



# The Meridian

Newsletter of the Quad Cities Astronomical Society • October 2014

## Upcoming QCAS Events

**October 24**, QCAS assisted observation night at Bettendorf High School football field, in connection with the Iowa-Illinois American Association of Physics Teachers.

## Upcoming Meetings

We're back on schedule with Bettendorf Library. Our next meeting is on **November 3rd** at 6:30pm. This meeting is an astronomy (non-business) meeting. On **November 17th** at 6:30pm, we will have the club's dinner meeting and host a full business meeting, as well. This meeting will include *election of officers*, for 2015.

## Meeting Notes

**From October 6th.** Meeting called to order by Dale Hendricks at 6:35pm. The meeting was attended by 10 members. Members included: Sam Snow, Karl Adlon, Dale Hendricks, John Robbins, Bruce Brooker, Mitch White, Robert Mitchell, Bob Miller and Jeff Struve.

Mitch White shared photos of Iceland including many aerial photos of the eruption of the volcano Bardarbunga. He also showed photos of the Strokkur Geysers, about an hour's drive from Reykjavik.

Bruce Brooker reported on the status of the new mount for the 16". He and John Baker spent quite some time polar aligning the mount via the drift method. They achieved no discernable declination drift over 3-4 minute periods. Bruce showed a five-photo stack that John took. There seemed to be some issues

with the JMI computer. Bruce phoned Jim Burr at JMI and described the situation. Jim was able to lead Bruce to a possible solution. Bruce also believes that he and John were able to plug holes that mice were using to gain access to the observatory dome building.

Jeff Struve demonstrated the Stellarium software package. He showed, after entering scope and camera information (as well as oculars), how he could plan his evening of observing and taking astro photos. The software is available for PCs and Macs. There are also versions for handheld devices, but these may not have all the features of the computer-based version. Stellarium is freeware (open source license) and can be found on the web at [stellarium.org](http://stellarium.org).

The meeting was adjourned at 8:40pm.

## Past Event Reports

Report from the viewing with the **West Liberty Library** on September 26th. By John Robbins.

Bruce Brooker and I offered scope time to a small cadre of folks who came out to the Dutton Sports Complex in NE West Liberty on an evening with what I'd call "so-so sky conditions." On Friday evening, it seemed that we were parked under a funny little swirl in the atmosphere which created some minor clouding and a fair amount of murkiness

We enjoyed the company of three groups, including the event coordinator, Brooke Armstrong, from West Liberty Library. We had two families join us, for a total of nine visitors.

This gave everyone ample time to look through the eyepieces of our two scopes.

Bruce and I coordinated targets so that we didn't duplicate very often, starting with both of us pointing at post-sunset views of a sliver of a Moon and of Saturn. We traded between classic double stars (Albireo and Mizar) then to clusters such as M13, The Owl Nebula (NGC 457), and the Andromeda galaxy (M31), Ring Nebula (M57), the Coat Hanger (Cr 399), among several other sights.

The folks that came out enjoyed the session, and Bruce and I shared our excitement for the hobby as best we could. We heard stories about a previous star gazing event held by the Library where the person who offered scope time was considered quite boring to the people who came out for that event.

With a little positive word of mouth, our next event with the Library may draw even more folks.

Another event was with the **Davenport Parks and Recreation Department** at the Soccer Complex on North Division on October 4th.

We had a pretty fair response of a total of 21 members of the public in eight groups braving clouds and cold to have a look through our four telescopes set-up by Bruce Brooker, John Baker, Matt Neilssen and John Robbins.

Our primary target was the Moon, catching glimpses between the clouds. Folks were impressed with the level of detail seen in the craters, mare and mountains. We targeted the Tycho and Copernicus craters, as well as offered an almost 3-D appearing, whole globe, view. These were enjoyed by all.

A secondary, terrestrial, target was the illuminated fuel sign at the Love's Travel Stop near the intersection of I-80 and Northwest Blvd a bit more than a mile away. For a short time, John Baker trained his scope on it. Under high magnification, the individual LEDs in the fuel prices were easily seen! It was made even more incredible with low gas prices!

Clouds increased in density around 9pm. That was when we chose to pack it up, pull the QCAS signs and lock the gates. Many of the people indicated that they want to come to another event, when we might have better conditions.

### **Lunar Eclipse on October 8th.**

Although it wasn't an official QCAS event, nature held this event for those willing to rise early that morning.

Below, is a photo montage taken by John Robbins in Bettendorf, through a 200-400 Nikkor zoom (set at 400mm) with 1.4x teleconverter into a Nikon D2x camera.



