

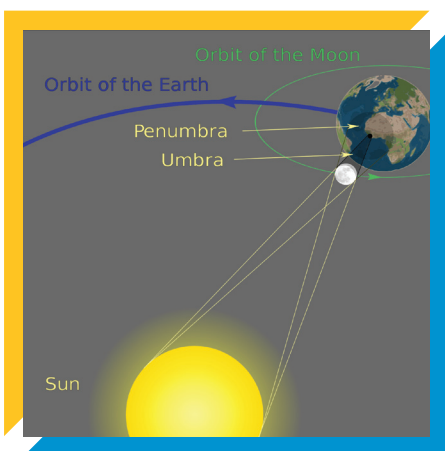
Solar Eclipse

August 21, 2017

Credit: Luc Viatour / www.Lucnix.be

Earth-Moon-Sun Connection

A solar eclipse can only take place at the phase of a new moon, when the Moon passes directly between the Sun and Earth and its shadow falls upon Earth's surface. In a total eclipse, the disk of the Sun is fully obscured by the Moon. In partial and annular eclipses, only part of the Sun is obscured.



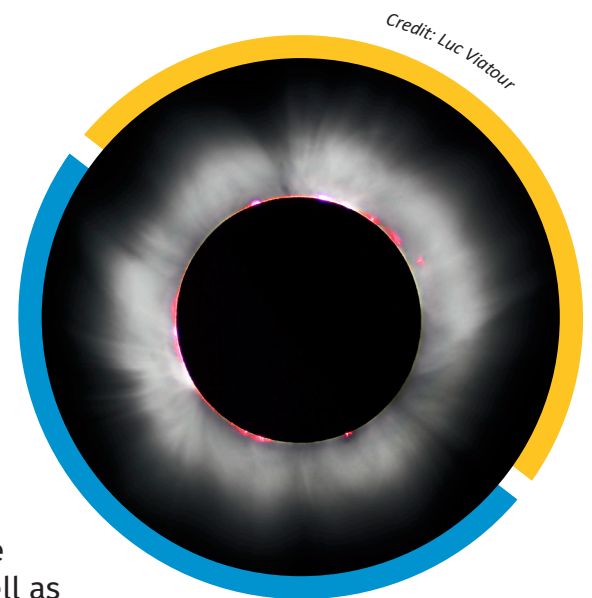
Credit: Sagredo

Geometry of Total Solar Eclipse

The small area where the umbra touches Earth's surface is where a total eclipse can be seen. The larger light gray area is the penumbra, in which a partial eclipse can be seen.

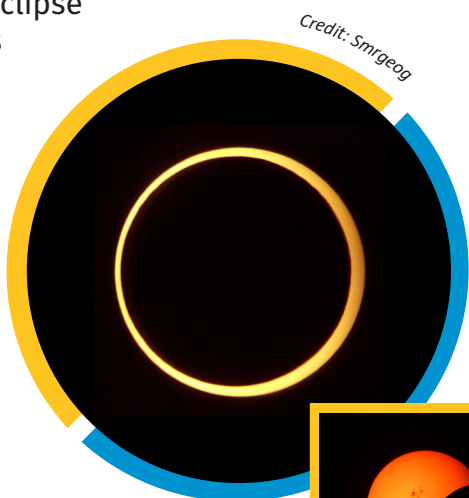
Total Solar Eclipse

A total solar eclipse occurs when the Moon completely covers the Sun's disk, as seen in this 1999 solar eclipse. Prominences can be seen along the limb (in red) as well as extensive coronal filaments.



Annular Solar Eclipse

An annular solar eclipse (upper left) occurs when the Moon is too far away to completely cover the Sun's disk (May 20, 2012). During a partial solar eclipse (lower right), the Moon blocks only part of the Sun's disk (October 23, 2014).



Credit: Tomruen

In some ancient and modern cultures, solar eclipses have been attributed to supernatural causes or regarded as bad omens. A total solar eclipse can be frightening to people who are unaware of its astronomical explanation, as the Sun seems to disappear during the day and the sky darkens in a matter of minutes. The image on the right is from Antoine Caron's (1515-1593) *Dionysius Converting the Pagan Philosophers*.



Credit: J. Paul Getty Museum

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Science-Technology Activities &
Resources For Libraries



NCIL
National Center for
Interactive Learning

Credit: University of Colorado