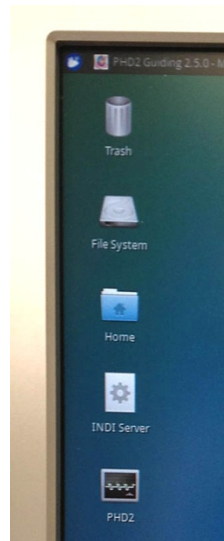


Introduction

VATTSpec's guider uses an Apogee, now Andor, Aspen CG8050, cooled, interline CCD. The array is 3296x2472, with pixels of 5.5x5.5 microns. The software is Craig Stark's PHD2 Guiding, so see its manual for details on normal guiding. The parameters below are for on-slit guiding. The control software is on "vattautoguide.vatt".

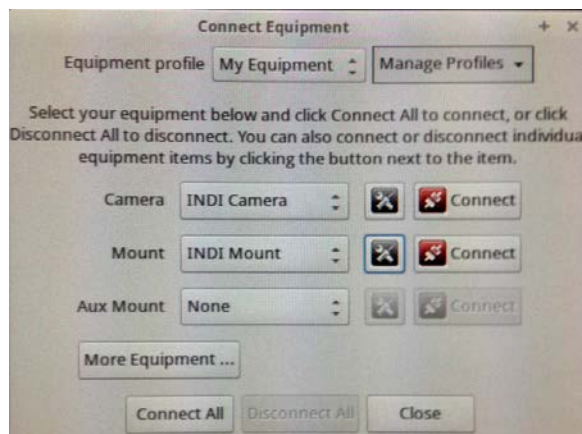
SETUP

Beginning from the Desktop



- Start INDI server via its icon.
- Start PHD2 via its icon

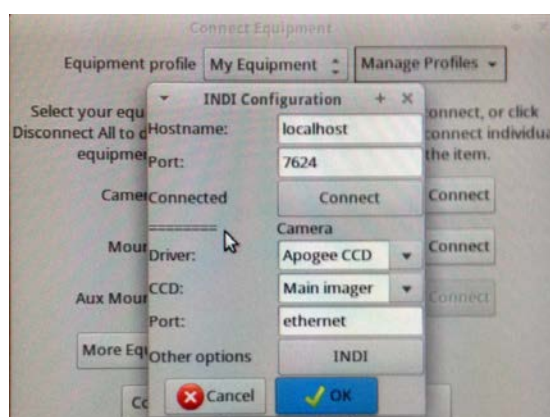
- In PHD2, press Camera button to connect to the Apogee camera and the mount.
- Select INDI Camera and INDI Mount (no Aux Mount)



- Under Camera tools (tools icon), set...

Then press OK

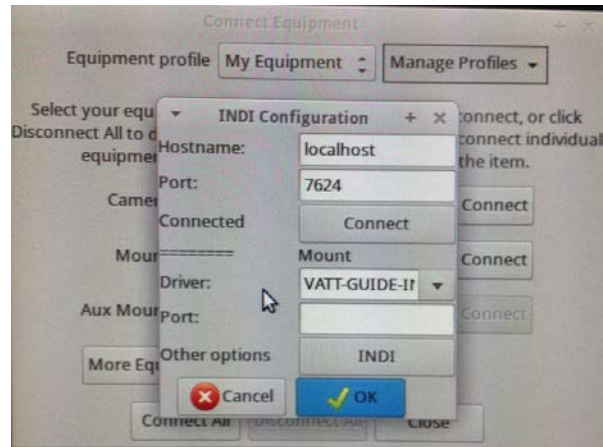
And then press Camera Connect TWICE.



