



NASA map of Solar Eclipse "path of totality", October 14, 11:18 am; The Annular Eclipse we saw from Baton Rouge (pink sun being covered by black moon) -- snippet captured from Ben Toman's Facebook live stream ([see page 10](#))

Monthly Meeting November 13th at 7:00 PM, in person

You may also join this meeting via meet.jit.si/BRASMeet

(Monthly meetings are held on 2nd Mondays of the month, at Highland Road Park Observatory)

PRESENTATION: Walt Cooney on Cataclysmic Variables

What's In This Issue?



President's Message
 BRAS Meetings Calendar
 Monthly Meeting Minutes
 Business Meeting Minutes
 Outreach Report
 Light Pollution Committee
 Globe At Night



4 TYPES OF SOLAR ECLIPSE

HRPO EVENTS

OBSERVING NOTES: Vela – The Sails

Like this newsletter? See PAST ISSUES online back to 2009
Baton Rouge Astronomical Society Facebook Page
BRAS YouTube Channel – Monthly Speakers via Jitsi

President's Message

November 5th, 2 a.m., is the end of Daylight-Saving Time. – do not forget to turn your clocks back, or “fall back”, one hour. It will soon be getting dark between 5 PM and 6 PM. This gives us more time for observing! And, my wife points out, less time for yardwork!

Nominations for next year’s officers are, to date, as follows: President – Don Weinell; Vice-President – Ben Toman; Secretary – Scott Cadwallader; and Treasurer – Trey Anding. Nominations are still open – up to the time of voting – so if you want to nominate someone (they must accept), let us know. If you cannot be at the December Pot-Luck Dinner/Meeting on December 11th, and you want to vote, use the Proxy form (attached to the end of this newsletter, or downloadable from the Documents link on the BRAS web page) – send or transmit it to me at president@brastro.org.

BRAS has had a few big accomplishments this year -- we got back into the swing with many Outreach Events (post covid lockdown); we have picked up several new members (mostly young people); AND we successfully hosted the 2023 ALCon, Here’s a photo of the 12 plaques ALCON awarded to our committee, which I passed out at the October meeting.



Plaques presented by ALCON to BRAS Conference organizers, photo by Ben Toman (plaqued, not pictured)

Front Row L-R: Scott, John, Trey, Chris

Back Row L-R: Abby, Brandon, Coy, Steven (Chairman w large plaque), Joel, Merrill, Roz

Abby also received a framed ALCON 2023 program from BRAS for designing it.

BRAS will also suffer a loss next year. The only BRAS Founder still active (there are two more founders still living), **Craig Brenden**, will be moving with his wife to the St. Louis area after the 1st of the year, to be nearer his children. BRAS thanks him for his 42 years of dedication to Astronomy and to our club. Come see him off at the Christmas Party. He will surely be missed.

One of my goals for this term has been to get the radio-telescope at HRPO working again. I am still working with LSU (they own the system) and hope to finally get it working during the upcoming year.

BRAS has ordered/acquired the necessary equipment to make our on-line presence better – live streaming of the meetings and remote speakers. Our goal is to have everything (projector, microphones, cameras, and speaker system) connect on-line with the push of one button. I am hopeful that this will all be ready for the January meeting.

Clear Skies, and Happy Thanksgiving to all,

John R. Nagle

John Nagle, President

P.S. Reminder. Our first STAR PARTY (replacing our old MOON nights), is on November 10th. Mark your calendar! Bring you scope!

Calendar of Upcoming Meetings

Monthly Member Meeting – 7 pm Monday, November 13th at the Observatory, in person and via Jitsi

Light Pollution Committee: 6 p.m. before the Monthly meeting.

Monthly Business Meeting: 7 pm Thursday November 29th at the Observatory, in person and via Jitsi

BRAS Star Party, HRPO, November 10th, 7 til

BRAS WISHES ALL OUR MEMBERS AND THEIR FAMILIES A WONDERFUL THANKSGIVING HOLIDAY





Monthly Meeting Minutes – October 9th

- Welcome by the president, John Nagle.
- John introduced Amy Northrop as the speaker for the evening; she is the local Solar System Ambassador for JPL/NASA. The title for her topic was Psyche Mission. This was an overview of the mission to the asteroid 16 Psyche; this will launch on October 12th. This orbital mission will be looking to expand information on M-type asteroids.
- There were three books available for the raffle; two by David Eicher who was the keynote speaker at this year's ALCON.
- John briefly discussed the highlights from the outreach at the Mini Maker Faire at the EBRPL at Goodwood this past Saturday; there was evidently a slight problem with chainsaw dust for Ben and Scott C.'s scopes from one of the other artisans in the area.
- Ben discussed outreach (this is covered elsewhere in the newsletter).
- There were a few solar viewers on the front table available to households for the eclipse event this coming Saturday.
- There was a sign-up sheet for the light blue T-shirts for outreach. These are the ones that were designed by Chris and Annette Raby. Payment will be due on these in November and will be delivered at the Christmas potluck. The price is \$17.60 per shirt (add \$2 to this price for sizes XXL on up). Trey was collecting the money for this this evening.
- John had Steven display his award that he received at the ALCON banquet and then Steven distributed ALCON plaques to the major committee members. Steven also presented Abigail with a framed copy of the ALCON 2023 program for her contribution to this critical part of the convention.
- Chris K. discussed volunteer participation at the observatory for this Saturday's eclipse event.
- There were introductions of visitors and new members who were present for the meeting.
- There was a photograph taken of the speaker for the evening, Amy Northrop, along with the officers of the club.
- A raffle for three books was held with coffee and cookies (including homemade cookies from Amy Northrop) available for onsite attendees.



2023 Officers:

President: John Nagle
president@brastro.org

VP: Joel Tews
vice-president@brastro.org

Secretary: Roz Readinger
secretary@brastro.org

Treasurer: Trey Anding
treasurer@brastro.org

BRAS Liaison for BREC:
Chris Kersey

BRAS Liaison for LSU:
Dr. Matthew Penny

Committees/Coordinators:

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Merrill Hess

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Michele Fry

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John Nagle

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Ben Toman

public_relations@brastro.org

Scott Cadwallader

webmaster@brastro.org

Open



Business Meeting Minutes – October 26th

(meeting is usually the last Wednesday of the month, in person, at HRPO.)

