

Finding a Guide Star (Aladin Sky Atlas)

Exposures longer than 299 seconds (300) require a guide star. Due to the complexity of this mode of observing, many remotely accessible telescopes do not offer this capability. At the SkyCenter we consider this one of our shining achievements. However it does come with some additional work for the observer to do in advance of their time on the telescope. The SkyCenter uses the on-line Aladin Sky Atlas to visualize the field of view of the CCD camera and the guide chip. This allows you to compose a field and find a guidestar near to that orientation. Download the Aladin Desktop freeware client from: <https://aladin.u-strasbg.fr/> When you run the program you will be presented with a screen that looks like Figure 21:

In the top field (labeled "Command") type the name of your target. Consider NGC 7635 (The Bubble Nebula) as an example.

Aladin will by default display a color image from the Digitized Sky Survey at the default field of view. See Below: Next load the Schulman Telescope field of view indicator. Under the "File" top menu select the "Load Instrument FoV."

Now choose the Schulman Telescope from the list of worldwide large astronomical telescopes and submit! Now the main screen will show the field of views for the main chip and the guide chip. The field of view of the Schulman Telescope is larger than the default screen. Zoom out by rolling your mouse wheel until you see a view as is shown below.

Make certain the upper layer labeled "Schulman32" is highlighted as shown in Figure 25. The large square represents the entire field of view of the main CCD chip. Anything in this square will be in your picture. The small rectangle, currently to the left side, is the guide chip. It is necessary to find a relatively bright guide star and move/rotate the field of view indicator so that the star is on the chip and your target is composed/centered properly. Stars that fall in the annulus are available without shifting the field of view at all. The controls you need are at the top right labeled "Select" and "Pan."

Pressing the pan button will allow you to scroll around the sky. The field of view indicator will not move with respect to the stars. However it is necessary to move this indicator in order to find a guide star. Press the "select" button and hover your mouse over one of the lines (any line) of the field of view indicator. When you have done this, the cursor will change from a pointer to a hand. Then you can left click and hold with your mouse button and shift the indicator's position on the screen.

The star indicated by the arrow in Figure 27 is a good guide star. Shift the indicator until it puts the guide star within the annulus. See Figure 28 below.

The indicator needs to be rotated to put the guide star on the guider rectangle. Do this by right clicking on the upper layer (Schulman32) and selecting properties.

In the form that pops up, input a "roll" angle (Position Angle) that will put guider rectangle on to the guide star. Type in a number and press the apply button. Increasing angle is counterclockwise with the guider being on the left when the position angle is "0." The good guide star is found to be at 328 degrees.

Figure 30 Find the "roll" angle that puts the guider small rectangle on the guide star. Finally copy the coordinates in the "Target" field and the roll angle you determined. In this case the values are: RA 23:20:54 Dec +61:12:06 PA 328 These are the values that you put into forms or plans that will allow you to take a long exposure using a guide star. The RA and Dec position here is the center of the field

of view indicator and not the catalog coordinates of the object.

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