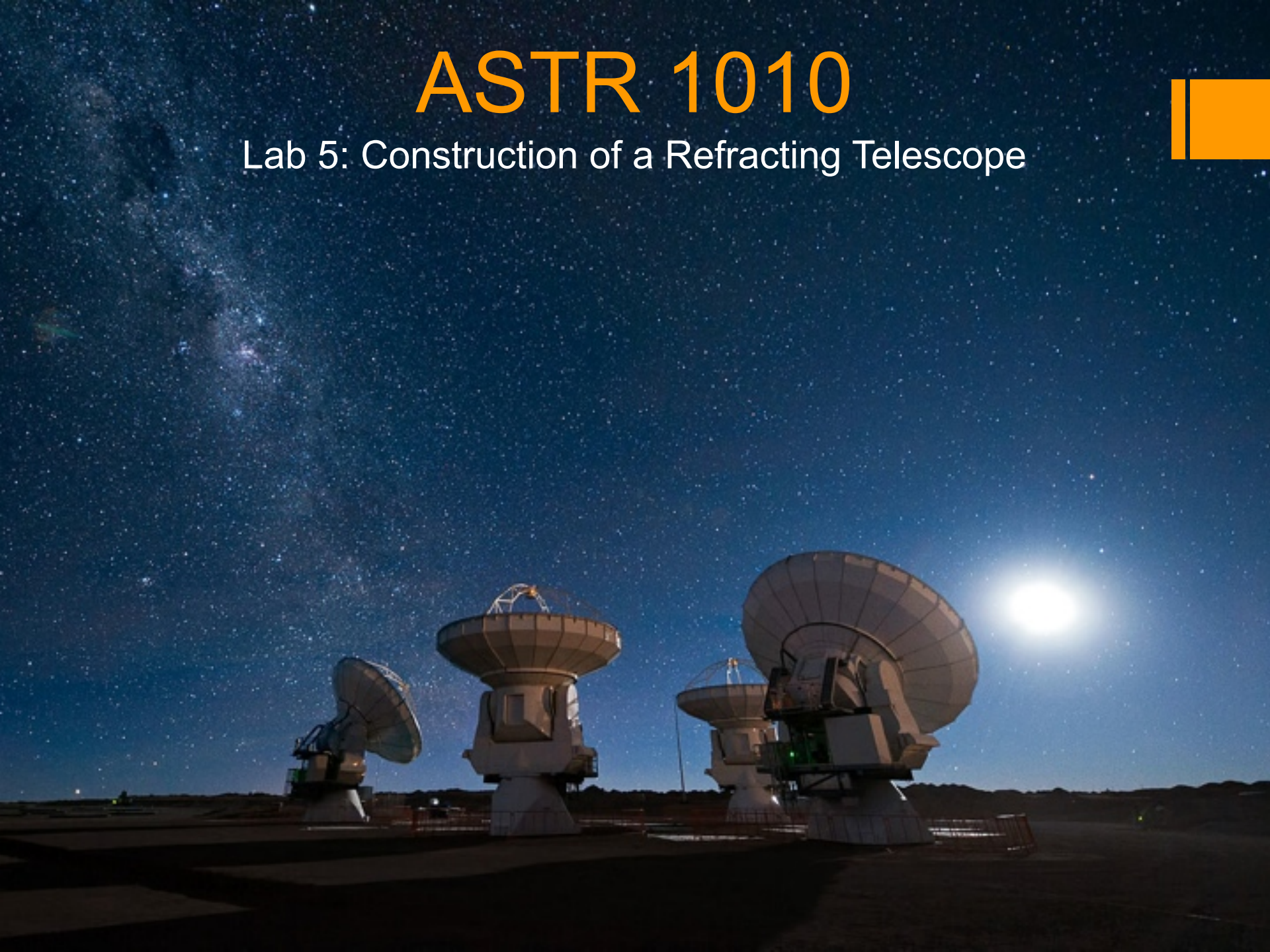


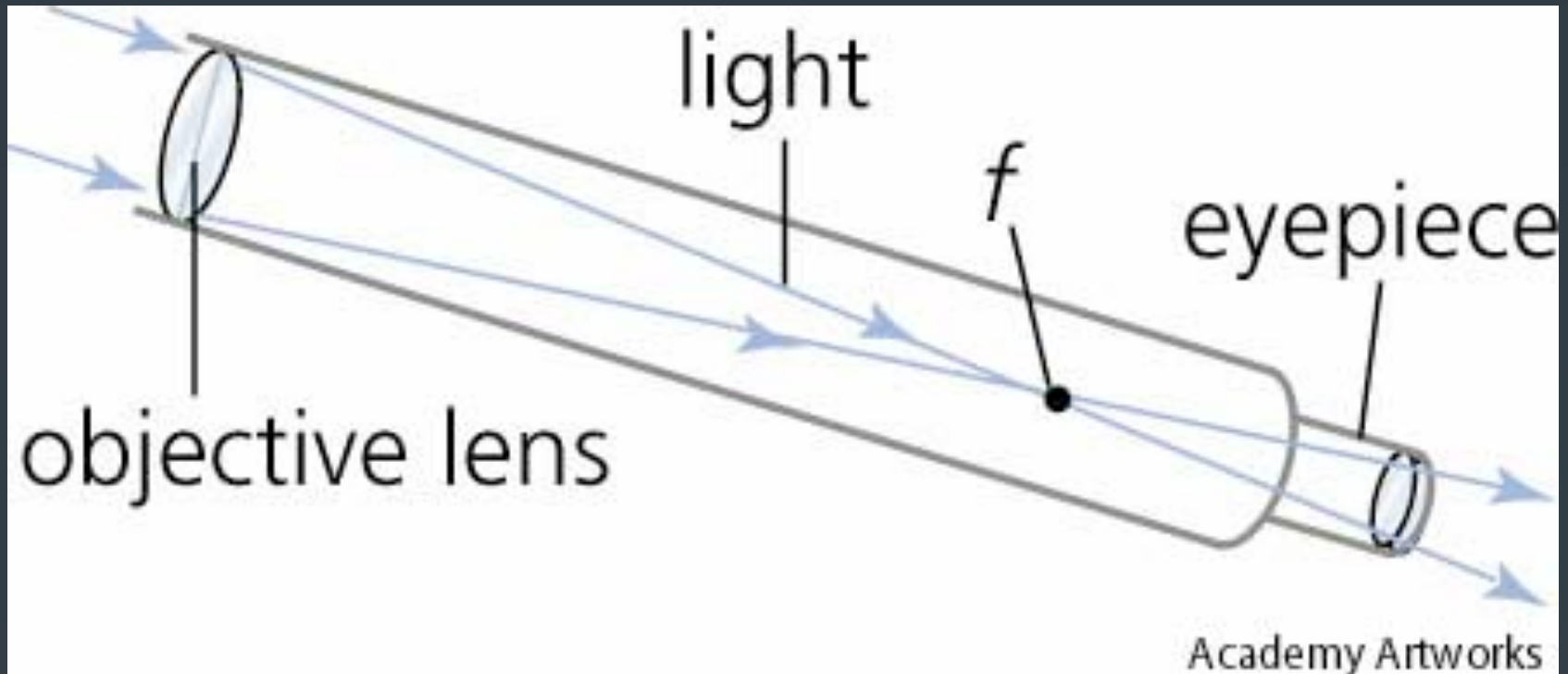
ASTR 1010

Lab 5: Construction of a Refracting Telescope



Refracting Telescope

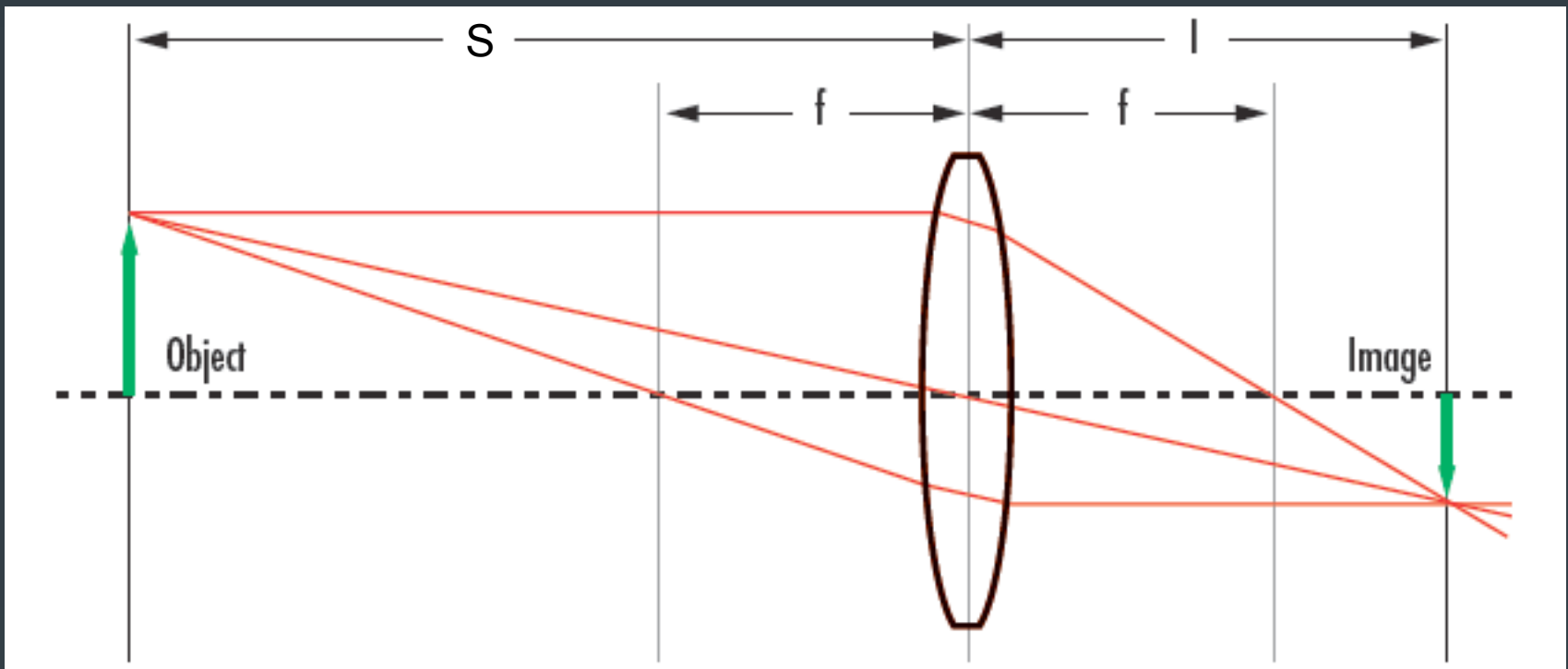
The simplest telescope you can build has two lenses and a tube connecting them. The objective lens gathers light, and the eyepiece lens focuses the light onto an observer's eye.



Lens Focal Length

Each lens focuses light a set distance away from the lens. This distance is the focal length. We can measure this distance by achieving a sharp image, then measuring object distance from the lens to the object and image distance from the lens to the image, and then using this formula:

$$f = \frac{S I}{I + S}$$



Magnification

The magnification of your telescope comes from the focal lengths of your two lenses.

$$\frac{f_o}{f_e}$$



Diameter

Diameter determines a particle's light gathering power and angular resolution. A bigger diameter lets a telescope gather more light and see finer details.

Light-gathering Area:

$$\pi \left(\frac{D}{2} \right)^2$$

Angular Resolution
(D in cm):

$$\frac{11.6}{D}$$

Be careful with units!
1 mm = 0.1 cm.



Build a Telescope

Leave out the cardboard washer! Increase your angular resolution! :)
When you're ready to see something through the telescope, look out down the hall.



Fin

