



VIA STELLARIS

The Monthly Newsletter of the Von Braun Astronomical Society

VBAS Highlights

Public Programs for January

Our next society meeting will be held on Friday, January 21st at 7 PM. VBAS Meetings are held on the 3rd Friday of each month & they are open to the public!

Regular planetarium programs are held on Saturdays at 7:30 PM. This month, we explore the history of Ancient Astronomers. Admission to planetarium shows is free for VBAS Members, \$5.00 for Adults, \$3.00 for Students, and free for children under 6. Observation of the night sky, and visual exploration of the universe through various telescopes will follow planetarium program, weather permitting.

Calendar of Events

On page 2, Details for the events of January.

The Night Sky for January

On page 3, Jupiter at twilight, and Venus & Mercury at dawn.

Stellar Events for January

On page 4, Doug Horacek's report on astronomical events.

Stellar Challenges

On page 4, Things to find in the January Sky!.

Doppler Shift?

On page 5, Walt Langley tells us what and how to measure it!

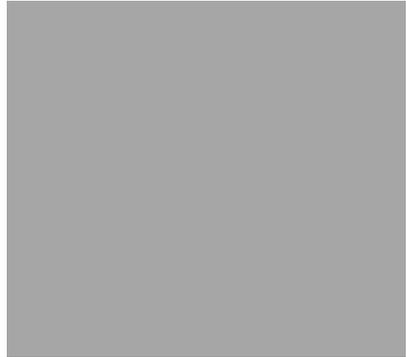
Lunar Eclipse Dec 2010

On page 6, Another way to observe an eclipse!

Swanson Observatory Status Report

On page 6, Thanks to many folks progress is made!

Richard Norman
Via Stellaris Editor
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Calendar of Events

Saturday, Jan 8th, 15th, 29th, 2011, 7:30 PM

Planetarium Show: “Ancient Astronomers”

Location: VBAS

Presented by Beth Bero

Join us for a family-friendly program as we explore the history of ancient astronomers. Weather permitting, we will be viewing the night sky afterwards through the historical telescopes, too.

Sunday Jan 9, 2011

Jupiter Transits

Location: Doug’s Condo

Presented by Doug Horacek

Pizza party to watch Callisto and Europa transit Jupiter, and later Europa casts a shadow on the planet. RSVP to Doug for the times and directions at (256)772-6788.

Friday, Jan 21, 2011, 7 PM

Regular Monthly Meeting

Location: VBAS

Meeting and a topic. To find out what the topic is you’ll have to come to the meeting. Visitors are welcome!

Saturday, Jan 22, 2011, 7:30PM **Planetarium Show: “Solar Astronomy in Ancient Central America”**

Location: VBAS

Presented by Mitzi Adams

Join us for a family-friendly program exploring the history of solar astronomy in the Central

America region. Weather permitting, we will be viewing the night sky afterwards through our historical telescopes, too.

Friday Feb 4, 2011,

Members Observing Night

Location: VBAS

Presented by Moonless Night

Several of the members are planning to take advantage of moonless night for some observing weather permitting.

Saturday Feb 5th, 12th, & 28th, 2011,

Planetarium Show: “Advances in Astronomy in the Middle Ages”

Location: VBAS

Presented by Naz

Continuing our journey through history we explore how astronomers from the middle ages advanced our knowledge of the universe.

Saturday Feb 19, 2011,

Planetarium Show: “Follow the Drinking Gourd”

Location: VBAS

Presented by Gena and Brenda

...And as always, for the most up-to-date information about VBAS events, be sure to check the web site at vbas.org.