Lunar Eclipse • October 8, 2014 • Bettendorf, Iowa

# Celestial Calendar

Oct 17 22:25 Jupiter 5.4°N of Moon  
18 01:05 Moon at Apogee: 404898 km  
18 21:08 Regulus 4.7°N of Moon  
21 11 Orionid Meteor Shower  
22 19:46 Moon at Ascending Node  
23 16:45 **Partial Solar Eclipse**; mag=0.811  
23 16:57 NEW MOON  
25 02 Venus at Superior Conjunction  
25 11:04 Saturn 1.0°S of Moon: Occn.  
25 16 Mercury at Perihelion  
30 21:48 FIRST QUARTER MOON

Nov 01 07 Mercury at Greatest Elong: 18.7°W  
02 18:21 Moon at Perigee: 367871 km  
04 06:10 Mercury 3.9°N of Spica  
04 21:13 Moon at Descending Node  
05 11 S Taurid Meteor Shower  
06 16:23 FULL MOON  
08 13:41 Aldebaran 1.4°S of Moon  
12 10 N Taurid Meteor Shower  
14 09:16 LAST QUARTER MOON  
14 11:39 Jupiter 5.2°N of Moon  
14 19:56 Moon at Apogee: 404338 km  
15 04:05 Regulus 4.6°N of Moon  
17 16 Leonid Meteor Shower  
18 02 Saturn in Conjunction with Sun

List from [www.astropixels.com](http://www.astropixels.com)



## QCAS Officers and Contacts:

President: Dale Hendricks	Vice-president: Craig Cox
Secretary: John Robbins	Treasurer: John Baker
Director: Dana Taylor	Facilities: John Baker
Web Master: Dana Taylor	Outreach: Tom Bullock
Programming: Jim Rutenbeck	

**QCAS Meetings:** First Monday (workshop) at 6:30pm, and third Monday, (business), at 6:30pm, Bettendorf Library, 2950 Learning Campus Dr., off of 18th Street, Bettendorf.

## QCAS Correspondence:

Please contact the society at:  
P.O. Box 3706, Davenport, IA, 52808.  
Members are welcome and encouraged to submit articles for The Meridian. Submit Any and all interesting items (via e-mail) to: John Robbins or Dale Hendricks.

## Milky Way has half the amount of dark matter as previously thought, new measurements reveal

A new measurement of dark matter in the Milky Way has revealed there is half as much of the mysterious substance as previously thought.

Australian astronomers used a method developed almost 100 years ago to discover that the weight of dark matter in our own galaxy is 800,000,000,000 (or  $8 \times 10^{11}$ ) times the mass of the Sun.

They probed the edge of the Milky Way, looking closely, for the first time, at the fringes of the galaxy about 5 million billion kilometres from Earth.

Astrophysicist Dr Prajwal Kafle, from The University of Western Australia node of the International Centre for Radio Astronomy Research, said we have known for a while that most of the Universe is hidden.

“Stars, dust, you and me, all the things that we see, only make up about 4 per cent of the entire Universe,” he said.

“About 25 per cent is dark matter and the rest is dark energy.”

Dr Kafle, who is originally from Nepal, was able to measure the mass of the dark matter in the Milky Way by studying the speed of stars throughout the galaxy, including the edges, which had never been studied to this detail before.

He used a robust technique developed by British astronomer James Jeans in 1915 -- decades before the discovery of dark matter.

The study also presented a holistic model of the Milky Way, which allowed the scientists to measure several interesting things such as the speed required to leave the galaxy.

“Be prepared to hit 550 kilometres per second if you want to escape the gravitational clutches of our galaxy,” Dr Kafle said.

“A rocket launched from Earth needs just 11 kilometres per second to leave its surface, which is already about 300 times faster than the maximum Australian speed limit in a car!”

Story posted on *Science Daily*, October 9, 2014.

For more details, see:

*The Astrophysical Journal*, 2014; 794 (1): 59

FIGURE 4

# Partial Solar Eclipse of 2014 Oct 23

Ecliptic Conjunction = 21:57:46.8 TD (= 21:56:39.5 UT)

Greatest Eclipse = 21:45:38.7 TD (= 21:44:31.4 UT)

