



VIA STELLARIS

The Monthly Newsletter of the Von Braun Astronomical Society

VBAS Highlights

Public Programs for October

Our next society meeting will be held on Friday, October 15th 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 Constellations of the Southern Skies. We'll have a special show on Astronomy Day Sat 16th: "Space for Rent: Who will be the next generation of "Exploreneurs"".

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 through various telescopes will follow planetarium program, weather permitting.

Calendar of Events

On page 2, Details for the events of October.

The Night Sky for October

On page 3, Venus and Jupiter easily seen in the twilight!

Stellar Events for October

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

Stellar Challenges

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

Construction of a Littrow Spectrograph

On page 5, Walt Langley tells us how we can build our own!

International Observe the Moon Night

On page 6, The overall event was a success!

Richard Norman
Via Stellaris Editor
astrodude@mchsi.com



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Calendar of Events

Friday Oct 1st, 2010, 7:00 PM

Youth and Adult Observing Night

Location: VBAS

Presented by Doug Horacek

Planetarium show starts at 7pm: "The Soap Opera in the Sky." Observing starts at 8pm. If cloudy we will still have the planetarium show and tours of the observatories. We will be talking about the following Constellations: Cepheus, Cassiopeia, Andromeda, Perseus, and Pegasus. One of the featured objects that evening, if the sky is clear will be the famous Double Cluster in Perseus. In smaller or faster scopes, both clusters appear in the same field of view. We will provide star maps and children can look through the adult telescopes until they are tired and need to go home. This will conclude this year's Youth and Adult observing sessions. Contact Doug if you'd like to help plan next year's events: 256 772-6788.

Saturday, Oct 2nd, 9th, 23rd, 30th 2010, 7:30 PM

Planetarium Show: "Southern Skies"

Location: VBAS

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

Friday Oct 8th, 2010, 5:30 PM

Member's Observing Night

Location: VBAS

Presented by Doug Horacek

Take advantage of a moonless fall night, and join us at the VBAS observing field for an impromptu observing session of the fall constellations. Setup begins at 5:30 pm.

Friday, Oct 15th, 2010, 7 PM

Regular Monthly Meeting

Location: VBAS

Meeting & Tent Raising for Astronomy Day. Visitors are welcome!

Saturday, Oct 16th, 2010, 2 to 6PM
Astronomy Day: Free Activities for kids and hourly planetarium shows

Location: VBAS

Our usual outdoor day time activities and two fun planetarium shows: "Harry Potter Astronomy, and Spooky Skies". Please volunteer to help by contacting Naz, Melissa, Gena, or Richard.

Saturday, Oct 16th, 2010, 7:30PM **Planetarium Show: "Space for Rent: Who will be the next generation Exploreurs"**

Location: VBAS

Presented by Ray Cronise

Special Guest Speaker for Astronomy Day is no stranger to space exploration. Weather permitting, we will be viewing the night sky afterwards through our historical telescopes, too.

Saturday Nov 6th, & 13th 2010, 7:30 PM

Planetarium Show: "Fall Soap Opera in the sky"

Location: VBAS

Presented by Doug Horacek

Cepheus, Cassiopeia, Andromeda, Pegasus, and Perseus, the Fall Soap Opera in the Sky will present a little bit about the mythology for this part of the sky. Important stars and stellar objects will be included in the presentations. Observing the constellations and objects afterward weather permitting.