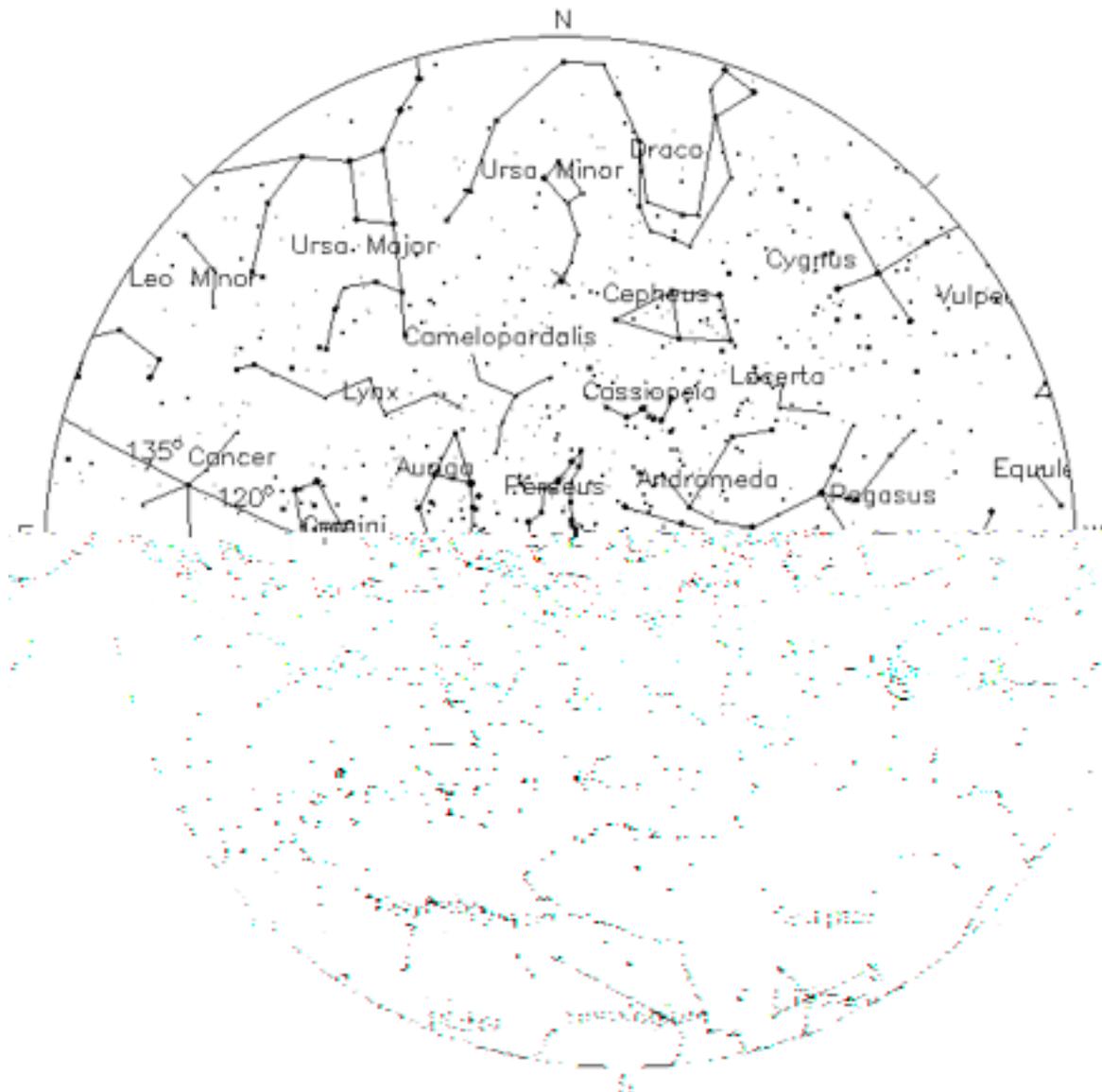
The Night Sky for January, 2011

Here is the view at 8:30 PM CST on January 1, 2011, at 34° N Latitude, 86° W Longitude.

Map courtesy of John Walker and YourSky (<http://www.fourmilab.to/yoursky/>).

