

Trips / Events

Ideas for trips and events
always welcome!

events@weymouthastronomy.co.uk

- ◆ 21 Oct CADAS—APOD Evening—Bob Mizon
- ◆ 3 Nov WAS—Herschel & Planck, Europe's cosmic explorers—Chris North
- ◆ 18 Nov CADAS—Members' short talks evening
- ◆ 1 Dec WAS—Members' video and digital images
- ◆ 16 Dec CADAS—Steve Tonkin: Star of Bethlehem and Christmas social
- ◆ 2016 Meeting programmes to be announced soon.

If you are interested in giving a talk or workshop, let the organisers know. They like to offer new titles in their programme line-up.

More events to come!!

WAC Upcoming Events:

- 13 Nov—Exoplanets—Gemma Lavender
- 11 Dec—Christmas Quiz Night

2016 Meeting programme to be announced soon.

More to come!

Plans for informal viewing nights will take place after the monthly meetings, weather permitting.

Sky Watcher



WAC News—

Last month's total lunar eclipse put on a great showing across most of the UK. If you were able to capture some images, the article below may be of great interest. Chris B. has already performed the calculations with great results.

This month, keep a watch in the pre-dawn sky for blazing Venus joined by Jupiter and Mars.

<http://theskylive.com/venus-tracker>

Until next month...clear skies! ~SK

Measure the moon's size and distance during the next lunar eclipse By Ethan Siegel

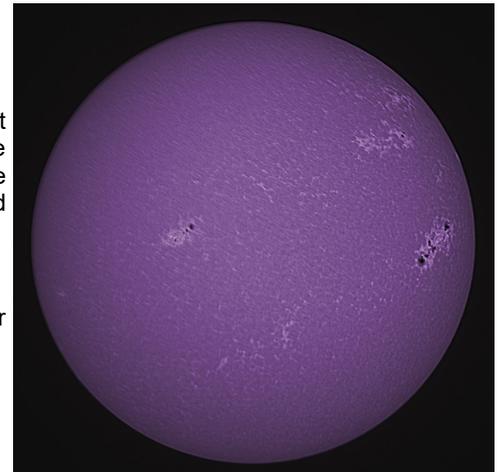
The moon represents perhaps the first great paradox of the night sky in all of human history. While its angular size is easy to measure with the unaided eye from any location on Earth, ranging from 29.38 arc-minutes (0.4897°) to 33.53 arc-minutes (0.5588°) as it orbits our world in an ellipse, that doesn't tell us its physical size. From its angular size alone, the moon could just as easily be close and small as it could be distant and enormous.

But we know a few other things, even relying only on naked-eye observations. We know its phases are caused by its geometric configuration with the sun and Earth. We know that the sun must be farther away (and hence, larger) than the moon from the phenomenon of solar eclipses, where the moon passes in front of the sun, blocking its disk as seen from Earth. And we know it undergoes lunar eclipses, where the sun's light is blocked from the moon

by Earth.

Lunar eclipses provided the first evidence that Earth was round; the shape of the portion of the shadow that falls on the moon during its partial phase is an arc of a circle. In fact, once we measured the radius of Earth (first accomplished in the 3rd century B.C.E.), now known to be 6,371 km, all it takes is one assumption—that the physical size of Earth's shadow as it falls on the moon is approximately the physical size of Earth—and we can use lunar eclipses to measure both the size of and the distance to the moon!

Simply by knowing Earth's physical size and measuring the ratios of the angular size of its shadow and the angular size of the moon, we can determine the moon's physical size relative to Earth. During a lunar eclipse, Earth's



30 September—Calcium K 393.4nm

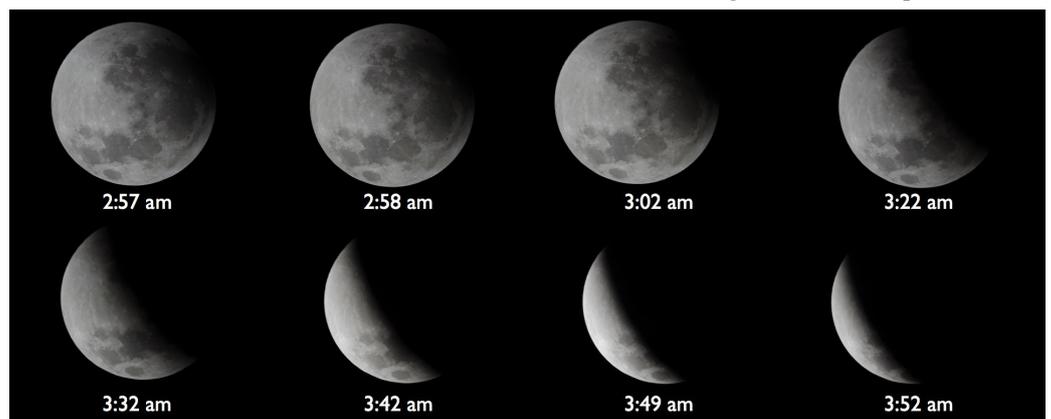


Image credit: Daniel Munizaga (NOAO South/CTIO EPO), using the Cerro Tololo Inter-American Observatory, of an eight-image sequence of the partial phase of a total lunar eclipse.



Moon (continued)

shadow is about 3.5 times larger than the moon, with some slight variations dependent on the moon's point in its orbit. Simply divide Earth's radius by your measurement to figure out the moon's radius!

Even with this primitive method, it's straightforward to get a measurement for the moon's radius that's accurate to within 15% of the actual value: 1,738 km. Now that you've determined its physical size and its angular size, geometry alone enables you to determine how far away it is from Earth. A lunar eclipse is coming up on September 28th, and this supermoon eclipse will last for hours. Use the partial phases to measure the size of and distance to the moon, and see how close you can get!

	Maxi Moon			
	<p>Camera</p> <p>Camera maker SONY Camera model ILCA-77M2 F-stop f/2.8 Exposure time 1/25 sec. ISO speed ISO-500 Exposure bias 0 step Focal length 50 mm Max aperture 2.96875 Metering mode Pattern</p>	<p>27th September 2015</p> <p>Camera</p> <p>Camera maker SONY Camera model ILCA-77M2 F-stop f/2.8 Exposure time 1/2000 sec. ISO speed ISO-500 Exposure bias 0 step Focal length 50 mm Max aperture 2.96875 Metering mode Pattern</p>	<p>Date taken 27/09/2015 19:53</p> <p>Maxi Moon 27th September 2015</p> <p>Date taken 27/09/2015 19:52</p>	
	Mini Moon			
	<p>Camera</p> <p>Camera maker SONY Camera model ILCA-77M2 F-stop f/5 Exposure time 1/500 sec. ISO speed ISO-400 Exposure bias 0 step Focal length 50 mm Max aperture 2.96875 Metering mode Spot</p>	<p>5th March 2015</p> <p>Camera</p> <p>Camera maker SONY Camera model ILCA-77M2 F-stop f/2.8 Exposure time 1/80 sec. ISO speed ISO-800 Exposure bias 0 step Focal length 50 mm Max aperture 2.96875 Metering mode Spot</p>	<p>Date taken 05/03/2015 18:47</p> <p>Mini Moon 5th March 2015</p> <p>Date taken 05/03/2015 19:01</p>	

Images and measurements above provided by Chris Bowden.

Members Images—Total Lunar Eclipse 28 September 2015



Image taken by Robin Catchpole from the Cambridge Institute of Astronomy,



Image taken by Sheri Karl from Aberdeen with a Pentax DSLR on a fixed tripod through haze.

Images taken by Matt Karl from San Diego, California with a smart-phone and Meade ETX70.