1. **Elections.** Proposed slate: President – Don Weinell; Vice-President – Ben Toman; Secretary – Scott Cadwallader; Treasurer – Trey Anding. - Bylaws require a slate of candidates by November for the December elections; this fulfills that requirement. All have agreed to serve if elected (Treasurer is the only position not term limited). Per Steven's request John will ask for a short bio from all candidates in order to inform the club members about whom they are voting for. All positions are open for nominations up until the actual time of voting.
2. **Bras Observing Programs** – should we make a check-off list? Should we make an explanation/instruction for the meteor program? - The Constellation program will need a checklist, but the meteor program will need a description. John will get info related to this from Chris K. The lunar program is complete; two members have already received certificates from this. The other BRAS programs are almost complete. Amy Northrop has been asked to do the artwork for the new certificates. BRAS' version of Beyond Polaris will have to be renamed.
3. **Member's Handbook.** Should we give to all members electronically (e-mail) and to new members? – This is currently in Ben's hands for review. When this is ready, we want everyone, old and new members alike, to get a copy. Chris K. would like PDF copies kept online on the website with the version numbers listed at the bottom of the pages. We decided that it didn't need to be in forums; there was a discussion then about forums. We need to document the reason it exists and how it's gotten out.
4. **Donation Policy.** – The old policy document was used as a basis for the new document. Steven thought the wording "any and all" in reference to donations should come out of the first sentence. There was a discussion and then Joel moved that the wording should be struck from the document. Steven seconded this and the vote was unanimous. This document will be posted online.
5. **Drop-out cylinders update.** Electronics – what is still needed? - Chris K. is still receiving estimates to replace the cylinders. LSU needs to finish the collimation of the 20-inch telescope. The small dome for the 16-inch telescope needs an \$800 motor replacement with a backup motor.
6. **Web master!** – Michele is still considering modernizing the web page to incorporate floating links across the top of the home page. Uploading software has been purchased from Coffee Cup by Michele, reimbursed by Trey. Scott will update the page on daylight time. There was a discussion about some trash on the forum. Chris K. said he would check; Michele should be able to fix this. There was also a discussion about setting up a page of BRAS history on the website.
7. **Natural Sky Conference.** – Chris K. is sending a list of non-BREC invitees. We need volunteers from the club to help with this event; we will ask at the BRAS meeting. There was a brief discussion about using the trifold from IDA; John will check for updates. There was a discussion about the diorama which needs work. Chris K. decided to simplify the scale to HO and use one of his own buildings, Mel's Diner, as the centerpiece. He has stickers he can use on the building. This will use 3 sets of 3 lights apiece. Amy can solder. John will wire the setup using his own switches.

Members attending this evening were John N., Joel T., Chris K., Steven T., and Roz R.

Submitted by Roz Readinger, Secretary



LPC (Light Pollution Committee) Report October

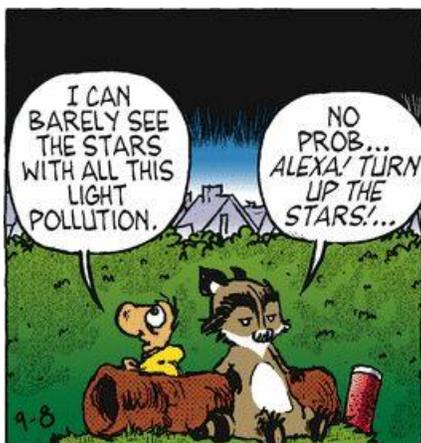
This committee meets at 6:00, same day as the 7:00 BRAS Member Meeting
Everyone is welcome to join in.

1. Letters are being written and sent to projects/construction about BRAS concerns about Light Pollution.
2. Planning Commission meeting will be on October 16th.
3. Chris will speak to DOTD tomorrow.
4. Templates for You-Tube videos on Light pollution have been loaded onto the BRAS computer. Scripts to be written. First videos will be defining Light Pollution and associated terminology. They will be voice-overs of short power point presentations.
5. BREC Park outreaches – first ones will be solar viewing. Awaiting a date from the first – Highland Road Park (across the street from HRPO). Note: There are 40 locations for the BREC Park outreaches.

New Item

Need to get dates of the Capital Area Regional Planning Commission meetings.

John Nagle, LPC Chair Pro-Tem



Globe At Night

This month's target for the Globe At Night program is
Pegasus and Perseus from November 3rd through November 12th

If you would like to participate in this citizen science program, you can find instructions at

<https://www.globeatnight.org>

P.S. The "Loss of the Night" app can be used for information and for reporting your observations.



Outreach Report for October 2023



Hi Everyone,

Whew! October was a pretty busy month for us, but we made it through. It started with the **Baton Rouge Maker Faire at the Main Library** and ended with **Sidewalk Astronomy at Perkins Rowe** this past Tuesday.

The Maker Faire was excellent. We had some nice weather and were able to offer views of the Sun through white light filter and Hydrogen-Alpha. Of course, we also had our regular demos set up, too. Thanks to Roz, John, Susan, Scott, Thea and Ben for making it happen.

Of course, the **Partial Solar Eclipse** happened on the 14th. A lot of our regular volunteers had left the state to travel to path of annularity further West, but some of our members were able to help out with a wonderful event put on by **Ken Stage down in Thibodaux**. About 150 people stopped by to experience views of the eclipse through multiple scopes and enjoy demonstrations and exhibits ranging from meteorites to Medieval siege engines! Thanks to Merrill, Kerry, Robert and former member David T. for helping out and representing our club.



We had a great **Sidewalk Astronomy at the Gonzales branch of the Ascension Parish Library.** It

was another night of clear skies and we were able to show off the Moon and Saturn to a very

enthusiastic crowd. Thanks to Don, Ben, Brandon and Abby for helping out!

The outreach at the **Lutcher Library** saw around 50 people show up to look through scopes. In the battle of



the aperture, Scott L. had his 6", Don upped the ante with his 12", but Fr. Mike took top prize with his 17.5"! Thanks to all three for putting on a good show for the community.

The **Halloween event at the West Baton Rouge Museum** was another success. Over 100 people were able to get some great views through telescopes and learn more about the night sky. We're always well received there and they even made some improvements to the lighting on the property with us in mind. A huge thank you to Scott and Troy for heading it all up.

Finally, **Sidewalk Astronomy at Perkins Rowe** was a huge hit this month. *There were a lot of young people out and so many that got their first look through a telescope.* Once again, nice clear skies the whole night. The Moon and Saturn did not disappoint and we even started getting good views of Jupiter during the last 15 minutes or so. Thanks go to John, Coy, Roz, Craig and Ben for that night.



A LOT OF YOUNG PEOPLE GOT THEIR FIRST "LOOK THROUGH THE TUBE"!

We made it through the busy season and now we calm down a bit. We just have Sidewalk Astronomy at the Ascension Parish Library and Perkins Rowe on the horizon, but we can expect to be contacted for more events. We've had a lot of interest in more telescope viewing.

As always, keep an eye out for further emails with outreach requests, but in the meantime, have a look below and let me know if you'd like to help out!

