



Experience the Annular Solar Eclipse

Saturday, October 14, 2023

WHAT IS A SOLAR ECLIPSE?

Eclipses happen when one object in space passes through the shadow of another object in space. During a solar eclipse, the Moon passes between the Sun and Earth, blocking all or part of the Sun for the viewer.

Annular Solar Eclipse

An annular eclipse happens when the Moon is lined up between the Sun and Earth, but at its farthest point from Earth. Because the Moon is farther away from Earth than usual, it seems smaller. It does not block the entire view of the Sun. When it is in front of the Sun, the Moon will look like a dark disk on top of a larger, bright disk. This creates what looks like a ring around the Moon.

Total Solar Eclipse

For a total eclipse to take place, the Sun, Moon, and Earth must be in a direct line. The people who see the total eclipse are in the center of the Moon's shadow when it hits Earth. The sky will darken, as if it were twilight. Weather permitting, people in the path of a total solar eclipse can see the Sun's corona, the outer atmosphere of the Sun. A total solar eclipse is the only type of solar eclipse where viewers can watch without their eclipse glasses – and they can only remove them when the Moon is completely blocking the Sun.

Hybrid Eclipse

Sometimes a solar eclipse can appear as an annular in some places and a total in others as the Moon's shadow moves across Earth's surface. This is known as a hybrid eclipse.

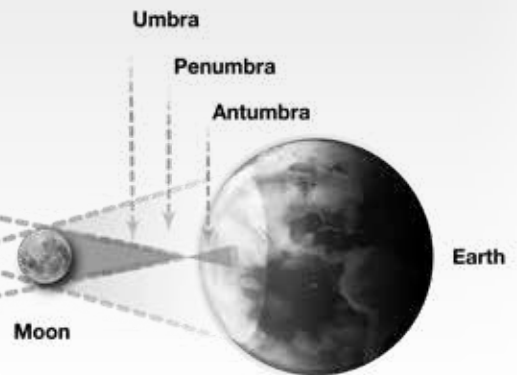
Partial Solar Eclipse

A partial eclipse happens when the Sun, Moon, and Earth are not exactly lined up. Only a part of the Sun will appear to be covered. During a total or annular solar eclipse, people outside the Moon's inner shadow see a partial solar eclipse.

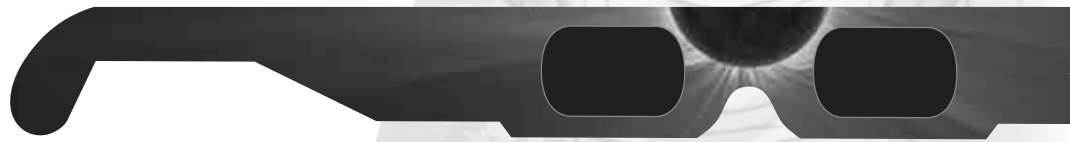
Geometry of an Annular Solar Eclipse



Sun



During an annular eclipse, the Moon's inner shadow cone (the "umbra") does not reach Earth's surface. Observers in the "antumbra" will see a ring of sunlight around the Moon. Diagram not to scale: If drawn to scale, the Moon would be 30 Earth diameters away from Earth. The Sun would be 400 times that distance.



WHERE TO WATCH

To find out what's happening in your area, go to: solarsystem.nasa.gov/eclipses



HOW TO WATCH

You can see the Sun and an eclipse with special eclipse or solar viewing glasses. NEVER look directly at the uneclipsed or partially eclipsed Sun without appropriate eye wear. Sunglasses are not safe to view an eclipse. For more information, visit: go.nasa.gov/EclipseEyeSafety



HOW LONG WILL IT LAST

The length of the eclipse will depend on your viewing location. The partial phases will last 1 to 2 hours both before and after annularity. For most locations, annularity will last between 2 and 5 minutes, but it will be longer or shorter in some places.

SAFELY OBSERVING THE SUN

WARNING!

Except during the total phase of a total solar eclipse, do not look at the Sun without special eye protection. **BEFORE EACH USE:** Check the front and back of each lens for damage such as scratches, pinholes, or separation from the frame.

DO NOT USE IF DAMAGED! Cut glasses into small pieces and discard.

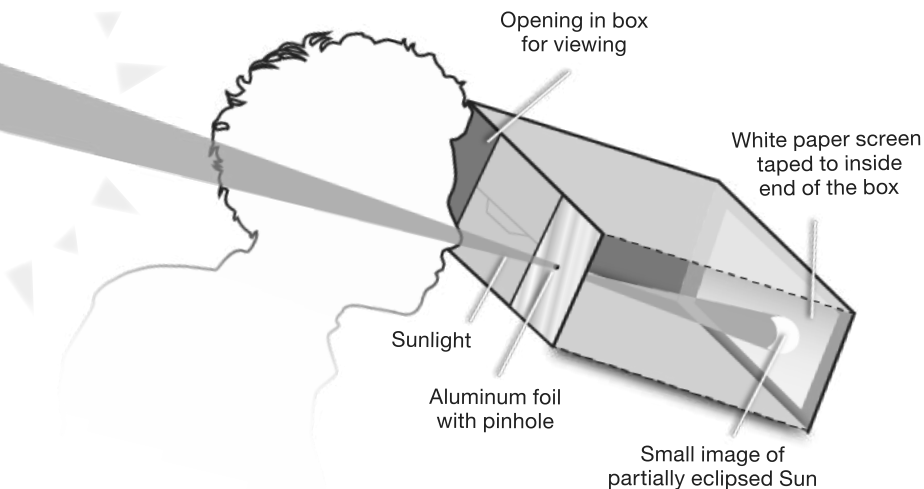
DO NOT attempt to clean or disinfect eclipse glasses except with a soft, dry, nonabrasive tissue or cloth.

View the eclipse
with special
eclipse glasses



Sunglasses are
not safe to view
the eclipse

NO!



Make Your Own Eclipse Projector

You can make this simple eclipse projector with almost any cardboard box, paper, tape, and foil. The longer the distance from the pinhole to screen, the larger the image of the Sun will be.

More Ways to Experience the Eclipse

You can access more exciting information about this eclipse, including downloadable activities, information about our Sun, and alternative ways to view the eclipse at solarsystem.nasa.gov/eclipses.



Eclipses in the United States

The next solar eclipses that cross the United States are on Saturday, October 14, 2023 (annular solar eclipse) and Monday, April 8, 2024 (total solar eclipse).

This product is supported by the NASA Heliophysics Education Activation Team (NASA HEAT), part of NASA's Science Activation portfolio.

Viewers can experience the connection between the Sun, Earth, and Moon during an annular solar eclipse. NASA studies how the Sun – and solar eclipses – influence our planet from the ground, our atmosphere, and in space.

Image Credit: Hinode's view of the annular eclipse on Oct. 25, 2022. Image credit: NASA/Hinode/XRT.

ECLIPSE
2023 THROUGH THE EYES OF NASA

NP-2022-7-807-GSFC