Eclipse Magnitude = 0.8114      Gamma = 1.0908

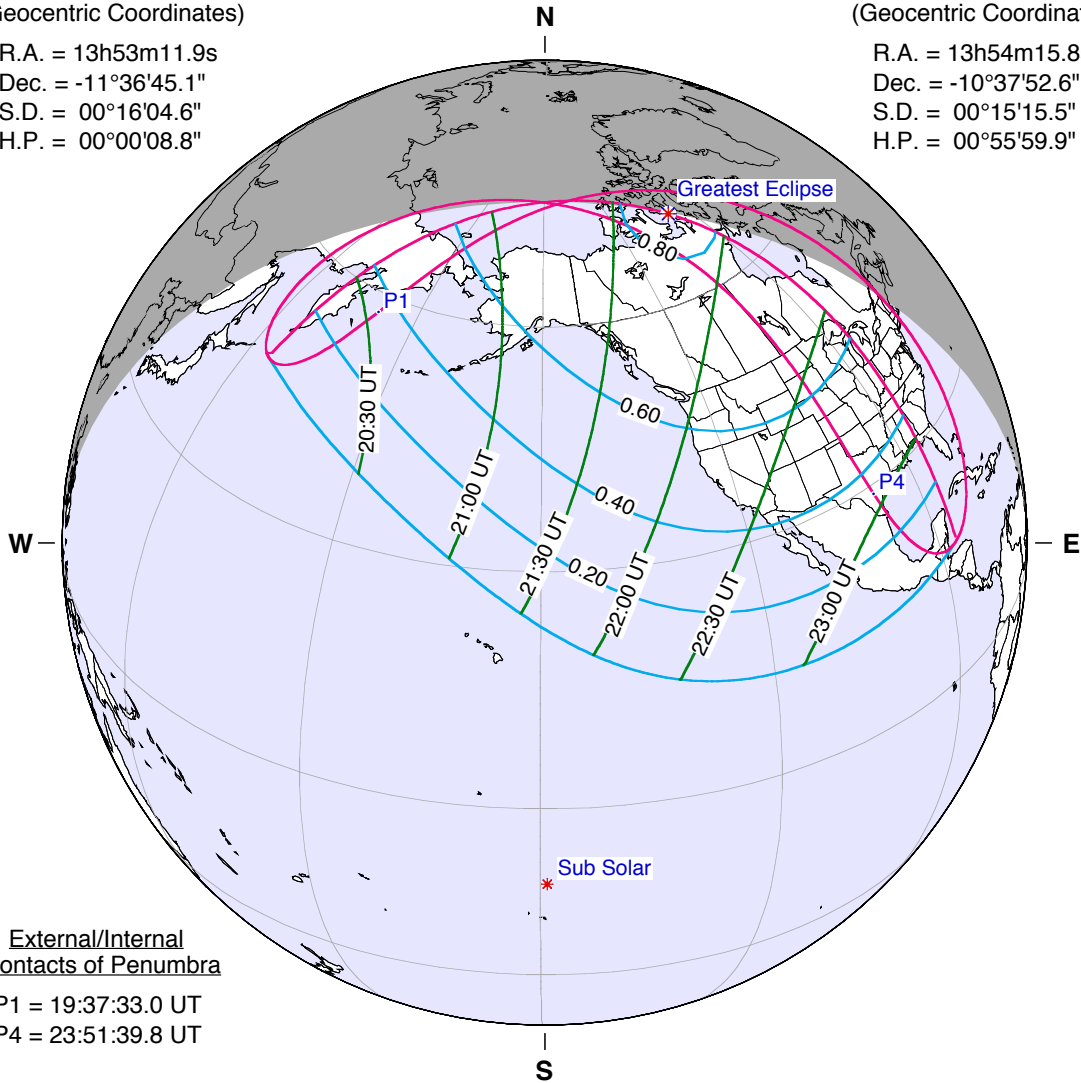
Saros Series = 153      Member = 9 of 70

Sun at Greatest Eclipse  
(Geocentric Coordinates)

R.A. = 13h53m11.9s  
Dec. = -11°36'45.1"  
S.D. = 00°16'04.6"  
H.P. = 00°00'08.8"

Moon at Greatest Eclipse  
(Geocentric Coordinates)

R.A. = 13h54m15.8s  
Dec. = -10°37'52.6"  
S.D. = 00°15'15.5"  
H.P. = 00°55'59.9"

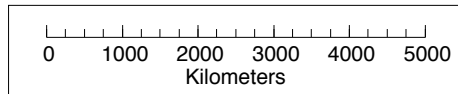


External/Internal  
Contacts of Penumbra

P1 = 19:37:33.0 UT  
P4 = 23:51:39.8 UT

Constants & Ephemeris

$\Delta T = 67.4$  s  
 $k1 = 0.2724880$   
 $k2 = 0.2722810$   
 $\Delta b = 0.0''$      $\Delta l = 0.0''$   
Eph. = VSOP87/ELP2000-85



Geocentric Libration  
(Optical + Physical)

$l = -4.52^\circ$   
 $b = -1.27^\circ$   
 $c = 21.96^\circ$   
Brown Lun. No. = 1136

F. Espenak, NASA's GSFC

[eclipse.gsfc.nasa.gov/eclipse.html](http://eclipse.gsfc.nasa.gov/eclipse.html)