Clear Skies,

Ben Toman

Upcoming Outreach Events

Sidewalk Astronomy

Monday, November 20th

Time: TBD (Probably close do dusk)

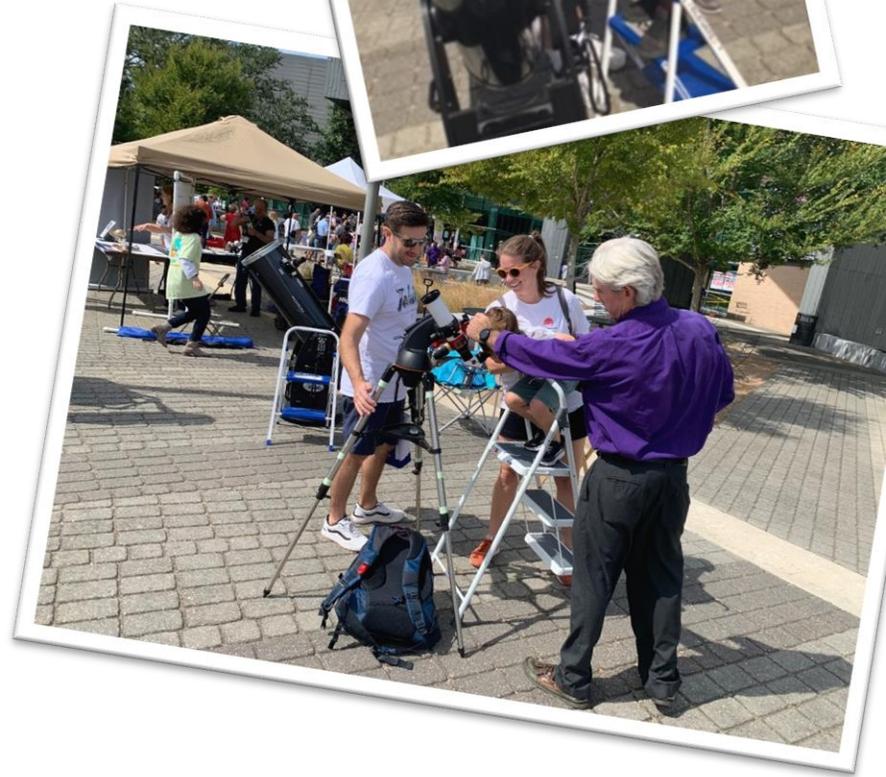
Ascension Parish Library - Gonzales

Sidewalk Astronomy

Tuesday, November 21st

6pm-9pm

Perkins Rowe Shopping Center



SPACE WEATHER ALERTS

Instant solar flare alerts: The sun is starting to flare again.

Sign up for [Space Weather Alerts](#) to receive text messages when explosions are underway.

Basic plan \$49.95/year

Alerts include: Coronal Mass Ejections (CME), Geomagnetic Storms Predicted (class G1-G4), Planetary K-index (K5-K9, K4 for Pro Plan), Solar Flare alerts (X-Ray Flux levels and Scales), Solar wind speed alerts (500, 600, 700 and over 800 km/s), B Sub Z South-pointing episodes, Cracks in Earth's magnetic field.

• BRAS subreddit and a Discord server.

Our subreddit has been set up for us to reach out to the public. Please join us on there. <https://www.reddit.com/r/BRAstro/>

Our Discord server is for Members only, and requires the download of a free app. It's a fun place for us to hang out. To join the discord, email safey2007@gmail.com with the subject **BRAS Discord**.

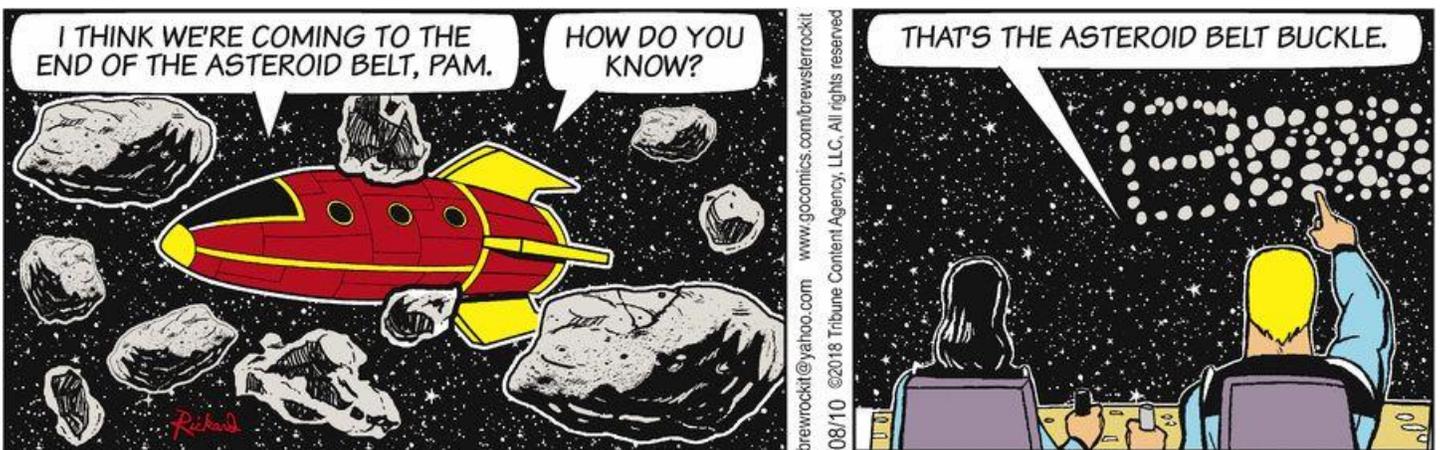
To add a Flair next to your username, PM Amy Northrop.

.For Discord help, access **techsupport-faq**,

or message Amy or Justin: <https://discord.gg/6N8r8DDj>

It also has voice channels so that you can speak to people through Discord.

The best part about both of these is that you can access them on your phone with the free apps. Hope to see you there. ~ Amy Northrop





October 14th, we had an “annular” Solar Eclipse. Lots of scopes and solar glasses out for that one. Our own **Ben Toman** live-streamed the event to his Facebook page. You can watch all 19 minutes of it [here](#).

What the heck is an “annular” solar eclipse?

from: <https://science.nasa.gov/eclipse>



From left to right, these images show a total solar eclipse, annular solar eclipse, and partial solar eclipse. A hybrid eclipse appears as either a total or an annular eclipse (the left and middle images), depending on the observer’s location.

Credit: Total eclipse (left): NASA/MSFC/Joseph Matus; annular eclipse (center): NASA/Bill Dunford; partial eclipse (right): NASA/Bill Ingalls

Well, let’s examine the 4 types:

1. Total

A total solar eclipse happens when the Moon passes between the Sun and Earth, completely blocking the face of the Sun. People located in the center of the Moon’s shadow when it hits Earth will experience a total eclipse. The sky will darken, as if it were dawn or dusk. Weather permitting, people in the path of a total solar eclipse can see the Sun’s corona, the outer atmosphere, which is otherwise usually obscured by the bright face of the Sun. A total solar eclipse is the only type of solar eclipse where viewers can momentarily remove their eclipse glasses (which are not the same as regular sunglasses) for the brief period of time when the Moon is completely blocking the Sun. The next total solar eclipse in the U.S. will be on [April 8, 2024](#).

