

SESSION 4: ASTEROID HUNT

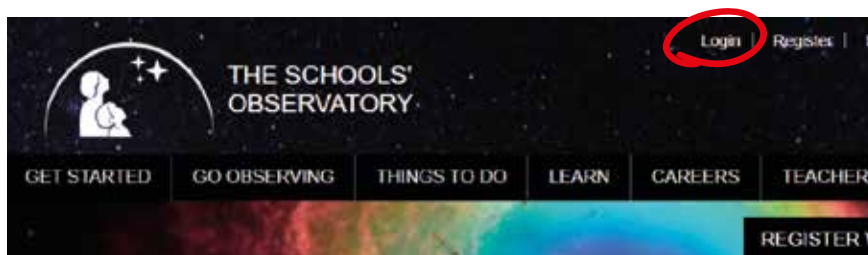
Asteroids are large rocks orbiting the Sun that are too small to be called planets. Using images from the Liverpool Telescope (shown on the inside cover of this booklet) you can join the hunt for asteroids! By looking at two images taken by the telescope a short time apart, you might be able to spot an asteroid moving. This is because asteroids appear to move across the sky relative to the far away objects and stars that look fixed.

The first thing we need to do is get some pictures (or observations) of the night sky. In each image, stars and asteroids will look the same. However, as we know that stars do not move around (i.e. are fixed), the only way we can spot asteroids and planets is by taking another image a few minutes later and looking to see if anything has moved – in which case it cannot be a star. It's a bit like keeping the camera still and taking a picture of someone running past. In the second picture, the runner will have moved position.



LOG IN TO OUR WEBSITE

1. Go to our website: www.schoolsobservatory.org and click 'Login' at the top of the page.



2. Next enter the username and password that your STEM Club Leader will give you, and click the 'Log in' button.

Write your username here:

Username *

Enter your The Schools' Observatory username.

Password *

Enter the password that accompanies your username.

Log in

Congratulations you are now logged in!



GET THE IMAGES

1. If your STEM Club Leader hasn't already given you the data files, go to our website: www.schoolsobservatory.org/discover/activities/hunting_for_asteroids.
2. At the bottom of the page there is a section called 'Data Files', right-click and save the following two sets of files to your computer (8 files in total):

ah-demo-1.fits
ah-demo-2.fits
ah-demo-3.fits
ah-demo-4.fits

ahunt-10-1-1.fits
ahunt-10-1-2.fits
ahunt-10-1-3.fits
ahunt-10-1-4.fits

OPEN AND VIEW THE IMAGES

1. Open AstroLab in your internet browser: www.schoolsobservatory.org/astrolab
2. Click on 'File', then 'Open an Image', find the location of the saved data files from before and click on 'ah-demo-1. fits', then click 'Open'.



3. Your image looks dark because the scaling is set such that only very bright objects appear on the screen. You are now going to change the scaling so you can see more objects.
4. Next click 'Display' from the menu at the top and select 'Scaling'.
5. You can now move the 'Minimum value' and 'Maximum value' slider bars side to side, and as you do so you'll see your image coming to life in the main image window.

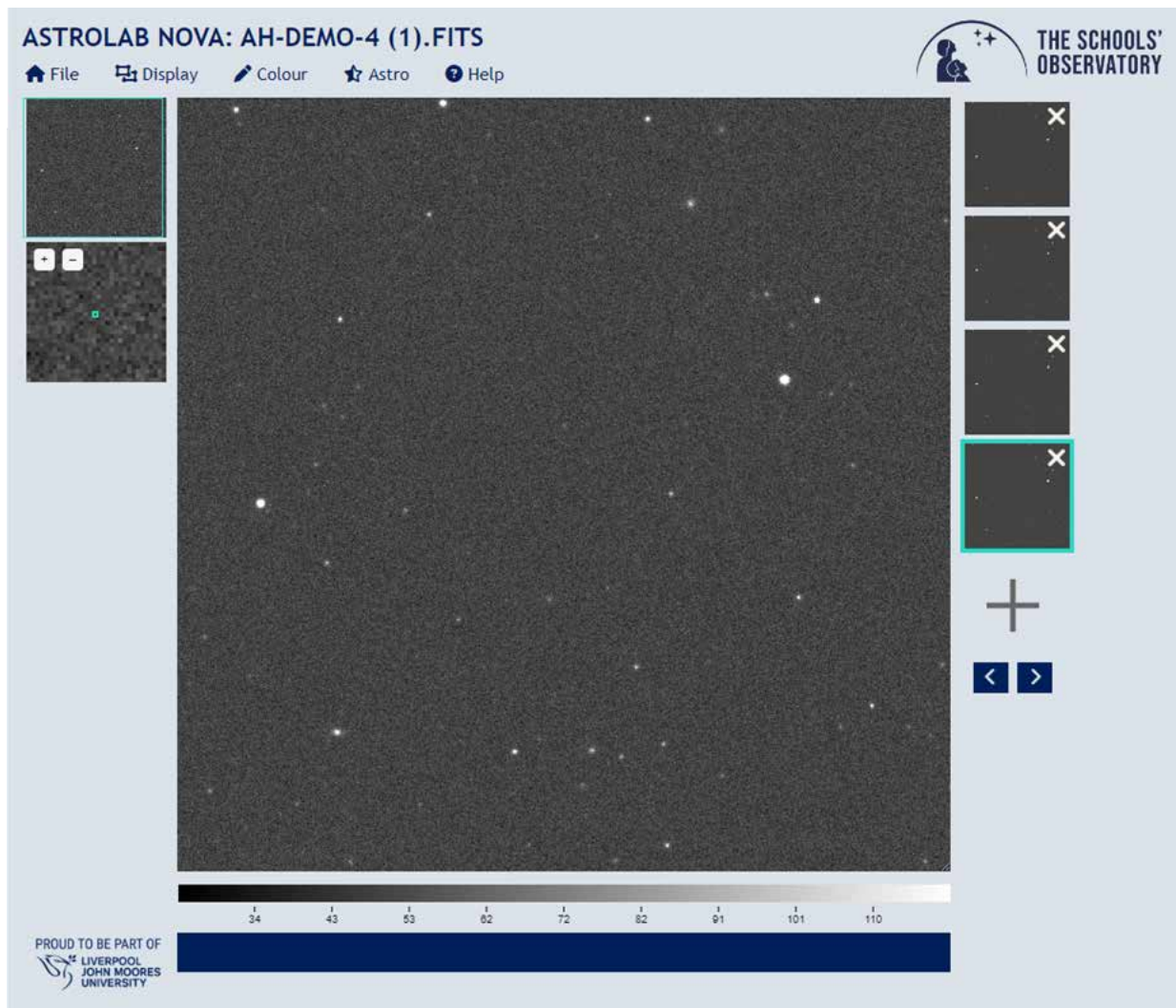
In the next steps you will open 3 more of the files into the Image boxes to the right of the main window.