...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 October, 2010

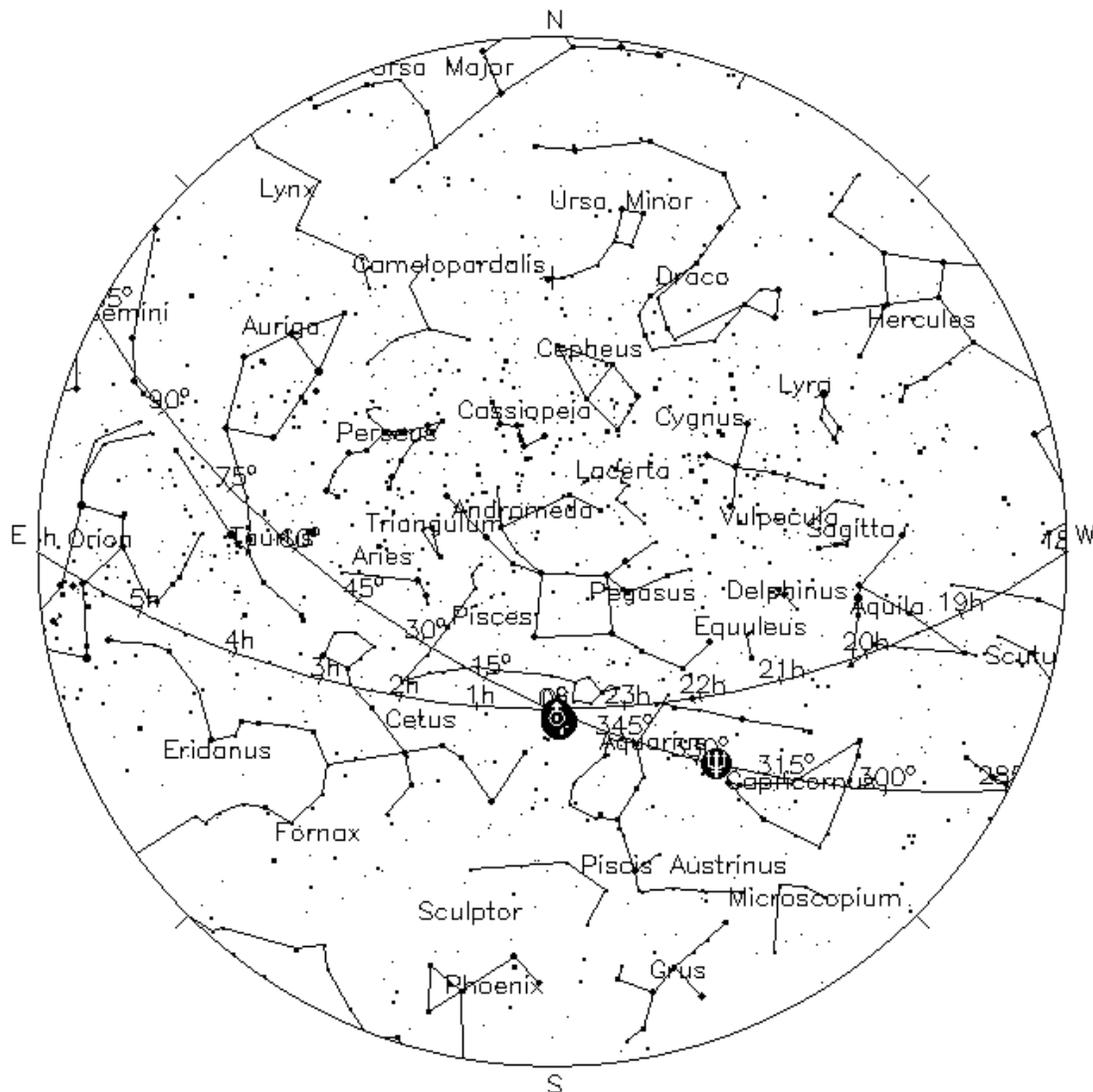
Here is the view at 9 PM CDT on October 4, 2010, at 34° N Latitude, 86° W Longitude.

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

Meteor Showers, By Doug Horacek, VBAS Resident Astronomer

Orionid Meteor Shower peaks Friday morning the 22 of October, but the Moon will be to the west and nearly full that morning making it difficult to see the meteors. The average per hour is 23 meteors. The parent comet is 1P Halley. There are several other minor showers: The Southern Taurids peak Sunday morning 10th averaging 5 per hour. The parent comet is 2P Encke. Tuesday Morning 19th the Epsilon Geminids will show a few meteors per hour. The source of this shower is unknown. Saturday Morning 23rd, the Leonis Minorids will display a few meteors, its parent is C1739 K1 (Zanotti). The Draconids on Friday morning 8th is a minor shower with variable meteors per hour. The parent comet is 21P Giacobini-Zinner.

In the same part of the sky the Camelopardalids, which has an Astroidal origin, parent object unknown, will peak on the Wednesday morning 6th.



