

May features a 'Blood Flower Moon'

By Alan Sheidler, Popular Astronomy Club May 3, 2022

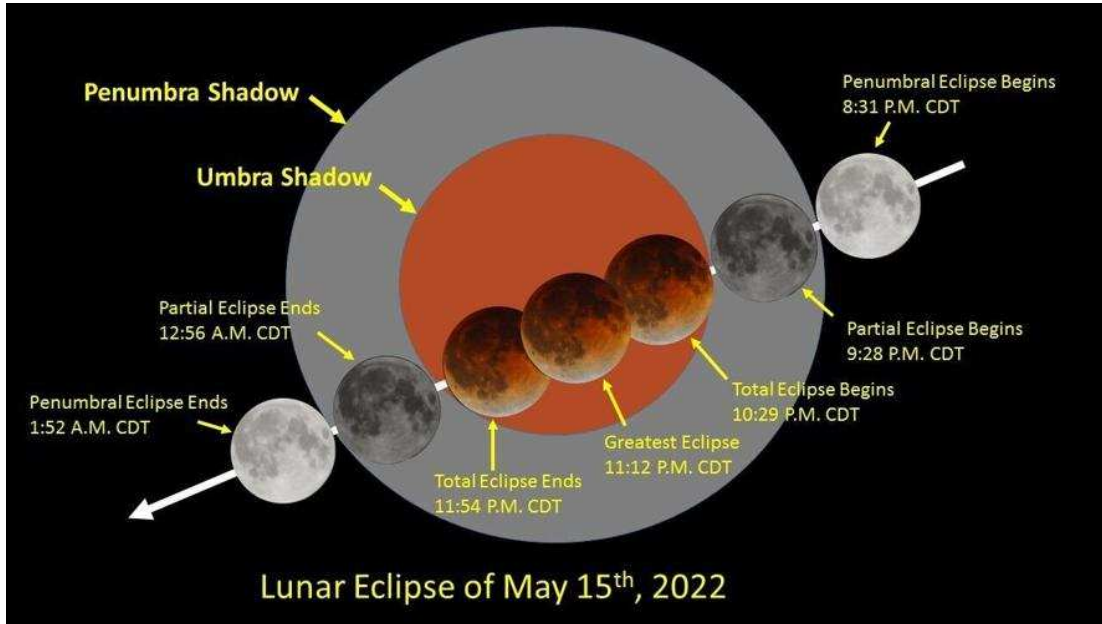


Photo by Alan Sheidler

I have to admit to always having been interested in speed. How fast things move has always fascinated me.

How fast is a jet airliner, an automobile, a galloping horse, a garden snail or a horsefly? Certainly a jet airliner is faster than a garden snail on a miles per hour (or kilometers per hour) basis — but is this the best way to compare their speeds? What if we consider the size of the object, and compare how long it takes for the speeding object to move its own length?

For example, let's say a Boeing 747 (which is 70.6 meters in length) is cruising at 900 kilometers per hour. If you divide the length of that airliner by its speed, you find that it takes slightly less than three-tenths of a second to travel its own length. That sounds pretty fast to me.

But compare the 747 to a horse. I won't bore you with the math, but a galloping horse can traverse its own length in under two-tenths of a second. Therefore, a horse is actually faster than the 747 when you factor speed by size.

What about a horsefly? I was surprised to learn that a male horsefly pursuing a female has actually been measured zipping along at 145 km/hr! On an absolute basis, that's fast. But factoring in his diminutive size (1 inch or 25 millimeters), that male horsefly moves his own length in an amazingly quick 0.00063 seconds. Now that's really fast!

So now consider the lowly garden snail. We've all seen one of these little guys cruising along at a breakneck one-one-hundredth (.01) km/hr. This is indeed slow on an absolute basis, but considering the average size of a snail is perhaps 1.2 inches, and dividing its length by its speed, we see that a garden snail moves its own length in just under 11 seconds, which is faster than I thought.

Now let's consider an object that is moving really fast — the moon. The actual speed of the moon varies a little bit because its orbit is slightly elliptical. But its average speed as it orbits the Earth is approximately 3,660 km/hr — more than 2,200 miles per hour.