2. Annular

An annular solar eclipse happens when the Moon passes between the Sun and Earth, but when it is at or near its farthest point from Earth. Because the Moon is farther away from Earth, it appears smaller than the Sun and does not completely cover the Sun. As a result, the Moon appears as a dark disk on top of a larger, bright disk, creating what looks like a ring around the Moon. The next annular eclipse in the U.S. will be on Oct. 14, 2023.

3. Partial

A partial solar eclipse happens when the Moon passes between the Sun and Earth but the Sun, Moon, and Earth are not perfectly lined up. Only a part of the Sun will appear to be covered, giving it a crescent shape. During a total or annular solar eclipse, people outside the area covered by the Moon's inner shadow see a partial solar eclipse.

4. Hybrid

Because Earth's surface is curved, sometimes an eclipse can shift between annular and total as the Moon's shadow moves across the globe. This is called a hybrid solar eclipse.

A Solar Eclipse – The Basics



Sun

Moon

Earth

A solar eclipse occurs when the Moon passes between the Sun and Earth, casting a shadow over parts of Earth and blocking the face of the Sun for observers in those locations.

Credit: NASA's Goddard Space Flight Center



Messages from HRPO

Highland Road Park Observatory



JOVIAN OPPOSITION

Thursday 2 November from 8:45pm to 10:45pm
for ages six and older / no admission fee

Jupiter is exactly 180 degrees from the Sun, rising as the Sun is setting. We are now the closest we'll be to Jupiter this year! Weather permitting viewing of Jupiter will take place. Saturn, Uranus and Neptune will be available also!



SCIENCE ACADEMY

Saturdays from 10am to 12pm.

for Cadets aged eight to twelve / \$5 per Cadet per week (\$6 if out-of-parish)
walk-ins welcome, but advanced registration via WebTrac strongly recommended
[activity #531990] / parents may stay with or leave Cadet

Four Cadet minimum and sixteen Cadets maximum per session.

- 4 November = "ISS Expedition 4"**
- 11 November = "Airplane Design"**
- 18 November = "The Mercury Program"**



EVENING SKY VIEWING

for ages six and older / no admission fee

Saturdays (4 and 25 November) from 7:30pm to 10pm

HRPO houses a 50-cm reflector, a 40-cm reflector and several smaller telescopes to bring the majesty of the night sky to the public. Trained operators, sharing duties via a rotating roster, work throughout the year in shifts. Each operator has a pre-planned list of objects to highlight. However, requests will be taken if there is time and if all present have viewed the previous target.



THE EDGE OF NIGHT (Fall Session)

Friday 10 November from 4:45pm to 6:45pm

for ages six and older / no admission fee / binoculars recommended

It's not light, it's not dark. It's that special time called twilight, and HRPO wants to introduce you to it! Are all sections of the sky the same shade of blue? Which stars are seen first? Are Mercury and Venus or the Moon out? Is that moving object a plane, a satellite or space debris? There is no other time like twilight. Bring it into your life!



URANIAN OPPOSITION

Sunday 12 November from 7:45pm to 9:45pm
for ages six and older / no admission fee

Uranus is exactly 180 degrees from the Sun, rising as the Sun is setting. We are now the closest we'll be to Uranus this year! The light-blue, high-ice planet (during these years in the constellation Aries) is very compelling. Although rather small due to its distance, its enormous size and unique color allow one to distinguish it from the stars in the constellation Aries. Jupiter, Saturn and Neptune will be available also!



NATURAL SKY CONFERENCE

Friday 17 November from 6:30pm to 9:30pm
for ages fourteen and older / no admission fee

Quite possibly the most important three hours a stakeholder will spend at HRPO this year will be this networking conference allowing HRPO parents, BRAS members and LSU physics professors and students talk to those organizations in the area who have the greatest ability to curb light pollution.



FALL SPACE EXPLORATION CAMP

Monday 20 November and Tuesday 21 November (8am to 5pm daily)
for ages nine to thirteen / \$55 per Camper for both days (\$66 if from outside EBR Parish) /
registration via WebTrac [activity #531180]

Campers will build and fly a single-stage chemical rocket, while learning about the upcoming missions to the Moon and Mars, and the latest news about the Psyche mission! All materials are supplied; campers will need a sack lunch and drink that does not require refrigeration. Explorers will also need to bring a hat and sunscreen.



SOLAR VIEWING

Saturday 25 November from 12pm to 2pm
for ages six and older / no admission fee

Weather permitting, viewing of the Sun's image in three different manners—transferred onto a white surface, directly with safely-filtered optical light, and directly in safely-filtered hydrogen-alpha wavelength—will take place for two hours. Protective clothing and sunscreen are recommended.



STEM EXPANSION: “American Space Exploration”

Saturday 25 November from 3:30pm to 7:30pm

for ages twelve to sixteen. / \$15 each per in-parish registrant; \$18 each per out-of-parish registrant. Advanced registration via WebTrac required [activity #531993].

This program offers advanced topics, topic extensions and all-new games and activities to an older crowd. Certificates will be earned, and a section of archived experiments, some not seen in over fifteen years (and some never performed on site) take place. There are also giveaways and door prizes.



AMATEUR ASTRONOMY COURSES

Saturdays from 3pm to 7pm

Registrants must be aged eighteen or older / \$15 per in-parish registrant;
\$18 per out-of-parish registrant

These exciting one-day classes are tailor-made to instruct the patron in the use of a personal telescope or binocular for skygazing, or the basics of the unaided-eye Baton Rouge sky. Sign up for one or more!

Learn Your Sky [16 December]

This class is an introduction to the unaided-eye Baton Rouge sky. We'll even go outside for some practice, weather permitting. Also included will be an overview of all major sky events for the next twelve months. This one-day course focuses specifically on the unaided-eye Baton Rouge sky. Limit thirty registrants. All registrants must be over eighteen; children are not allowed. Three adults needed for registration by 13 December.

Learn Your Binocular [6 January]

This class is a hands-on introduction to the operations of your personal binocular. We'll even take it outside for some practice, weather permitting. Also included will be an overview of all major sky events for the next twelve months. Up to four household members over the age of eight are encouraged to attend, though the registrant for this course must be over eighteen. Please bring all parts and accessories belonging to the binocular, including the instruction manual. This one-day course focuses specifically on binocular views of the Baton Rouge sky. Limit twenty registrants. Limit one binocular per registrant. Deadline for registration is 3 January; two households needed.

