

# SESSION 4: ASTEROID HUNT

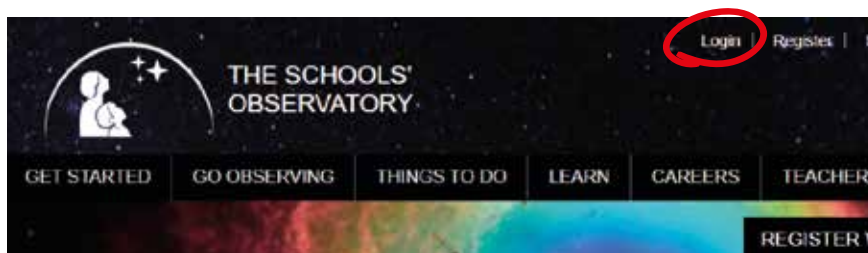
Asteroids are large rocks orbiting the Sun that are too small to be called planets. Using images from the Liverpool Telescope (shown on the inside cover of this booklet) you can join the hunt for asteroids! By looking at two images taken by the telescope a short time apart, you might be able to spot 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](http://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](http://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):

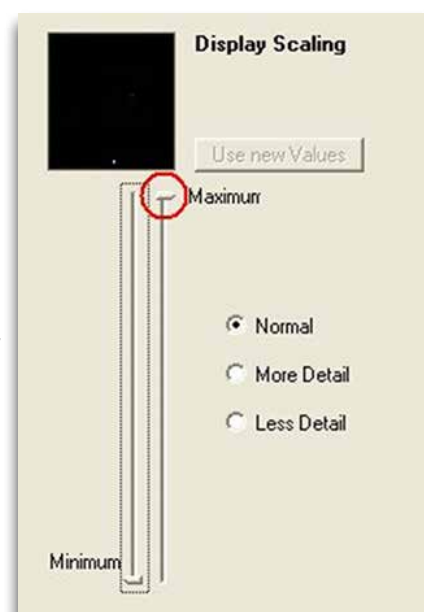
ah-demo-1.fits  
ah-demo-2.fits  
ah-demo-3.fits  
ah-demo-4.fits

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. Click on 'File', then 'Open Data Image', find the location of the saved data files from before and click on '**ah-demo-1.fits**', then click 'Open'.
2. 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.
3. Click on 'Display' and then 'Scaling'.
4. Move the slider on the far right hand side (see the red circle) until you can see a clearer picture in the small preview window. You do this by holding the left mouse button down as you move the slider up and down.

Now click on the 'Use new Values' button and the new image will be displayed on the main screen.



In the next steps you will open 3 more of the files into the Image Selection boxes in the bottom right of the LTImage window.

5. Click on Image Selection 2 in the bottom right corner.

Click on 'File', then 'Open Data Image', and click on '**ah-demo-2.fits**', then click 'Open'.

Repeat steps 2, 3 and 4 to improve what you can see.

6. Click on Image Selection 3 in the bottom right corner.

Click on 'File', then 'Open Data Image', and click on '**ah-demo-3.fits**', then click 'Open'.

Repeat steps 2, 3 and 4 to improve what you can see.

7. Click on Image Selection 4 in the bottom right corner.

Click on 'File', then 'Open Data Image', and click on '**ah-demo-4.fits**', then click 'Open'.

Repeat steps 2, 3 and 4 to improve what you can see.



## HUNT THE ASTEROID

You should now have four images loaded in the Image Selection boxes.

You now have to 'blink' between them – you have to look carefully at one image, then switch to another and another.

1. Select one of the four image windows in the bottom right pane and then **use the arrow keys** on your keyboard to move between them.
2. Repeat the process 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](http://www.schoolsobservatory.org/discover/projects/asteroidwatch/ast_download)

Happy hunting!