- Under Mount tools, set...
Then press OK

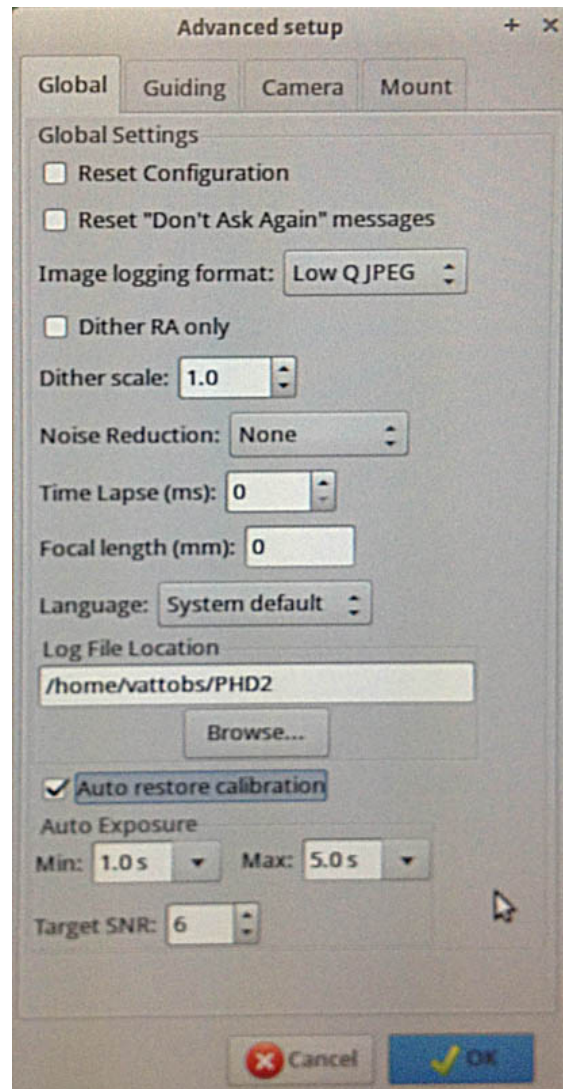
And then press Mount Connect.

- At end of night, “Disconnect All”.



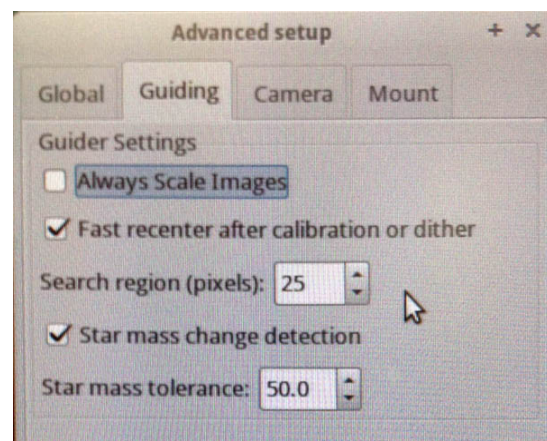
ADVANCED SETUP (the Brain icon)

- Under **Global** – check “Auto restore calibration” box, and set anything else desired.

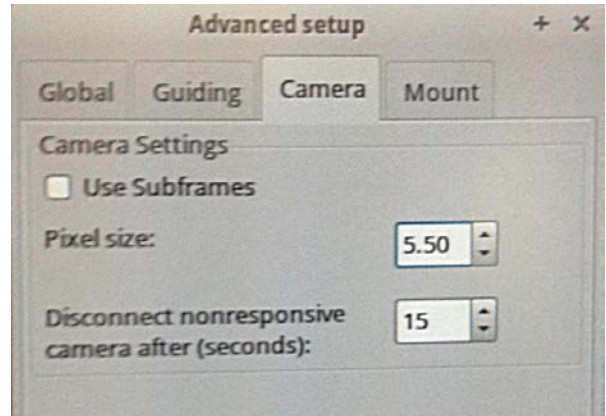


- Under **Guiding** – set Search region to 25 pixels, or more if seeing is poor.

- For on-slit guiding, probably better to **un-check** “Star mass change detection”.