Stellar Events Oct 2010

by Doug Horacek, Resident Astronomer

- 3rd:** Sunday Evening at 9:28 P.M. CDT.
Eclipsing Binary Algol is at its minimum brightness, magnitude 3.4.
- 4th:** Monday Morning the heart of the lion Regulus is six degrees to the lower left of the waning crescent moon.
- 6th:** Wed Morning right at dawn the very thin waning crescent moon and Mercury will appear very close to the horizon.
- 6th:** Evening 6:17pm CDT Algol minimum.
- 7th:** New Moon at 1:44 pm CDT.
- 7 & 8th:** Comet Hartley 2 will be close to the Double Cluster in Perseus just below them. It will be a sight for wide field of view telescopes and binoculars. Comet will be Magnitude 5, but spread out. (hint: newsletter would love a photo! ;-)
- 9th:** Saturday Evening Venus will be near the waxing crescent Moon with Mars above them both.
- 10 & 11th:** The Moon will flirt with Antares first to lower right and then to the upper left the following night.
- 14th:** First Quarter Moon at 4:27 pm CDT.
- 19th:** Tuesday evening Jupiter is 6 deg below the Moon
- 22nd:** Full Moon at 8:37 pm. CDT.
- 23rd:** Saturday evening Shadows of Europa and Ganymede will fall on Jupiter between the hours of 8:40 pm and 10:04 pm CDT, perfect observational event.
- 25th:** Early Dawn the Pleiades are 1 to 2 deg to the upper right of the Moon.
- 30th:** Last Quarter Moon at 7:46 am CDT

30-31st: Shadows of Europa and Ganymede fall on Jupiter from 11:16pm to 1:59 am CDT

October 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 October look for:

M33 Spiral Galaxy in Triangulum

Herschel's Garnet Star (and IC 1396) in Cepheus

M36 Open Cluster in Auriga

M37 Open Cluster in Auriga

M38 Open Cluster in Auriga

Clusters in Auriga are good binocular targets

Also, look for the smiley face asterism!

Hickson 93 in Pegasus

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



Melissa Snider and Megan Beattie share the Green Benefits of eliminating Light pollution during the Green U 2010 event.

Construction of a Littrow Spectrograph

By Walt Langley

Amateur stellar spectroscopy is a lot of fun and a very rewarding hobby. It is like trying to solve a puzzle each time you capture a spectrum and extract information from it. There is a amazing amount of data that can determined from star-light.

This is the third spectrometer I have built, each one with more resolving power than the last. This spectrometer mounts direct to my old C-8, as opposed to my last one which used a fiber optic cable. A Littrow design uses only one objective lens, passing the light from the slit to a reflective grating, and from the grating back to the camera.

The Spectrograph is shown in Figure 1. It uses a 1200 line/mm grating , a 12mm diagonal and a 31mm diameter,172mm focal length objective. I picked the FL of the objective so the entire device could be built on standard 4x10 inch aluminum sheets available from a local hobby shop.



Figure 1 Littrow Spectrograph

The grating mount , the objective mount and the two end pieces are made from thick plastic sheet (much lighter and easier to work with than aluminum). The camera mount is made from aluminum and is mounted in the plastic end

piece with set screws, as is the micrometer mounted on the opposite end. The micrometer body was purchased a local salvage store.

I glued a strong miniature magnet to the micrometer arm. I mounted a model airplane ball fitting on the grating arm, which allows rotary motion to be easily converted to linear motion for the micrometer.

I installed a variable slit at the entrance to the spectrometer so I can use it slit-less (stars are point sources and do not have to pass thru the slit to get a spectrum) or with a slit, which relieves tracking errors in the spectrum image. I made the telescope mount from two aluminum rings (salvage store) and a old C-8 visual back.

Initial testing on the sun (does not require a telescope since I can use a slit) has been favorable. The sun is a G star. Figure 2 shows a spectrum image (in this case, hydrogen alpha) as captured by the camera. Figures 3,4 and 5 show the hydrogen alpha line, the sodium doublet lines and the magnesium triplet lines, reduced from their respective images.

