PhDGuide steps

Aaron Mueninghoff

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1. Connect the autoguider camera to the laptop via a USB cable and to the mount via a telephone cable. Open PhDGuide and click on the connect button (bottom leftmost button, looks like a USB plug). A window will pop up, click "Connect All" and look at the text below the row of buttons at the bottom of the screen to see that the connections have been established.

2. Select an exposure time from the dropdown menu in the row of buttons and click the loop button (2nd from the left, with the two arrows in a circle) to begin taking exposures continuously. The text below the buttons should now say "Looping". Note that to change the exposure time, you have to click "STOP" (5th button from the left) and then click loop again.

3. Click on a star in the image to select it for guiding; a box will appear around the star. If you do not see any stars other than your target, try changing the exposure time, adjusting the gamma with the slider to the right of the exposure time, or clicking the "Auto-select star" button (3rd from the left, star with a magnifying lens on it).

   It is important to choose a star that looks like a 2-dimensional Gaussian, as that is what PhDGuide is looking for. (Note that a star on any of the slits is highly non-Gaussian. Also note that a saturated star is non-Gaussian.) The signal-to-noise ratio (SNR) of the selected star is shown in the bottom-right of the window next to the label "SNR". *The higher the SNR of your guiding star, the better.* Note that SNR is not necessarily correlated with brightness.

4. If the autoguider has been moved or rotated since the last time PhDGuide was used, i.e. if you just set it up, then you need to recalibrate the guiding. To do this, click the button to the right of the gamma slider (it has a picture of a brain); you should now see the "advanced setup" window. Go to the "Guiding" tab and check the "Clear mount calibration" box. Also make sure that the "Calibration step (ms)" box is set to 100 (it should be by default). Click "OK" to close the window.

5. With your guiding star still selected, click the guide button (4th button from the left, has a pictue of green cross-hairs on it); there should now

be green horizontal and vertical lines going through your guiding star. If you just cleared the calibration data, PhDGuide will begin the calibration sequence, which will take several minutes. (Note that calibration time is directly proportional to exposure time.) Once it has started guiding with the star you selected, the text below the row of buttons will say "Guiding". Watch the exposures to make sure that the guiding is working correctly (the target stays on the slit and does not drift off, and the software does not lose track of the guiding star). If the software is losing track of the guiding star due to low SNR, increase the exposure time or try using a different star. If the guiding seems to be moving in the wrong direction, try recalibrating again.

6. To stop guiding (end of observation, switching targets, etc.) click the red "STOP" button. Note that the "STOP" button also stops taking exposures; you will have to start looping again if you want to find a new target.