Meteor Showers, By Doug Horacek, VBAS Resident Astronomer

The Major Shower for January is the Quadrantids, whose radiant is near Bootes in the sky. The peak is 1 hour Universal Time or 7:00 CST, at 120 per hour, if you stay up late enough you can observe these meteors in the early morning as the constellation Bootes appears in the east. The parent body is Asteroid 2003 EH 1. There are four minor showers in January, the January Leonids peak on 1 January, parent body unknown, the Xi Corona Borealis peak on 15 January, parent body unknown, the South Delta Cancri peak on 18 January, parent body 2001 YB5?, and finally the Gamma Ursae Minorids peak on 21 January, parent body unknown.



Stellar Events Jan 2011

by Doug Horacek, Resident Astronomer

- 1st:** Sat at Dawn, New Years Morning, the Waning Crescent Moon is just above Venus, and Antares and Mercury are also in the Scene.
- 1-11th:** Sat thru Tue, at Dawn Mercury will be high above the horizon.
- 2nd:** Sun Morning before Dawn, Moon shines to lower right of Mercury low in the southeast.
- 2-5th:** Sun thru Wed, in the evening Uranus and Jupiter will be less than a 1/2 deg apart.
- 3rd:** Mon During the Day at around 1:00 P.M. CST the Earth passes closest to the Sun or perihelion point.
- 4th:** Tues Morning, Pre Dawn the Quadrantid Meteor Shower peaks. Also, the New Moon occurs at 3:03 A.M. CST
- 9th:** Sun Evening, Waxing Crescent Moon is to the lower right of Jupiter. Callisto and Europa will transit Jupiter from 9:49 P.M to 10:13 P.M. CST. See Pizza Party at Doug's condo.
- 10th:** Mon, Moon is upper right of Jupiter
- 12th:** First Quarter Moon at 5:31 am CST.
- 17th:** Monday Evening, Algol is at Minimum at around 10:43 CST.
- 19th:** Wed, Full Moon at 3:21 pm. CST.
- 20th:** Thurs Evening, Algol is at Minimum at 7:32 P.M. CST.
- 25th:** Tues Morning, Predawn, Moon makes triangle with Saturn and Spica.
- 26th:** Last Quarter Moon at 6:57 am CST
- 29-30th:** Sat and Sun Morning, at Dawn, Moon is to the right of Venus on the 29th and to lower left of Venus on the 30th.

January Stellar Challenges

by Doug Horacek, Resident Astronomer

Each month Doug will be presenting some targets for observers to try and find. Come to the Member's Meeting to see some star charts, images, and to get some hints on how to find the objects.

For January look for:

M35 Open Cluster in Gemini
 NGC2158 Open Cluster near M35
 M41 Open Cluster in Canis Major
 M79 Globular Cluster in Lepus

Advanced Deep sky object:
 Hickson 37 (NGC2783) in Cancer

If you take images of the stellar targets, please share them Via Stellaris.



Early construction during the Angele Observatory roof repair. Changing the roof level required a new stairwell and thus outside door Completion is expected by the end of January.

What is Doppler Shift, and How is it Measured?

By Walt Langley

Using a homemade spectrograph mounted on C-8 telescope, an attempt was made to measure the doppler shift of the star Aldebaran. The doppler shift of a star is an indication of the star's radial velocity (velocity along the line of sight between the earth and the star) with respect to the earth.

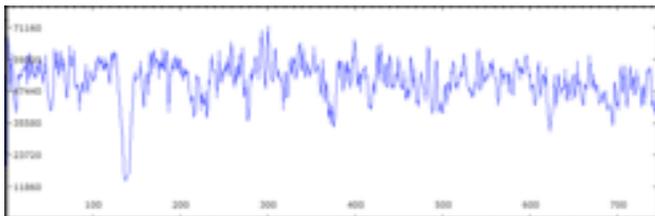
This is accomplished by the following:

1) Take a picture of the spectrum. This is shown in figure 1. The large dark "spot" is Aldebaran's Hydrogen Alpha line (H α).