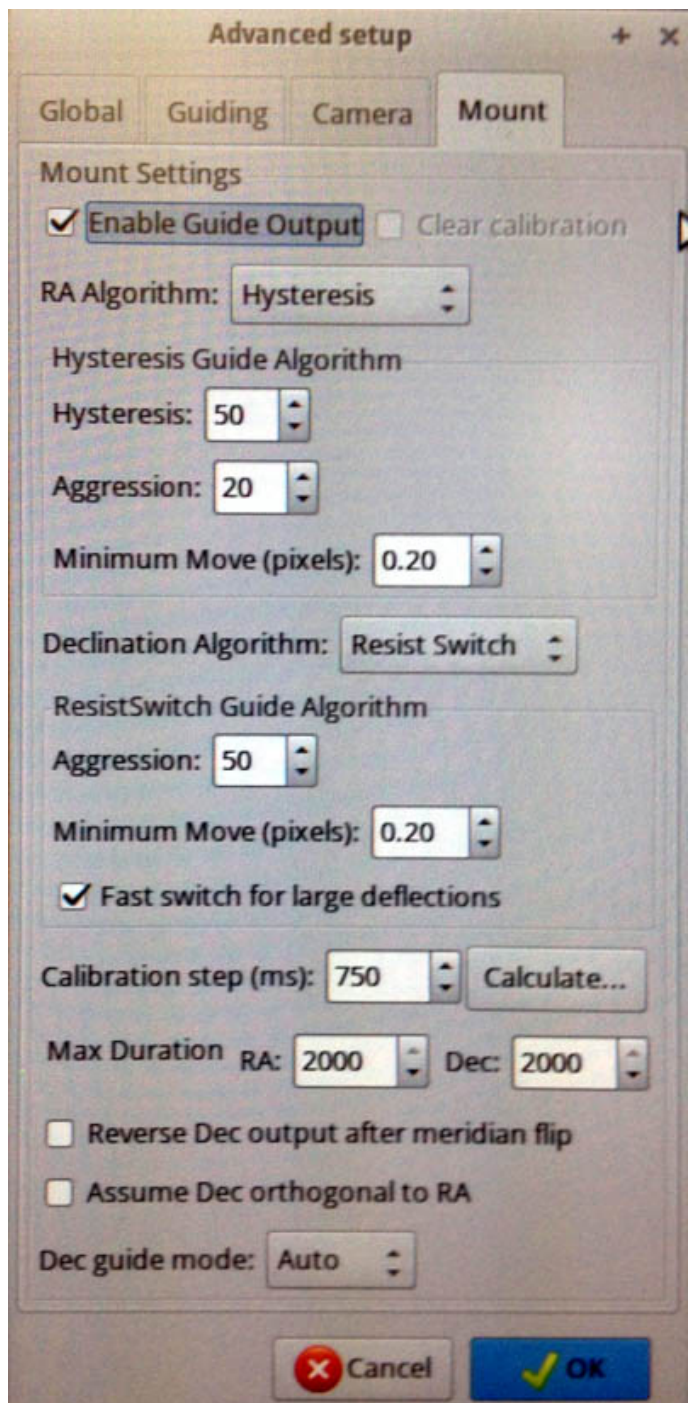


- Under **Camera** – set Pixel size to 5.5 x 5.5 microns.



- Under **Mount** – especially Hysteresis and Aggression are critical settings for on-slit guiding, so tweak these suggested values as appropriate.

Minimum Move is about right at 0.20 pixels, but if star stays above or below green crosshairs, then adjust down to, say, 0.15 pixels.
 Hover cursor over parameter to get brief help box.

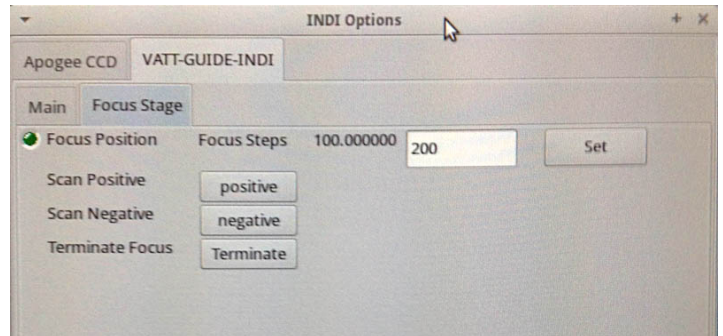


CAM DIALOG

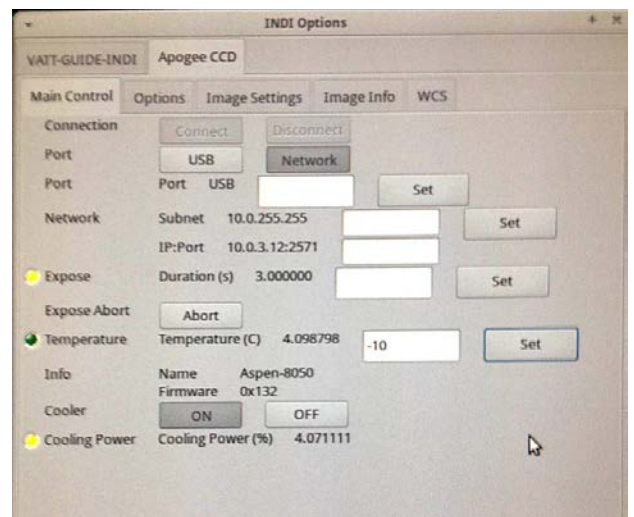
INDI Options setup

- **VATT-GUIDE-INDI – Focus Stage**
Set focus steps to 100 for tweaking, 1000 or more for defocusing to make collimation setting.

