’t work

Now there is a paper in front of the slit viewer

“Don’t breathe on it”

Taking 5 .1 second exposures in red filter – halogen\_red100ms

Taking 5 1 second exposures red filter – halogen\_red1s

Shouldn’t be saturated

Taking 5 5 second exposures red filter – halogen\_red5s

Moving to green filter now

Boost range – highest value only around 2,000 here

5 1 second exposures – halogen\_green1s ~ 7:16 pm

5 5 second exposures - halogen\_green5s ~ 7:18 pm

Moving to blue filter

5 1 second exposures – halogen\_blue1s ~ 7:18 pm

5 5 second exposures - halogen\_blue5s ~ 7:19 pm

Halogen lamp can’t see with eyes but is varying – it varies 20% over an hour (source – pae)

Lots of small things can mess with this – power grid fluctuations, etc.

Doing clear filter

1 second exposure clear filter

Looks not oversaturated

5 1 second clear filter – halogen\_clear1s ~ 7:20 pm

5 5 second clear filter - alogen\_clear5s ~ 7:21 pm

Transitioning from halogen lamp to Helium

Turn off lights

Go into focus mode 10th of a second

Expect no photons – are 0 photons

Tun helium on – get around 1 and a half thousand counts

Auto grab 5 1 second exposures Helium – He\_1s – filter unknown

5 1 second exposures helium – He\_1s\_clear

Lamp turned on a few seconds after grab started

We’re not getting “the whole thing” which is “probably because not pointed directly on”

Focus mode to check this – 10th of a second

5 .1 second exposures directly at lamp in clear filter – He\_100ms\_clear

Looks good

Deleting all other heliums but green highlight

Neon lamp

5 0.1 second exposures clear filter – Neon\_100s\_clear

Counts – “on order of 10,000 at peak” – sagen

Hydrogen lamp

5 0.1 second exposures clear filter – H\_100ms\_clear

Counts – “Around 1,000” – sagen “not good” Ginsburg

This is background level, only a couple hundred above background level at brightest line

5 1 second exposures clear – H\_1s\_clear

Now around 5,000 at peaks

Secondary lines – still only a couple hundred above background

5 5 second exposures – H\_5s\_clear

Peaks around 20,000

Is some white light – contaminants – only around 100 counts above background

Side notes -

CCD isn’t making click noise for changing filters – will

In DS9 counts for halogen lamp aren’t different between filters – pae

Mercury lamp

5 1 second exposures mercury clear filter – Hg\_1s\_clear

Peaks around 500 counts above

Second pic – several thousand above

5 5 second exposures – Hg\_5s\_clear

Green Laser

5 1 second exposures – Green\_Laser\_1s\_clear

“Microwaves are totally mazers”

Overhead light

5 100ms exposures - Overhead\_100ms\_clear

Too faint – barely 100 counts above background

Now pointing at overhead light directly

5 100 ms exposures – Overhead2\_100ms\_clear

Significantly brighter – by several thousand

Taking more darks

10 5 second darks – dark\_10s

DS9 tells us – no filter!