All About Solar Eclipses



Eclipses are a play of shadows when three celestial bodies fall in a straight line for a brief moment in their orbits. A solar eclipse occurs when the moon comes in between the sun and the earth, and the shadow of the moon falls on a part of the earth. Similarly, a lunar eclipse is caused when the earth comes in between the sun and the moon, and the earth's shadow falls on the moon.

Credit: N. Sanu

The central cone of shadow behind the moon is its umbra and the more diffuse region surrounding it is the penumbra. As the moon slowly covers the disc of the sun, you could experience one of three kinds of solar eclipses, depending on which part of the shadow falls on your location.

Partial Solar Eclipse: For regions under the penumbra, the moon never manages to completely cover the sun even during maximum eclipse. Farther away you are from the path of totality/annularity, less is the fraction of the sun covered.

Total Solar Eclipse: For regions under the umbra, the moon will completely cover the disc of the sun for a few minutes during maximum eclipse. This is when you can see the atmosphere of the sun, called the corona. The path of the umbra across the earth is the path of totality.

Annular Solar Eclipse: If the moon is farther away in its orbit than usual during a total solar eclipse, then the moon will not be able to completely cover the disc of the sun during maximum eclipse. Instead, a ring, or annulus of the exposed sun's surface can be seen for a few minutes at this time. The eclipse on 21 June 2020 will be one of these.



Credits: The Exploratorium, www.exploratorium.edu

Did you know?

The sun is about 400 times bigger than the moon, but it is also about 400 times farther away from us than the moon is. This is why they appear to be the same size on the sky. This remarkable coincidence is what lets us experience a total solar eclipse!

Activity

Hold a coin in front of you and find the distance from your eyes at which it just covers the head of your friend who is standing farther away. By measuring the distance of the coin and your friend from your own eyes, and the diameter of the coin, can you calculate the size of your friend's head?

LOOKING AT THE SUN DIRECTLY WITH YOUR NAKED EYES OR THROUGH A TELESCOPE, BINOCULARS OR A LENS, MAY PERMANENTLY DAMAGE YOUR EYES.

Download this poster series and our Eclipse Handbook for Africa from our website

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Background image: A montage of the stages of the annular solar eclipse of 26 Dec 2019, by Aasif Iqbal J from Coonoor, India.