Learn Your Telescope [20 January]

This class is a hands-on introduction to the operations of your personal telescope. We'll even take it outside for some practice with the waxing gibbous Moon, weather permitting. Also included will be an overview of all major sky events for the next twelve months. Up to four household members over the age of eight are encouraged to attend, though the registrant for this course must be over eighteen. Please bring all parts and accessories belonging to the telescope, including the instruction manual. This one-day course focuses specifically on telescopic views of the Baton Rouge sky. Limit ten registrants. Limit one telescope per registrant. Deadline for registration is 17 January.



OBSERVING NOTES NOVEMBER 2023

Vela – The Sails

Position: RA 09 00, Dec. -50 00°

Note: For six years I wrote these Observing Notes, featuring the 60 constellations we can see before midnight from Baton Rouge, containing objects above magnitude 10. For the next three years I expanded that information and put all my research in the same format, ending last April, 2022. Beginning with last May, Named Stars, Deep Sky and Other Stars are expanded to include new discoveries, and updated when more accurate information is available. Monthly updates will be made to Sky Happenings and all that appears below that title.

Named Stars

Suhail (Gamma² Vel), “Al Suhail al Muhlif” from the Arabic “suhayl al-muhlif”, “The Suhail (star) of the Oath”, sometimes called “Regor” – the reverse for Roger (so named for the astronaut Roger Chaffe), sometimes called “Al Sahl” – “the Plain”, and sometimes called “The Spectral Gem of the South”, is a multiple star system at 08 09 31.96 -47 20 11.8. The A star (white) is magnitude 1.9 with the B star (whitish yellow) is at magnitude 4.2, with a separation of 41.2” at PA 220°. The C star, at magnitude 8.2, has an AC separation of 67.3” at PA 151°. The D star (a binary with the E star) is at magnitude 9.1 with an AD separation of 93.5” at PA 147°. The E star is at magnitude 12.5 with a DE separation of 1.8” at PA 146°. **NGC 2547** is 2° south, the star **V Puppis** is 2.5° southwest, and the star **AI Velorum** is 2.8° north. The AB stars are also known as **HD 68273**, **HIP 39953**, **Gould 9 Velorum**, **SAO 219504**, **Δ65**, and **I 1175**.

Alsephina (Delta Vel), transcribed from the Arabic “Al Safinah” – “a ship”, also called “Koo She”, is a quadruple star system at 08 44 42.20 -54 42 30.80. The A₁ star is an eclipsing binary at magnitude 1.99, and with the A₂ star the orbital period is 45.2 days with a separation of 0.5 au. The B star (yellow) is at magnitude 4.2 with a separation varying from 26 to 72 au and has an orbital period of 142 years. The C₁ and C₂ stars are a pair of red dwarf stars with C₁ at 11th magnitude and C₂ at 13th magnitude and a separation of 6.2 “. If the C stars are part of the Delta star system, they would have an orbital period around the A stars of 28,000 years. Also known as **HD 749856**, **HIP 42913**, **Gould 65 Velorum**, **SAO 736252**, **I 10**, and **h4136**.

Markeb (Kappa Vel), or Markab “from the Arabic for “something to ride (ship)”, mag. 2.47, 09 22 06.83 -55 00 38.5, is a spectroscopic binary appearing as a blue-white sub-giant star. The two stars orbit each other with a period of 116.65 days and are located about 5° east of **Delta Velorum**. **NGC 2910** and **NGC 2925** are about 2.2° northeast. Also known as **HD 81188**, **HIP 45941**, **Gould 129 Velorum**, and **SAO 236891**.

Suhail Alwazn (Lambda Vel), “The Glorious Star of the Cycle” from the Arabic “Al Suhail al Wazn” – “The Suhail of the Weight”, also called Suhail, Suhail al Muhlif, Alsuhal, Al Suhail, and **Muliphein**, mag. 2.21, 09 07 59.78 -43 25 57.4, is an orange variable super-giant star with a faint companion (**λ 109**) at magnitude 14.8 and a separation of 18”. **NGC 2792** is about 1.1° northeast, **h4186** (a triple star) is 0.7° east and a touch south, **h4191** (**z Velorum**), a double star, is 1° west and a touch north. Also known as **HD 78643**, **HIP 44816**, **Gould 65 Velorum**, and **SAO 236232**.

Al Haram (Mu Vel), mag. 2.69, 10 46 46.12 -49 25 12.5, is a binary star. The primary, a yellow giant star, is magnitude 2.7 with its companion, a yellow main sequence dwarf star, at magnitude 6.4. The two are separated by 1.437” and have an orbital period of 116.24 years. Also known as **HD 93497**, **HIP 52727**, **Gould 229 Velorum**, **R 155**, and **SAO 222321**.

Xestus (Omicron Vel), mag. 3.60, 08 40 17.61 -52 55 19.1, is a blue-white sub-giant star located within **IC 2391** and gives its name to it - the **Omicron Velorum Cluster**. Also known as **HD 74195**, **HIP 42536**, **Gould 56 Velorum**, and **SAO 236164**.

Tseen Ke (Phi Vel), from the Chinese “**Heavens Record**”, mag. 3.52, 09 56 51.75 -54 34 04.1, is a binary star and a blue-white super-giant star. The A star is also known as “**Hae Shih**” – “The Sea Stone”. Also known as **HD 86440**, **HIP 48774**, **Gould 171 Velorum**, and **SAO 237522**.

Marut (N Vel), mag. 3.16, 09 31 13.35 -57 02 03.8, is an orange giant star. Also known as **HD 82668**, **HIP 46701**, **Gould 144 Velorum**, and **SAO 237067**.

Kalaus (HD 83443), mag. 8.24, 09 37 11.83 -43 16 19.9, has one planet in orbit. Also known as **HIP 47202**.

Natasha (HD 85390), mag. 8.54, 09 50 02.0 -49 47 25, an orange dwarf star has two planets in orbit. Also known as **HIP 48235**.

Luhman 16, 10 49 18.92 -53 19 10.1, is a brown dwarf star.

Vela Pulsar (HU Vel), mag. 23.6, 08 35 20.66 -45 10 35.2, is a pulsar star associated with the **Vela Supernova Remnant**.

Deep Sky:

IC 2391, Omicron Velorum Cluster, mag. 2.6, 08 41 10.1 -52 59 28, 97.7’x97.7’ in size; detached, weak concentration of stars; large range in brightness; very large, bright; magnitude of brightest star is 3.6. Located 50’ west of **NGC 2669** and 1.8° north-northwest of **Delta Velorum**. Also known as **C0838-528**, **CGCG 376-010**, **CGCG 2132.5-0043**, **Caldwell 85**, **Cr 191**, **ESO 165-004**, **Lund 469**, **MCG+00-55-007**, **NPM1G-00.05684**, **OCI 767**, **OCI 767.0**, **PGC 067002**, and **vdB-Ha 112**.