Press and release “Scan Positive /Negative ” to start changing focus, and stop with “Terminate”.



- **Apogee CCD Main Control**
Set Camera Head Temperature, if desired.



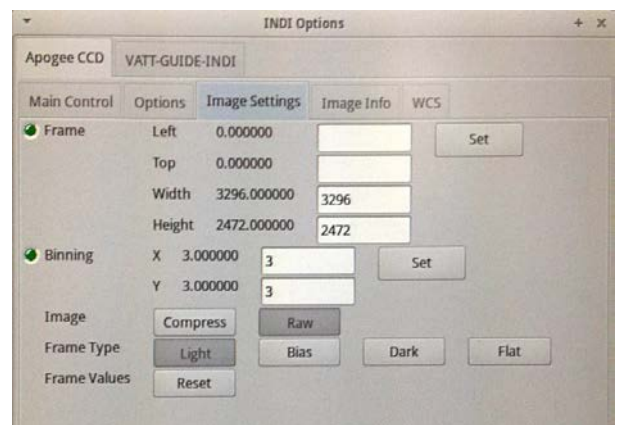
- **Apogee CCD Image Settings**
Check Frame is
Width = 3296, Height = 2472

Binning

(need to reset this each time PHD is run)

X = 3, Y = 3

Then press “Set” to register values.



IN MENU ON TOP OF PHD2 WINDOW

View

- Slit Position (to make a box the size of the slit)
Be sure to have first set the Binning to 3 x 3.
And check the "Spectrograph Slit" option.

Shown are approximate values for narrow slit.

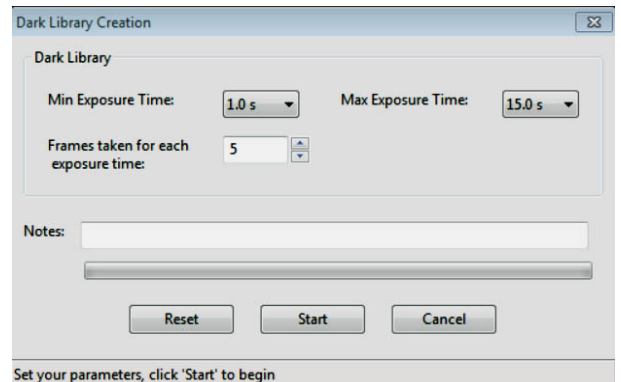
For wide slit, X same, Y=250, Height=16.

Tweak by using a calibration lamp, with Guider Mirror in Center position, to illuminate slit.



Darks

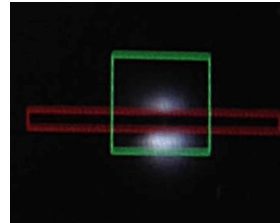
- The Dark Library is probably made and in use. This practically eliminates the streaking down a column of pixels for the longer exposures and fainter objects.
- If the library is not running and the dome is completely dark, click on "Dark Library" and rebuild a library of darks. Suggested range is 1 to 15 secs, with 5 frames per exposure time.
- The Bad-pixel Map was no significant help in removing the streaks.



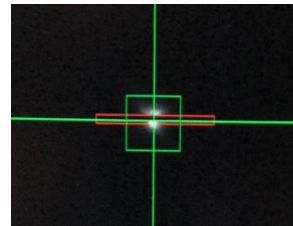
ACTUAL ON-SLIT GUIDING

- Hit the Loop button, bottom left of screen, to start the camera.
- Center star in slit with telescope paddle, and click on it to get the green box.

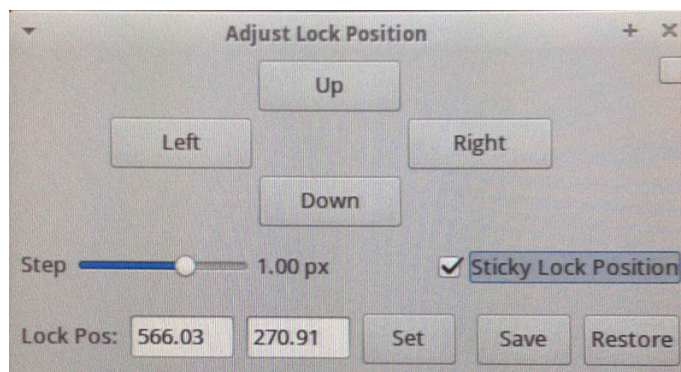
Yes, this one is not quite centered!