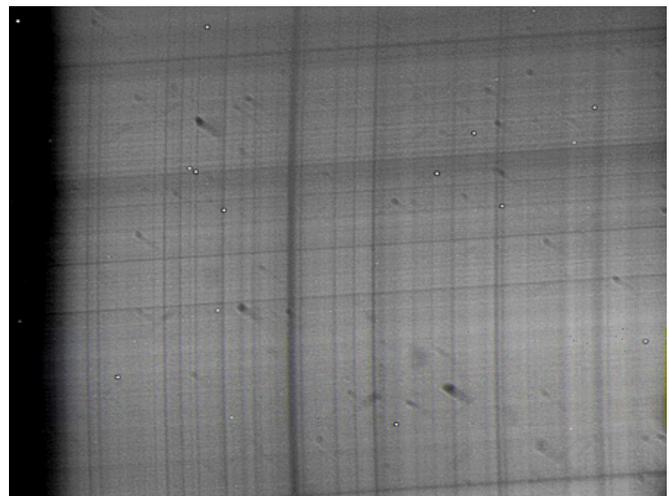
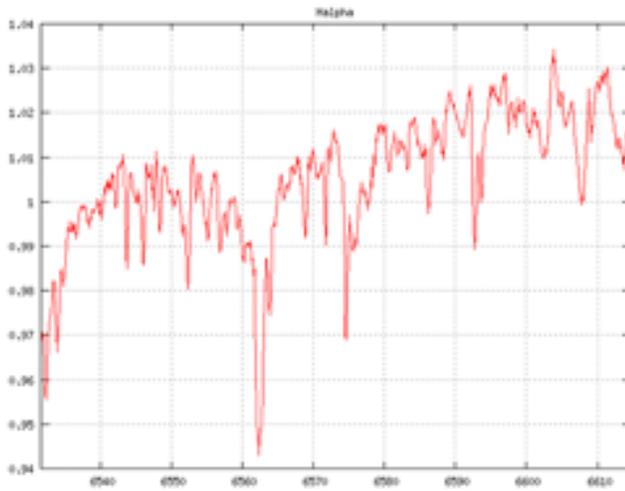
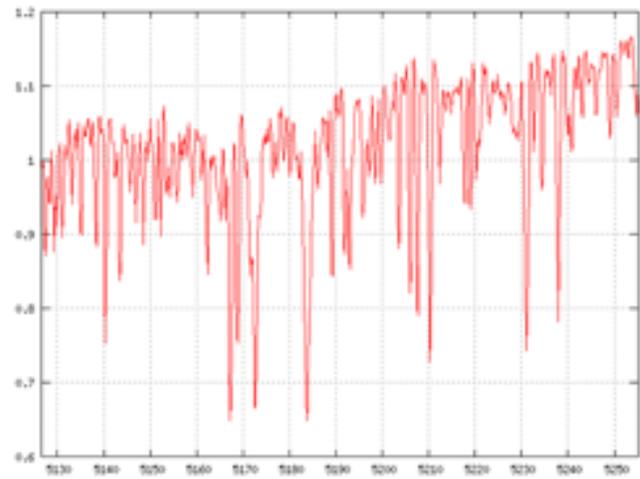


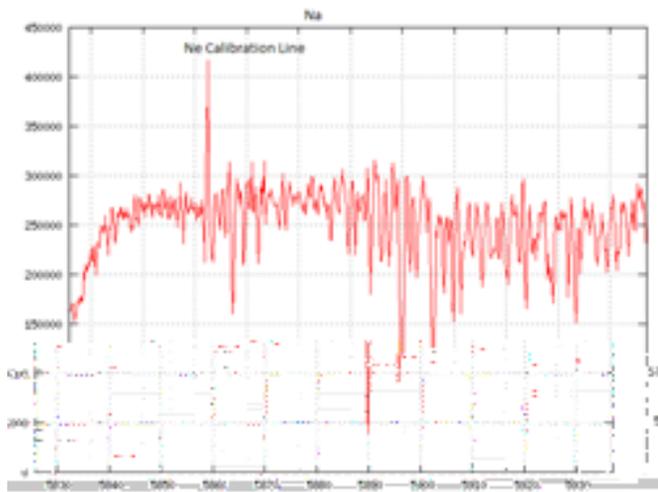
Figure 2. Ha spectrum image.



Wavelength A
Figure 3. Ha Spectral line.



Wavelength A
Figure 5. Mg triplet lines



Wavelength A
Figure 4. Sodium Doublet Lines.

Note that the curvature of the lines in Figure 2 is an artifact in the spectrograph. Only a small section of the picture is used to generate the spectrums. I am still working on final adjustments.

The spectrometer has demonstrated a capability of 0.13 Angstroms per pixel, and weighs only 1.8 pounds! It has a resolution of 1 part in 13000. Compare this with the capability of some commercial devices, costing thousands of dollars. It is so accurate that the heliocentric doppler shift effect must be considered, when the spectrograph is calibrated to an external source.

As I write this (Aug) it is 101 degrees outside and the sky is murky. I hope to capture stellar spectrums this fall as the weather cools and the skies clear. I am going to concentrate on the hydrogen alpha line of Be (B emission stars) stars, and I hope to present the results later in the fall.

International Observe the Moon Night

InOMN was a success. Numerous events around the world brought renewed attention to our nearest neighbor the Moon. VBAS had a large turnout, and Gena did her show twice. Sometimes it is hard to tell when little ones climb up to look through the scope if they actually see the faint object. Not so with the moon! As soon as their eye aligns with the eyepiece their exclamations of WOW! let you know they see it! This is an event worth doing each year! Thanks to Gena Crook and Jeff Goswick for their timely Moon observing tips. Also, Tom had some fun lunar info at the members meeting.

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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| *Richard Norman, Via Stellaris editor*
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