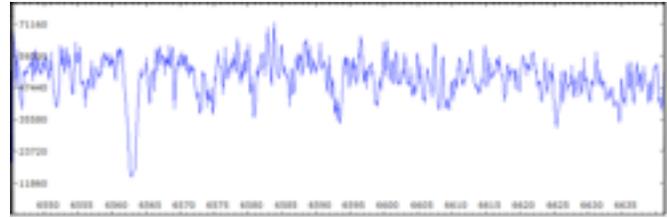
Spectrum Picture
Figure 1

2) Bin the picture (i.e. add the pixels of the photograph in each column) and show the results in a line graph. This is shown in Figure 2.



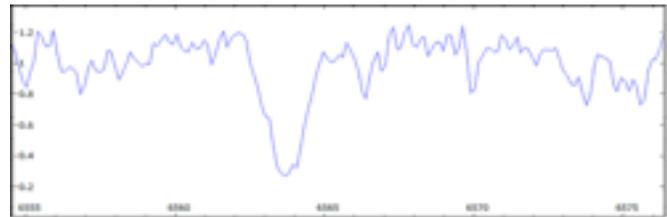
Camera Coordinate
Figure 2

3) Calibrate the spectrum (change the camera coordinates to wavelength coordinates). In this case the atmospheric H $_2$ O spectrum lines were used (some of the small "dips" around the H α "dip". See Figure 3.



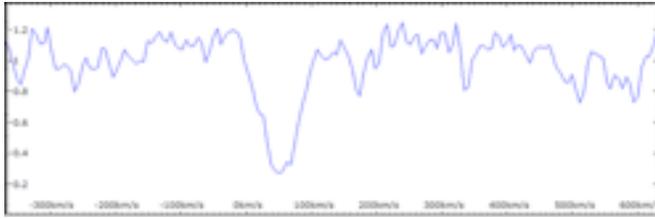
Wavelength A
Figure 3

4) Correct for the earth's motion around the Sun (Helocentric Correction). This correction is calculated for the location of the telescope (Lat,Long), the stars location (Aldebaran: RA 4h32m, Del 16.4 deg) and the date the spectrum was made (in this case Oct 9th 2010). The correction applied was -24 km/sec (-0.526A). The intensity was then normalized. This is shown in Figure 4 (enlarged from the H α area of Figure 3).



Wavelength A
Figure 4

5) Calculate the the doppler velocity, based on a known reference line (in this case the Hydrogen Alpha line, whose location would be 6562.58 A if there was no relative velocity. The result is shown in Figure 5. As can be seen in Figure 5 the doppler velocity (the center of Aldebaran's H α line relative to the reference line location of 6562.58A) is about 50 km/sec. Since the velocity is positive, the spectrum is red shifted and Aldebaran is moving away from the earth. The actual relative velocity from reference texts is 53 km/sec.



Doppler Velocity (km/sec)

Figure 5

Future articles will discuss other amateur spectral measurements: stellar temperature, spectral class, spectroscopic binaries, Wolf-Rayet stars, and B emission stars.

Lunar Eclipse Dec 2010

by Richard Norman

Although the event was clouded out here in Huntsville, there is more than one way to observe an eclipse. The sunlight reflected off the Moon still makes it to Earth through the clouds. Just like the light of a backlight display, the moonlight becomes a diffuse even glow illuminating the clouds from above while sky glow from light pollution illuminates the clouds from below. Using the Sky Quality Meter that VBAS won from the NASA Night Sky Network, I took sky brightness measurements every 15 minutes for the first half of the eclipse until totality ended. The meter measures an average sky brightness over a 40 degree wide cone near the Zenith. Although the rapidly moving clouds created a lot of noise, by averaging several readings I was able to get a fairly smooth curve showing about 2.4 magnitudes per square arc second difference from full moon to total eclipse. This scale works similar to limiting magnitude in that a change of 5 represents a factor of 100 times change in brightness. I have not

found any data from other observers yet that had clear skies. It would be interesting to see how much the clouds and the light pollution impact the difference in brightness levels. Although less than a 100 times dimmer, and despite the light pollution, the ground illumination was still obviously much darker during the totality.