Everyone would agree that this is fast, right? But now consider that the moon is 3,475 kilometers in diameter. Adjusting the moon's speed for its size, we find that it travels its own diameter in just under 1 hour — about 57 minutes, to be exact. Compared to a garden snail, the moon is downright leisurely. In fact, the moon is one of the very few objects which moves its own diameter in about one hour.

We'll get an opportunity on Sunday, May 15, to actually see the moon's motion in real time. A lunar eclipse will begin that evening at about 9:28 p.m. Central time.

At that moment — assuming the sky is clear — we'll see the moon entering into the darkest part of the Earth's shadow, called the umbra. By 9:45 p.m. or so, you should see a "bite" out of one side of the moon's disk and watch it gradually grow in size as the eclipse progresses.

This partial eclipse phase will continue as the moon dives ever deeper into the Earth's umbra for about an hour. By 10:29 p.m., the moon will be completely within the umbra, and continue to be totally eclipsed for approximately 85 minutes as it gradually traverses the Earth's dark shadow.

The moon will be deepest into the umbra at 11:12 p.m. Totality will end at 11:54 p.m. when the moon begins to reemerge from the umbra. The remaining partial phase of the eclipse will continue until 12:56 a.m. Monday morning as the moon leaves the umbra and is gradually re-illuminated by sunlight.

During the partial eclipse phases, the moon will move its own diameter from the light to shadow and then back again. The time required to do this is a little more than one hour because the moon's path is slightly offset from hitting the center of the Earth's shadow. This means the moon will have to travel slightly farther to transition from light to dark and vice versa.

Nevertheless, a lunar eclipse is a good opportunity to witness the motion of the moon in real time, and prove to yourself that the moon does indeed move its own diameter in about one hour.

This month's lunar eclipse will also be an excellent opportunity for anyone wanting to enjoy one of nature's most interesting and beautiful astronomical events. As lunar eclipses go, this will be one of the best in a long time.

During the eclipse, the Earth's dark umbra shadow will cover the moon's surface for 85 minutes, during which there will be no direct sunlight on the moon's surface. Theoretically, the moon should be invisibly dark during the time it is within the umbra; however, there will still be some light refracted from the Earth's atmosphere finding its way to the lunar surface.

As a result, we will see a dimly illuminated moon which may take on a very interesting color - a shade of a dull red, brick red, orange, copper, or even gray. We won't know the colors we will actually see until the eclipse happens.

Imagine you're an astronaut standing on the surface of the moon and looking up in the sky during the eclipse. What you would see would be something beautiful and miraculous.

As you watch the Earth pass in front of the Sun, you would still see the Earth's atmosphere glowing like a reddish halo as sunlight is refracted or bent around the Earth. This reddish halo is caused in the same way we have red sunsets or sunrises on Earth.

The refracted sunlight from the Earth's atmospheric halo dimly illuminates the moon's surface. So even though there is no direct sunlight falling on the portion of the moon lying within the umbra, it will still be visible to us as a dim reddish color.

The colors seen on the moon may be very different depending on if there have been recent volcanic eruptions, thick clouds, or thunderstorms on Earth prior to the eclipse. Dust particles and clouds can filter the sunlight, causing dramatic shades of red.

A total lunar eclipse is referred to as a “Blood moon” because it can look almost blood red. The May full moon is sometimes called a “Flower moon” because May is the month when flowers bloom.

This month’s lunar eclipse could be called the “Blood Flower moon” but, regardless of what we call it, it should be a good one. Seek a location with a clear view of the southwestern sky and bring a pair of binoculars or a small telescope.

Often when we hear or read the word “eclipse,” it’s followed by some kind of warning to protect your eyes. This warning, however, only applies to solar eclipses. During a lunar eclipse, there is no danger to your eyes, so you can safely look at it without any eye protection and use binoculars or a telescope without a filter.

As you may have gathered, a lunar eclipse is only possible when the moon is full. Because the full moon is very bright, its light drowns out dimmer, deep sky objects.

As the lunar eclipse proceeds, however, the moon will dim way down and allow other nearby objects to shine through. Watch as the moon dims and the other stars nearby pop into view.

You will not want to miss this event. Let’s hope for clear skies and keep looking up.

PAC invites the public to its next observing session at Niabi Zoo on May 21 at sunset and on the third Saturday of every month through November. To learn more, visit the PAC website at popularastronomyclub.org or search for the club on Facebook.

[Longest Partial Lunar Eclipse in 600 Years to Occur This Week](#)

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