GUM 12, “Gum Nebula”, mag. 4.5, 08 09 31.95 -47 20 11.71, 1200’x720’ in size (in **Vela**), is a huge H II region (interstellar medium “**ISM**”) extended from **Vela** into **Puppis**. It is a **SNR** (Super Nova Remnant) – the **Vela SNR**, and a reflection nebula. It contains 32 cometary globules. The **Gum Nebula** complex contains **Gum 15**, **Gum 17**, and **NGC 2736**. The **12a** portion of the **Gum Nebula** is at 07 55 - 43 00 and is illuminated by **HD 68273** while the **12b** portion is at 09 45 – 38 00 and is illuminated by **HD 66811**.

IC 2395, mag. 4.6, 08 42 07.4 -48 05 24, 25.1’x25.1’ in size; detached, weak concentration of stars; large range in brightness; large; magnitude of brightest star is 5.5. Also known as **C0839-480**, **C0841-497**, **Cr 192**, **Ced 106m**, **ESO 210-003**, **Lac III.03**, **Lund 472**, **Lund 1060**, **OCI 765**, **Raab 79**, and **vdB-Ha 47**.

Trumpler 10, mag. 5.0, 08 47 46.3 -42 33 58, 106.8’x106.8’ in size; detached, weak concentration of stars; moderate brightness range; magnitude of brightest star is 6.4. Located 38’ east-northeast of **d Velorum**. Also known as **C0846-423**, **Cr 203**, **Lac III.06**, **Lund 487**, **OCI 747**, **OCI 747.0**, and **vdB-Ha 53**.

NGC 2547, mag. 5.5, 08 09 52.36 -49 10 35.01, 34’x34’ in size; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is 6.5; bright, large; involved in nebulosity. Located 2° south of **Gamma Velorum**. Also known as **AM 0808-490**, **BRAN 45**, **C0809-491**, **Cr 177**, **Dunlop 411**, **ESO 209-018**, **Lac III.02**, **Mel 84**, **OCI 753.0**, and **Raab 71**.

Pismis 4, mag. 5.09, 08 35 09.6 -44 24 25, 34.9’x34.9’ in size; not well detached; small brightness range; magnitude of brightest star is 7.3; involved in nebulosity. Located 28’ from center of **Gum Nebula** and is the north end of **Ru 64**. Also known as **BRAN 159**, **C0832-441**, **Lund 461**, **OCI 746**, and **vdB-Ha 36**.

Gum 17, mag. 6.0, 08 50 21.01 -42 05 23.24, 100’x65’ in size, is a spectroscopic binary star (**HD 75759** and **HD 75724**). Also known as **CD-41 4560**, **GSC 07684-02120**, **HIP 43392**, **HR 3525**, **RCW 33**, and **SAO 220552**.

vdB-Ha 37, mag. 6.0, 08 35 47.0 -43 36 36, 4.1’x4.1’ in size. Also known as **BRAN 368**, **C0831-434**, **CD-58 3335**, **GSC 08613-01736**, **HD 91533**, **HIP 51623**, **Lund 1059**, and **SAO 238168**.

NGC 2669, mag. 6.1, 08 46 26.6 -52 55 52, 14.2’x14.2’ in size; detached, no concentration of stars;

large brightness range; magnitude of brightest star is 7.6; large. Contains **Harvard 3**. **IC 2391** is 55' to the west. Also known as **C0843-527**, **Cr 199**, **Cr 202**, **ESO 165-005**, **h 3140**, **Harvard 3**, **Lund 747**, **OCI 745**, and **vdB-Ha 52**.

NGC 3228, mag. 6.5, 10 21 30.7 -51 48 50, 61.4'x61.4' in size; detached, strong concentration of stars; small range in brightness; magnitude of brightest star is 7.9; large. Also known as **C1019-514**, **Cr 218**, **Dunlop 386**; **ESO 214-001**, **Lund 539**, and **vdB-Ha 93**.

Bochum 7, mag. 6.8, 08 44 48 -45 58 00, 20'x20'm in size. Located just west-northwest of a **Velorum**. Also known as **C0843-458** and **Lund 1131**.

Vela X-1 (GP Velorum), mag. 6.87, 09 02 06.86 -40 33 16.89, is a high-mass X-ray binary star. Also known as **HD 77581**, **HIP 44368**, **CD-40 4838**, **GSC 07681-02303**, **SAO 220767**, and **4U 0900-40**.

NGC 2910, mag. 7.2, 09 30 34.3 -52 54 47, 6.4'x6.4' in size; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 9.3; quite large. **Pi 14** is 9' to northwest, **vdB-Ha 72** is 11' to southeast, and **I Velorum** is 46' to southwest. Also known as **C0928-525**, **Cr 209**, **ESO 166-017**, **Lund 510**, **OCI 781**, and **vdB-Ha 71**.

NGC 2645, mag. 7.32, 08 39 35.8 -46 14 06, 5.2'x5.2' in size. **Pi 8** is 26' to east, **Wa 4** is 15" to east-northeast. Also known as **C0837-400**, **ESO 259-014**, **Lund 467**, **OCI 754**, **vdB-Ha 40**, and **Waterloo 4**.

NGC 3330, mag. 7.4, 10 38 38.2 -54 08 53, 14.9'x14.9' in size; detached, no concentration of stars; moderate brightness range; magnitude of brightest star is 8.8. Also known as **C1036-538**, **Cr 226**, **ESO 168-011**, **Harvard 4**, **Lund 533**, **OCI 806**, and **vdB-Ha 100**.

IC 2488, mag. 7.8, 09 27 25.7 -57 00 14, 26.4'x26.4' in size; detached, weak concentration of stars; moderate range in brightness; large; magnitude of brightest star is 10.0. Located 0.5° west of **K Velorum**. Also known as **C0926-567**, **Cr 208**, **ESO 186-014**, **Lund 507**, **Mel 97**, **Raab 83**, and **vdB-Ha 69**.

Mrk 18 (Cr 205), mag. 7.8, 09 00 31m-48 59 06, 5'x5' in size; detached, strong concentration of stars; moderately rich in faint stars; magnitude of brightest star is 9.3. Also known as **C0858-487**, **Cr 205** (use this for ID), **Dunlop 430**, **Lund 493**, **OCI 766**, and **vdB-Ha 57**.

NGC 2670, mag. 7.8, 08 45 32.6 -48 48 32.6, 13.2'x13.2' in size; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is 9.3; pretty large. **IC 2395** is 30' to north. Also known as **C0843-486**, **Cr 200**, **ESO 210-005**, **Lund 484**, **Mel 93**, **OCI 764**, **Raab 80**, and **vdB-Ha 50**.

Teusch 48, mag. 7.87, 09 20 31.8 -52 51 06, 2.2'x2.2' in size. Also known as **DSH J0920.5-5251**.

Pismis 16, mag. 8.0, 09 51 14.0 -53 10 19, 1.1'x1.1' in size, teardrop shape. Also known as **C0949-529**, **Lund 522**, **OCI 790**, and **vdB-Ha 81**.