6. Click on the plus sign (+) to the right of the main display window. Click on 'ah-demo-2.fits', then click 'Open'. Repeat steps 4 and 5 to improve what you can see. Try to make the scaling the same on each of the images.



- Repeat step 6 to open 'ah-demo-3.fits', and 'ah-demo-4.fits', changing the scaling on each (steps 4 and 5).

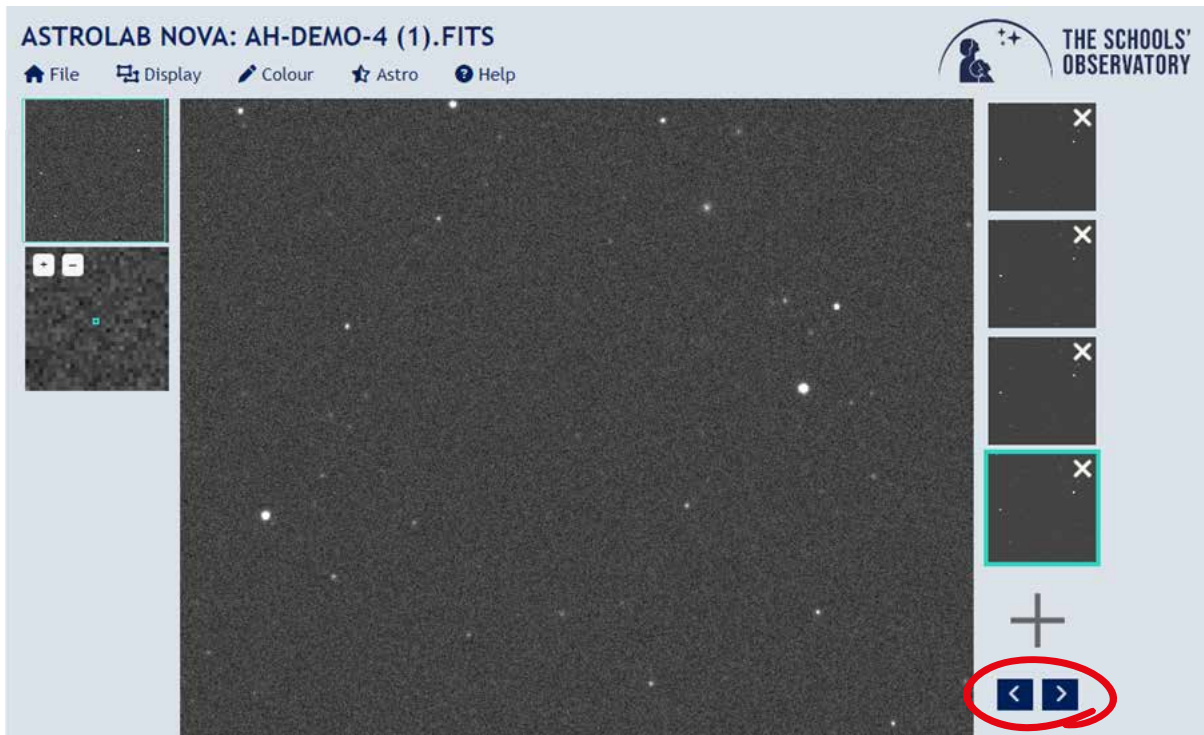
You should now have a window which looks like this:



HUNT THE ASTEROID

You can now 'blink' or flick between the images – you have to look carefully at one image, then switch to another and another.

1. To move between the images, press the arrow keys below the small image panes.



2. Keep clicking the arrow keys while looking at the screen and try and find the object that is moving.
3. Once you have found the first asteroid, try and find another one. This asteroid may be much fainter than the first one.

BONUS: FIND OTHER ASTEROIDS

Repeat the steps from Activities 4 and 5, using the second set of data files :

ahunt-10-1-1.fits
ahunt-10-1-2.fits
ahunt-10-1-3.fits
ahunt-10-1-4.fits

When you are happy that you can find a moving object in the demonstration image sets, visit our 'Download Asteroid Observations' page on the website for new image sets to see if you can find more asteroids!

www.schoolsobservatory.org/discover/projects/asteroidwatch/ast_download

Happy hunting!

