

IMAGING AN ASTEROID

Beginners guide

The Slooh [A-Team](#) is a group of members actively involved in using Slooh telescopes to observe Comets and Near-Earth Asteroids (NEOs) and report their measurements to the [Minor Planet Center](#).

The A-Team Workspace and the Comet Trackers Workspace on the Slooh website are where observers discuss their targets and observations. Any interested Slooh member can join these workspaces and see what is going on, (request access from Paul@slooh.com).

Slooh members need authorisation from Slooh.com before they can make official measurement reports. To obtain that authorisation they need to “graduate” through a programme of tutorials and exercises to demonstrate the skills to make accurate and reliable measurements.

This can take quite a lot of time and attention, and not everyone wants to spend that much time on the subject. It also requires Astronomer level membership, and purchase of special software.

However, it is possible for anyone to make images of asteroids or comets, and the following notes may help.

What are Asteroids?

The Solar System formed about 4 ½ billion years ago from a cloud of gas and dust. In the middle, the Sun formed from mainly hydrogen and helium gas. It began nuclear fusion and has been “burning” ever since.

- Around the proto-Sun the gas and dust formed into a rotating disk of material. Near the Sun, grains of dust gradually stuck together and accumulated into bigger and bigger objects – ending up with the rocky planets we know today.
- Further out, beyond the “snow line”, volatiles like water and carbon dioxide, formed ice crystals clinging to the grains of dust and making them “sticky.” The sticky grains formed “snowy dirtballs” that grew rapidly and formed gas and ice giant planets.

There was a huge quantity of debris left over after the planets had formed. The inner region had lumps of rock and metal left over from failed rocky planets and most of those gathered in the region between Mars and Jupiter and are called the Main Belt Asteroids.

Many of the “dirty snowballs” were disturbed by the gravity of the giant planets. They came raining down towards the Sun (Late Heavy Bombardment) or were ejected outwards forming the Oort Cloud.

Some of these objects have evolved orbits that bring them close to Earth. These are called Near Earth Objects (NEO's) and we need to keep an eye on them.

Set up the Missions

You will need to set up two or more missions to the same object to be able to “blink” the images and show the object's movement. It's best to choose a Main Belt asteroid because that will show some movement if the missions are 10-15 minutes apart.

On the Slooh Dashboard go to Missions, Schedule Mission and select the “By Telescope” tab.

You should pick two or three missions on the same telescope and 10-15 minutes apart. Find the suitable schedule slots and set up the missions as follows:

Click on the available mission slot. With “By Slooh 1000” selected, choose category Minor Planets and select a visible Main Belt asteroid. Click on Preview Mission then Schedule Mission.

Now sit back and wait for the missions to run and hope for good weather!

Retrieve the Images

Go to Dashboard, Missions, My Past Missions. View each of the mission logs and download an image from each mission.

Check your download folder and move the downloaded images somewhere safe.

Blink the Images

Open your favourite GIF maker (I use Screen-to-GIF) and load your images. Set the blink speed to about 1 second and have a look.



FIGURE 1 FIRST ATTEMPT AT BLINKING.

It's obvious which one is the asteroid, but the image is a bit shaky with the stars moving about. That's because the telescope was not pointing in exactly the same direction for each image.

Those of you that already have Astro-image processing software will be able to align the images for a better result. (There may be an on-line GIF makers that can do that, but I have not found one.)

You can align the images fairly well using any photo editing app that has a "crop" feature. Load the images into the app, select a couple of stars upper left and lower right of the target and use them as a guide to crop each image to the same field of view. Then save the cropped images and recreate the GIF.



FIGURE 2 BETTER (BUT NOT PERFECT) ALIGNMENT.

Most Gif maker tools allow you to add some text so we can end up with:



FIGURE 3 WITH BETTER ALIGNMENT AND A TITLE.

Well done! You have your first asteroid observations.