Ru 82, mag. 8.1, 09 45 41.0 -54 00 04, 7.6'x7.6' in size; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is 10.8. Also known as **C0943-537**, **Lund 518**, and **OCI 788**.

NGC 2925, mag. 8.3, 09 33 17.0 -53 24 47, 16.9'x16.9' in size; detached, no concentration of stars; small range in brightness. Also known as **C0932-532**, **Cr 210**, **ESO 166-022**, **Lund 511**, and **OCI 783**.

Waterloo 6, mag. 8.4, 08 40 24.0 -46 08 00, 2.2'x2.2' in size; detached, weak concentration of stars; large brightness range; magnitude of brightest star is 9.2. Also known as **C0838-459** and **Lund 486**.

NGC 3201, mag. 8.5, 10 17 36.82 -46 24 44.9, 18.2'x18.2' in size. Also known as **ARO 504**, **Ben 44**, **C 79**, **C1015-461**, **CD-45 5935**, **Dunlop 445**, **EQ 1015-461**, **ESO 263-026**, **GC 115**, **HD 89353**, **He2-46**, **Leda 2802645**, **Mel 99**, and **VV 54**.

NGC 2660, mag. 8.8, 08 42 40.1 -47 12 04, 4.2'x4.2' in size. Also known as **C0840-469**, **Cr 193**, **ESO 260-004**, **Lund 475**, **Mel 92**, **OCI 723**, **OCI 723.0**, **Raab 77**, and **vdB-Ha 48**.

NGC 3033, mag. 8.8, 09 48 34.8 -56 24 54, 12.2'x12.2' in size. Also known as **C0947-561**, **Cr 212**, **ESO 167-006**, and **Lund 519**.

Teutsch 66, mag. 9.08, 09 33 28.6 -52 23 10, 2.4'x2.4' in size. Also known as **DSH J0933.4-5223**.

Ru 67, mag. 9.1, 08 41 51.4 -43 21 47, 7'x7' in size. Located 51' east-southeast of **e Velorum** or 52' southwest of **d Velorum**. Also known as **C0840-432**, **Lund 424**, and **OCI 748**.

vdB-Ha 12, mag. 9.11, 07 51 35.8 -31 48 43, 3.2'x3.2' in size. Also known as **BRAN 137**, **C0749-317**, **Haffner 17**, **HD 70584**, and **IRAS 07495-3142**.

Cr 213, mag. 9.2, 09 54 56.0 -50 57 04, 17'x17' in size. Also known as **C0952-504** and **OCI 785.0**.

PK 272+12.1, mag. 9.2, 10 07 00 -41 26 42, >47" in size. Also known as **ARO 504**, **HD 87892**, **He2-40**, and **NGC 3132**.

Ru 77, mag. 9.2, 09 41 02.2 -53 50 46, 6.2'x6.2' in size. Also known as **C0939-536**, **[FSR 2007]1502**, **Lund 515**, **OCI 787**, and **vdB-Ha 77**.

NGC 2659, mag. 9.5, 08 42 32.2 -44 59 56, 5'x5' in size; detached, no concentration of stars; large range in brightness; magnitude of brightest star is 9.7. Also known as **C0840-447**, **Cr 194**, **ESO 260-003**, **Lund 476**, **Mel 91**, **OCI 752**, **Pi 9**, **Raab 78**, and **vdB-Ha 46**.

Pi 8, mag. 9.5, 08 41 37.7 -46 16 19, 4.1'x4.1' in size. The **Vela SNR** is 8' to east, **b Velorum** is 24' north-northeast, **Waterloo 6** and **Pi 6** are to the north. Also known as **C0839-461**, **Lund 473**, **OCI 755**, **vdB-Ha 44**, and **Waterloo 5**.

Pi 12, mag. 9.7, 09 20 01.7 -45 07 52, 6.4'x6.4' in size. Also known as **C0916-449**, **ESO 261-005**, **Lund 500**, **OCI 765**, and **vdB-Ha 62**.

Ru 83, mag. 9.8, 09 49 13.7 -54 36 40, 3.6'x3.6' in size. Also known as **C0947-543**, **IRAS 09743-5420**, **Lund 520**, **OCI 791**, **vdB-Ha 80**.

NGC 2972, mag. 9.9, 09 40 13.9 -50 19 34, 5.7'x5.7' in size. Located 5° northwest of **Phi Velorum**, **Hogg 1** is 16' to south, and **He2-35** is 25' to the north-northeast. Also known as **Bennett 41a**, **C0938-501**, **Cr 211**, **IRAS 09386-5006**, **Lund 513**, **OCI 718**, and **vdB-Ha 76**.

Objects beyond magnitude 10 that are of interest:

NGC 3132, "The Eight Burst Nebula", mag. 10.01, 10 07 01.76 -10 26 11.3, 0.75'x0.75' in size, is a PN that is very bright, very large, and a slightly oblong ring with a smooth disk. Also known as the "Southern Ring Nebula", **AM 1004-401**, **Bennett 43**, **C 74**, **CD-39 6137**, **ESO 316-027**, **GSC 07714-00963**, **HD 87877**, **HD 87892**, **IRAS 10049-4011**, **PK 272+12.1**, **PKS 1004-401**, **PKS J1007-4026**, **PN G272.1+12.3**, **Sa2-53**, **StWr 4-8**, and **Wray 15-501**.

Gamma Velorum Cluster, 08 09 32.0 -47 20 12. 18' in size. **Gamma² Velorum** is the brightest member. Also known as **Brandt 1**.

NGC 2736, "Pencil Nebula", "Peanut Nebula", 09 00 12.0 -45 57 00, 20' in size, is an H II region located 2.8° south-southeast of **Lambda Velorum** and is part of the **Vela SNR**. Also known as **ESO 260-14**, "Herschel's Ray", and **RCW 37**.

Octopus Nebula, 10 54 42 -48 47 00, 0.61'x0.14' in size, is a hot, sub-dwarf star. Also known as **ESO 215-004** (**CD-48 6027**, **GSC 08207-02114**, **IRAS 10524-4831**, **PK 283+09.1**, **PN G283.9+09.7**, **DS 1**, and **AAVSO 1050-48**).

Vela A, 09 18 00 -48 00 00, is a molecular cloud.

Vela Pulsar (**HU Velorum**), mag. 15.10, 08 35 20.65 -45 10 35.15. Also known as **Vela A**, **EQ 0833-450**, **PSR J0834-4511**, **SNRG 263.6-030**, and **4U 0833-45**.

Vela SNR (**Gum 12**), 08 34 00.0 -45 50 00, 255'x255' in size, is a supernova remnant. Also known as **Vela XYZ**, **SNRG263.9-030**, **SNRG 263.4-030**, **SNRG 263.9-03.3**, and **1E 0840.0-4430**.

