

# THE STAR DIAGONAL

THE JOURNAL OF THE OGDEN ASTRONOMICAL SOCIETY



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## Meeting Announcement

The monthly meeting of the Ogden Astronomical Society will be held on October 8<sup>th</sup> at 7:30 in the Ott Planetarium at Weber State University

## President's Message

If you haven't heard the news about last month's elections we didn't have them. With only the past officers running we had a sustaining vote and all four of us will continue for another year. The President and Vice President will not be eligible to run for a third year so we will need someone to step up next September.

I hope everyone had a chance to see the eclipse last Sunday the 27<sup>th</sup>. We had a view from my back deck; there was a thin cloudy haze when the moon rose over the mountain. The clouds seemed to clear a little as the moon got higher. When it got to totality it was darker than any other eclipse I have seen, not sure if it was due to the clouds or it was

just darker. We had a great time using my 4" refractor.

At our meeting this month October 8<sup>th</sup> we will show a Night Sky Network Teleconference recorded in August titled, 50 Years of Exoplanets, the View from 2045. The speaker is Dr. Charles Beichman, he is the Executive Director of NASA's Exoplanet Science Institute at the California Institute of Technology in the jet propulsion labs. It is a Power Point show with recorded audio.

We are still looking for anyone that can make it to Snow Basin on Friday October 9<sup>th</sup> and we have our last Antelope Island star party Saturday October 17, solar viewing will start at 5:30.

Please come out and support these club activities for the public.

Thanks,

Lee Priest

## OAS Minutes – September 2015

The annual meeting of the Ogden Astronomical Society was held on September 10, 2015 at 7:30pm at the Ott Planetarium. President Lee Priest conducted the meeting.

### Announcements

- 9/12 - North Fork Park Star party celebrating the Dark Sky Park IDA designation.
- 9/19 – Antelope Island.
- 9/27 – Lunar Eclipse, Harvest Moon.
- 10/2 – Kaysville Primary star Party.
- 10/9 – Snowbasin
- 8/21/2017 – Solar Eclipse. We have members going to several locations and have room for others at the locations.
  - Doug's cabin near Stanley ID
  - Jim's property in Driggs ID
  - ALCON in Casper WY
- 3/4 – 3/5 – St. George.

Since all the offices were uncontested, there was a motion and second to accept the officers as noted. The vote was confirmed.

President – Lee Priest  
Vice President – Ron Vanderhule  
Secretary – David Dunn  
Treasurer – Doug Say

We discussed going to Kitt Peak and Lowell and observing through their equipment. They both do private sessions. We will be looking into this further. We are also going to work on getting other star parties included in our list. Please send any that

you know about to us. Some members are interested in Grand Canyon, Bryce, etc.

Meeting adjourned and several of us went to Village Inn in South Ogden for desert or dinner.

## Star Parties

### Public

- 10/17 – Antelope Island

### Requested

- 10/2 – Kaysville Primary
- 10/9 – Snowbasin

### Private

- 10/9-10/11 – Messier Marathon (Curlew)
- 3/4-3/5 – St. George

## Lunar Eclipse Picture



Taken at Dutch John Utah with the Skywatcher 120 and Sony DSLR a77 by Tony Habovstak



## 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 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!

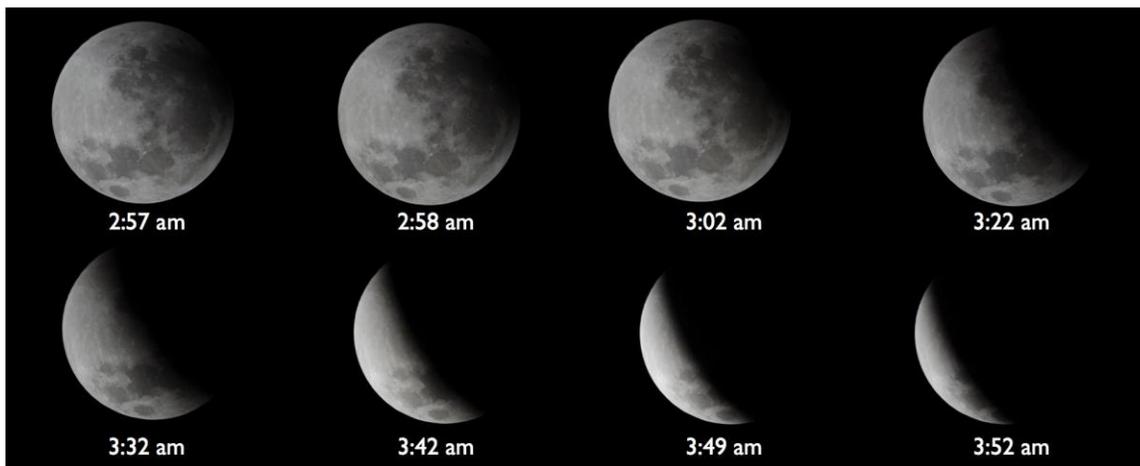


Image credit: Daniel Munizaga (NOAO South/CTIO EPO), using the Cerro Tololo Inter-American Observatory, of an eight-image sequence of the partial phase of a total lunar eclipse.