- Press PHD button to start guiding, and a green cross will appear.

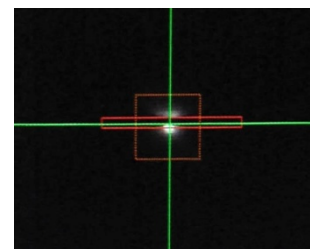


- Center the green cross on the slit with the Adjust Lock Position buttons (under Tools).
 - Use “Save” when centered and “Restore” for auto-centering the next star.
 - If the star, during guiding, favors being up or down from the center of the slit, then nudge the cross a bit in the opposite direction from center, or lower “Minimum Move” (see p.3, Mount controls).



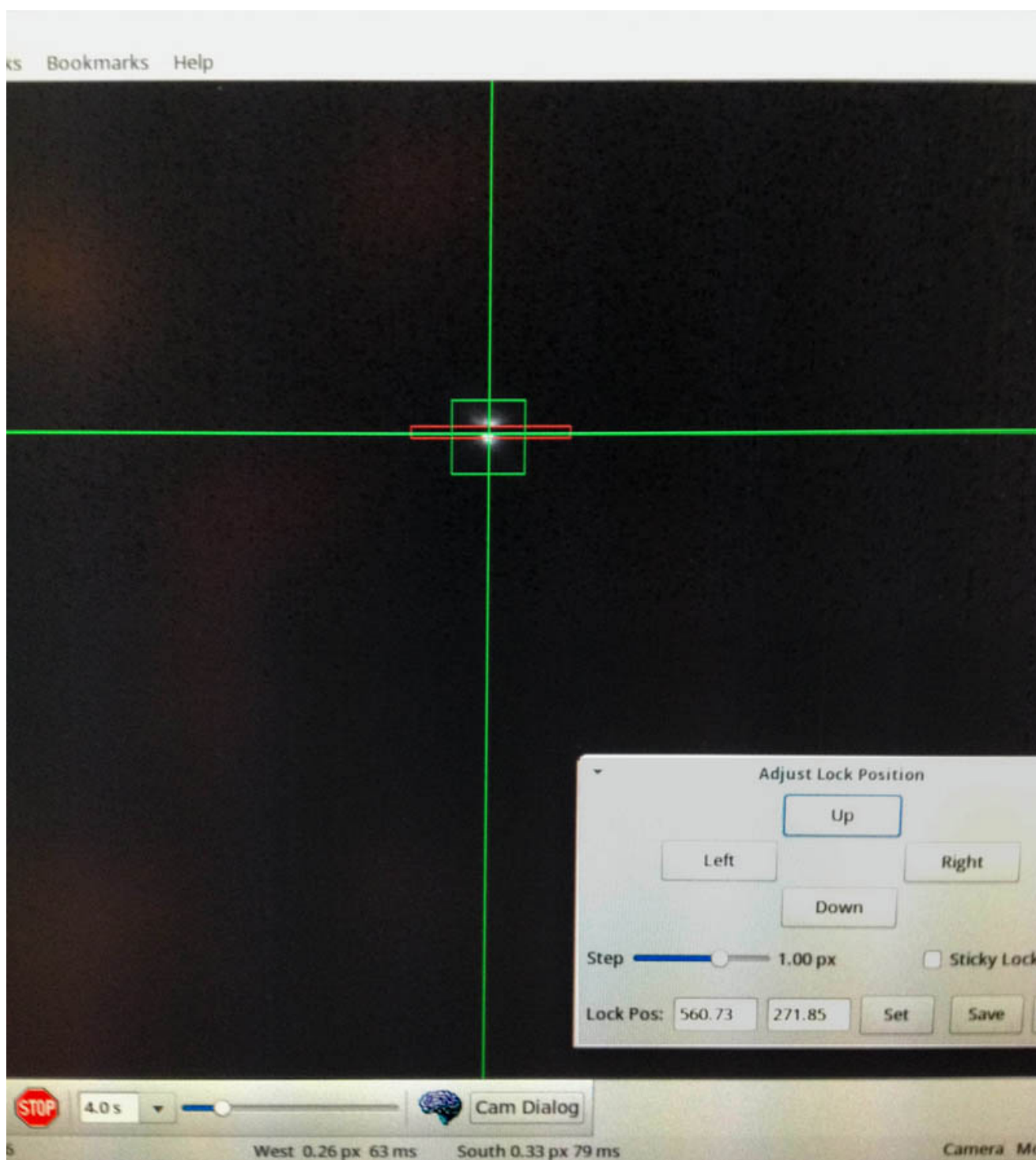
Checking the “Sticky Lock Position” will prevent losing centering if re-calibration is done (automatically) after pressing the PHD button.

