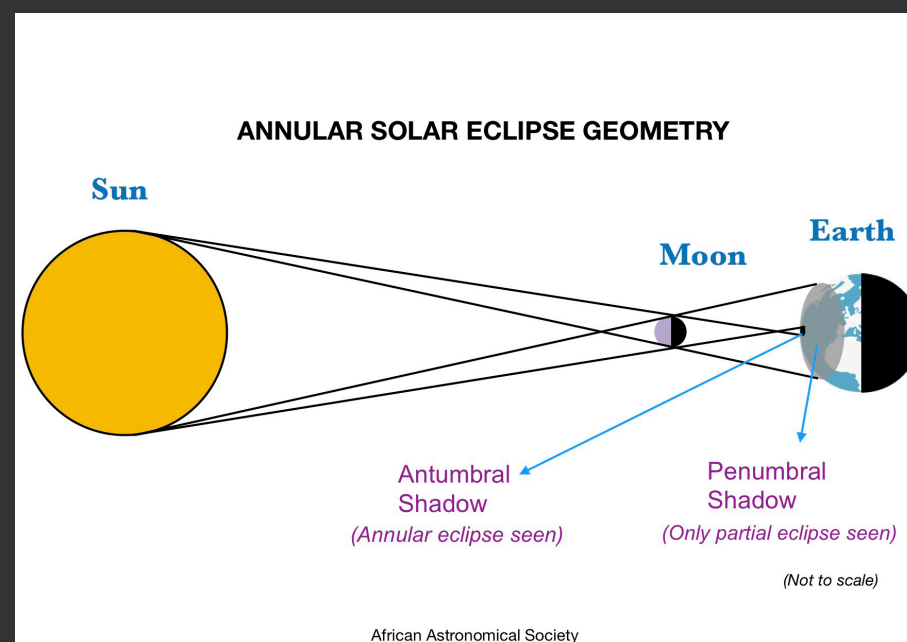


Annular Solar Eclipses

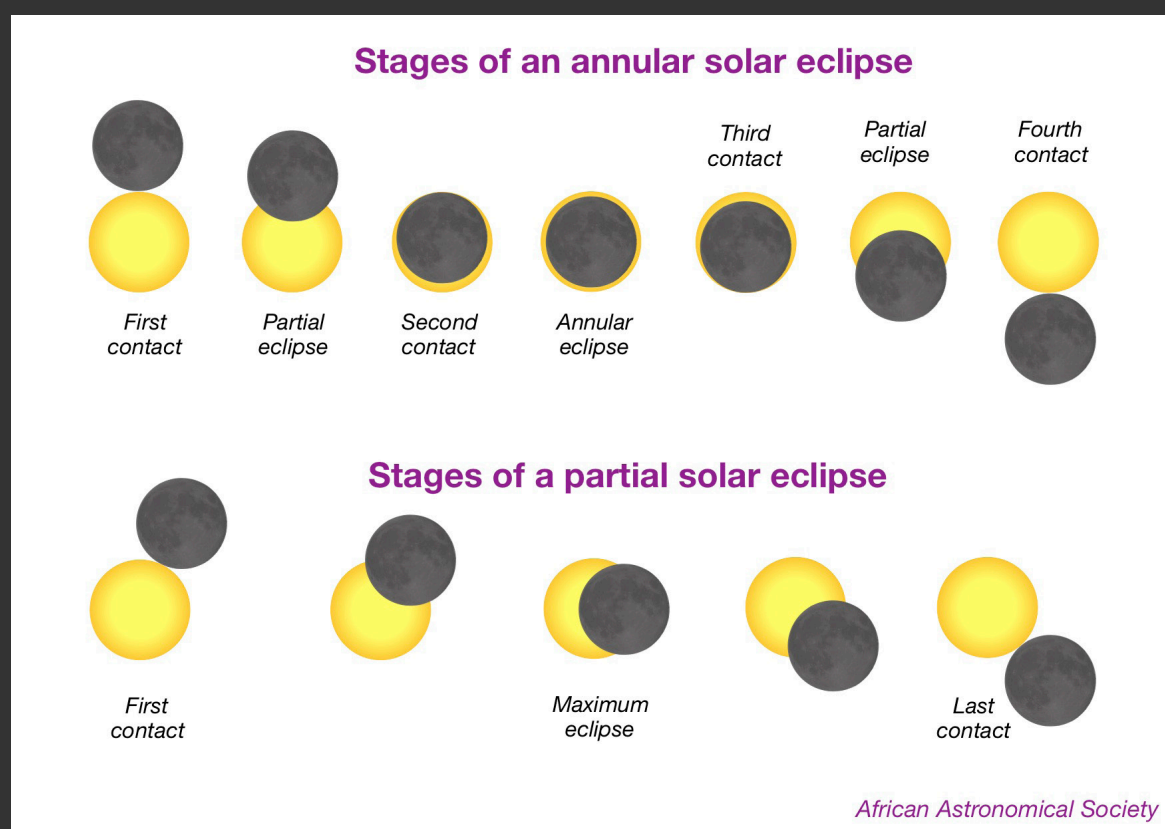
The eclipse of 21 June 2020 will be an annular solar eclipse. Locations under the penumbra, or the outer shadow of the moon, will experience a normal partial eclipse, where only a portion of the disc of the sun will be covered during maximum. For regions directly under the moon's shadow (called the antumbra, which is the extension of the umbra), the sun will appear as a "ring of fire" or annulus, at maximum eclipse.



The orbit of the moon around the earth is not a perfect circle, but is shaped like an oval (ellipse). Therefore, the distance to the moon varies continuously during its orbit around us. This difference, of about 11% implies that the apparent size of the moon also varies during its orbit.

Sometimes the moon comes exactly in between the sun and the earth when it is farther away in its orbit. At this time, it would not be large enough to completely cover the sun during mid-eclipse and its antumbra reaches the earth rather than its umbra.

On 21 June 2020, the moon will be about 1% smaller than the sun on the sky. This is why we will have an annular solar eclipse on this date. Locations under the antumbra will be able to see a thin ring of the exposed sun for a few minutes during maximum eclipse.



Did you know?

The moon is slowly moving away from us, by roughly 4 cm per year, and in about a billion years, will be too far away to cause total eclipses of the sun. We will only see annular solar eclipses from then on.

Activity

Cut out two circular pieces of paper of different colours, with one being a 3-4 times larger than the other. Paste the larger disc on the wall, stand in the middle of the room and hold the smaller disc directly in front of it. By changing the distance of the smaller disc from your eyes, can you recreate a total and an annular eclipse?

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

<https://www.africanastronomicalsociety.org/solar-eclipse-2020/>

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niruj@africanastronomicalsociety.org



Designed by: Science Stars - info@sciencestar.com | www.sciencestars.co.za



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