Swanson Observatory Status Report

by Richard Norman

Slow but steady progress is being made on the 21 inch telescope. A wonderful new corner cabinet was built by one of the VBAS members, Frank Schenk. It was installed and the wires for the TV run in a more permanent and neater installation by Jeff Delmas. Mimmo has continued to streamline and perfect our video scope control center. Mimmo and Jeff installed our new electronic focuser which required a redesign of the mounting plates. Wes Swift built some bushings and installed them to prevent the main mirror cell from shifting as the scope moves. Jim Fly helped us collimate everything after the changes. Doug and I helped Jeff get the finder and telrad realigned with the primary, but the seeing was too poor for final collimation. We are now waiting for a clear night with good seeing so that we can fine tune the collimation.

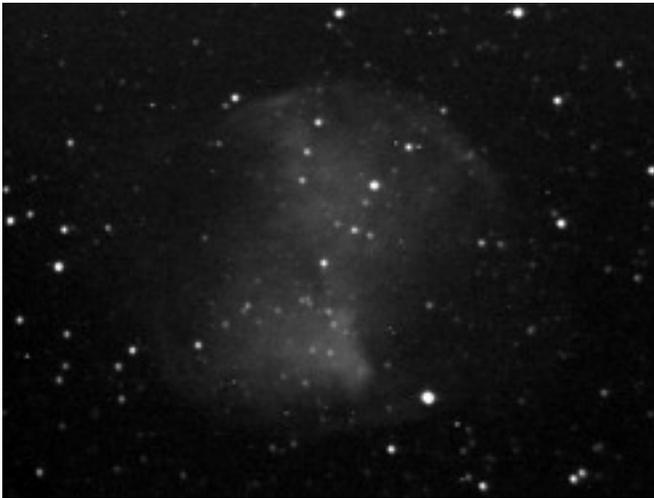
I've included a couple of images from one of our better nights with the old focuser taken on 10/30/2010. Although Jeff was able to clean them up a bit in photoshop, collimation problems due to slop in the focuser and shifting of the mirror cell cause the stars to blur and distort. We hope to have some improved images soon as the weather cooperates.



M57 with the old focuser



NGC7662-Blue Snowball (10-30-2010)



M27 with the old focuser



M1 Crab Nebula (10-20-2010)



Stuhlinger Solar Telescope gets a new roof.

Starry Nights with Stencils

The Night Skies stencils can create accurate displays of the sky at night in most any darkened room with the luminous paint that is included. They are produced in two sizes featuring either the winter or summer night time displays over the Northern Hemisphere. A corresponding star map is also included. More information about the Night Skies is available at www.ursamajorstencils.com. The 8 foot Night Skies are priced at \$25.00 and the 12 foot at \$30.00 each. The stencils are one product from Bridgeway Training Services, a not-for-profit agency that provides a variety of services to disabled individuals. The sale of the American-made products help fund those programs.

Contributions to Via Stellaris

We welcome contributions to our newsletter that may be of interest to the astronomical community. Contributions are best sent by email to Richard Norman at astrodude@mchsi.com.

Membership and Renewal

The VBAS currently has four categories of membership. All four include free admission to the planetarium shows; subscription to this newsletter; membership in the Astronomical League; and use of VBAS library and equipment. The four categories of membership, and the dues for each, are: REGULAR at \$24.00 per year, FAMILY at \$36.00 per year, STUDENT (must be full-time student) at \$12.00 per year, and LIFE at \$500.00. Newsletter Only is also available for \$12.00 per year. Membership renewal occurs for all members annually on March 1st.

All VBAS memberships came up for renewal on March 1, 2010. If you have questions regarding membership, please contact a VBAS officer.

Please send your renewal to the Membership Secretary at VBAS, P.O. Box 1142, Huntsville, AL 35807. Make checks payable to the Von Braun Astronomical Society.

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