- If the star is lost, then the green box turns red until the star is found again. Regular beeping on turning red is “normal” when guiding on slit.



NOW START INTEGRATING ON YOUR OBJECT AND RELAX!

The whole screen, when **on-slit guiding**, might look like this...

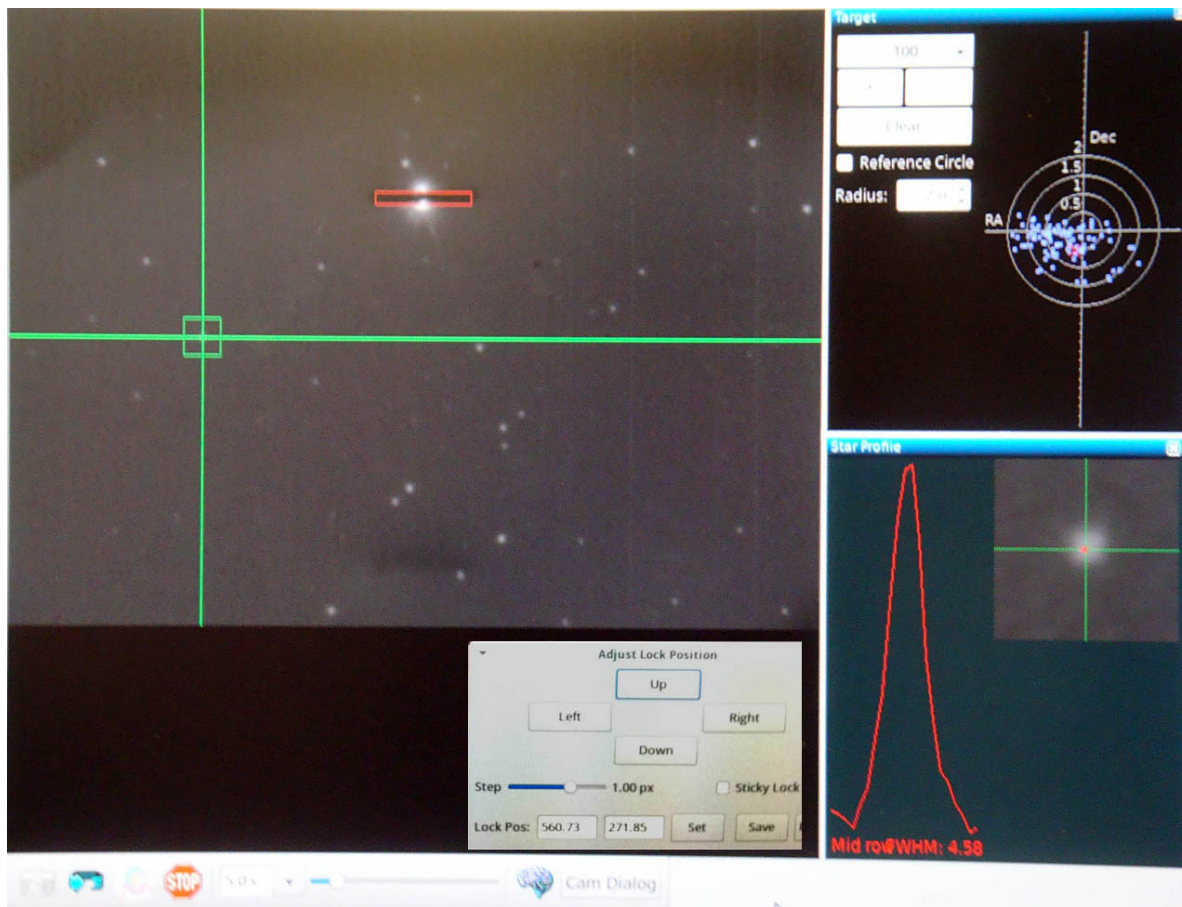


You could keep a check on the discussion of spilled-light / on-slit guiding at Google Groups' Open PHD Guiding.

GUIDING ON A SUITABLE FIELD STAR,

away from the slit, is covered in the PHD2 manual.

The parameters for on-slit guiding are probably still suitable. The whole screen, with two useful side displays from the View menu, Target and Star Profile, might look like this...



Please send comments on these VATTSpec specific notes to corbally@as.arizona.edu