Objects in deep space in Vela: 44 NGC; 4 IC; 206 ESO; 17 He2(Heinze); 3 Lac(aille) II; 3 Lac III; 104 C(luster); 6 Raab; 2 CGCG; 69 PK; 83 PN G; 9 HH(Herbig-Haro); 4 EQ; 4 vdBG(van den Bergh); 3 ARO(Algonquin Radio Observatory); 17 Pi(smis); 12 Sa(ndqvist); 14 Gum; 18 RCW; 27 Ru(precht); 65 vdB-Ha(van den Bergh-Hagen); 10 Teu(tsch); 1 Ferrero; 1 Kro(nberger) or Kn; 3 Pat(chick); 37 Sa(nduleak)-2; 3 Sa-3; 8 ASCC

(All Sky Compiled Catalog); 13 Ced(erbard); 1 NPM1G; 3 C(aldwell); 3 P(erek); 5 SL(Shapley-Lindsay); 4 Ho(gg); 2 Pe-2(Perek); 6 PB(Peimbert-Batiz); 2 Ste(nholm); 1 GC; 10 Lo(den); 2 GDC; 3 Kro(nberger); 2 Al(essi); 4 VBRC(von der Bergh-Racine); 2 AGCS; 1 SSWZ94; 1 Ba(sel); 4 Ben(net); 24 Cr (Collinder); 17 Dun(lop); 2 Ha(vard); 6 Mel(otte); 2 Haf(fner); 7 SAI; 2 Kle(mola); 1 Dr(illing); 1 Ku(stner); 1 Miller; 1 Muzzio; 1 Mar(karian); 1 Cop; 1 Koh(outek); 1 Al(essi)-Teu(tsch); 7 PKS (Parks Observatory); 1 Schuster; 3 Wa(terloo); 1 Sr(Saurer); 1 Tr(umpler); 1 Bo(chum); 1 Slr; 2 Jc(Jonckheere); 1 Volk; 1 Slo(Slotegraff); 1 Mayall;

1 Longmore; 4 AI; 4 Radio Galaxies; 7 VV(Verontsov-Vel'yaminov); 4 VV'; 2 LoTr(Longmore-Tritton); 1 Y-C(Yale-Columbia); 1 [DB01]; 2 MrWe(Melmer-Weinberger); 1 [PKL18]; 1 Hb (Hubbell); 1 LSS; 1 FeSt; 1 SaSt(Sanduleak-Stevenson); 2 StWr(Stock-Wroblewski); 3 StDr; 2 Pz; 1 K2(Kohoutek); 15 BRAN; 2 Mo; 1 Magaess; 1 Mul; 1 Ve(ighe); 1 MulLDu; 1 MulPre; 2 Po; 7 Ras; 1 RAS Object; 7 Fest; 1 DeGaFe; 2 UKS(United Kingdom Schmidt); 3 GN; 1 QSO; 1 1E; 1 Brandt; 3 PSR; 33 SNR; 53 IRAS; 27 SGC(Southern Galaxy Catalog); 8 GSC(Guide Star catalog); 59 Wray; 32 He2(Heinze); 1 My(Mayall); 23 MCG(Morphological Catalog of Galaxies); 15 PGC(Principal Galaxies Catalog); 35 LEDA(Lyon-Meadon Extragalactic Database) use PGC; 88 OCl(Open Clusters catalog); 15 AM(Arp and Madore)use Arp; 81 Lund; Pencil Nebula; Gamma Velorum Nebula; Eight Burst Nebula; Octopus Nebula; Omicron Velorum Cluster; Gum Nebula; Vela Pulsar; Vela SNR; and Vela X-1 for a total of 1513 objects.

Other Stars:

HD 73526, mag. 4.12, 08 37 16.48 -41 19 08.8, is a yellow main sequence dwarf star with two planets in orbit. Their orbital periods are 187 days and 377 days – they are orbiting in a 2:1 resonance. Also known as **HIP 42282**.

HD 75289, mag. 6.35, 08 47 40.41 -41 44 10.5, has one planet in orbit – a hot Jupiter in a 3.57day orbit at a separation of 0.0482 au. Also known as **HIP 43177**, **Gould 70 Velorum**, and **SAO 220481**.

Vela X-1 (GP Vel), mag. 6.87, 09 02 06.86 -40 33 16.9, is an X-ray pulsar system and an eclipsing binary star with a period of 8.96 days. It is an emitter of particularly intense hard X-rays. Also known as **HD 77581** and **HIP 44368**.

HD 93385, mag. 7.49, 10 46 15.0-41 27 52.0, has two planets in orbit. Also known as **HIP 52676**.

ICR J08408-4503 (LM Vel), mag. 7.55, 08 40 47.79 -45 03 30.2, is a recurrent X-ray transient and a variable star.

HD 74438, mag. 7.58, 08 38 09.0 -52 42 00.0, is a quadruple star consisting of two binary stars orbiting their barycenter.

HD 85512, mag. 7.67, 09 51 07.0 -43 30 10.0, has one planet in orbit. Also known as **HIP 48331**.

HD 80077 (PV Vel), mag. 7.68, 09 15 54.79 -40 58 24.6, is a luminous blue variable star that is possibly in **Pismis 11**. Also known as **HIP 45467**.

HD 95338, mag. 8.62, 10 59 26.3 -45 39 33.1, has one transiting planet in orbit. Also known as **HIP 53719**.

IRAS 08544-4431 V390 Velorum), mag. 9.18, 08 56 14.19 -44 43 10.8, is a post-AGB star.

Stars of interest beyond magnitude 10:

LSS 2018 (KV Vel), mag. 12.12, 10 54 40.57 -48 47 02.9, is the central star of **Drilling 1 (DS1)** and is a reradiating spectroscopic binary star.

WASP-19, mag.12.3, 09 53 40.08 -45 39 33.1, is a yellow main sequence dwarf star with a transiting hot Jupiter planet orbiting it in 0.78884 days.

GRS 1009-45 (MN Vel), mag. 14.71, 10 13 36.38 -45 04 32.0, is an X-ray nova star.

2S 0918-549, mag. 21.0, 09 20 26.47 -55 12 24.5, is a low-mass X-ray binary star.

HH 46IRS, 08 25 43.85 -51 00 32.6, is a young stellar object in **HH 46 (Herbig-Haro)**.

PSR B1055-52, 10 57 58.84 -52 26 56.3, is a pulsar star.

PSR J0855-4644, 08 55 36.18 -46 44 13.4, is a pulsar that is possibly associated with the **Vela SNR**.

Vela Pulsar (HU Vel), mag. 23.6, 08 35 20.66 -45 10 35.2, is a pulsar associated with the **Vela SNR**.

The pulsar is spinning at a rate of 89 milliseconds (11,195 revolutions per second) and is only about 11,000 years old. It is one of the youngest pulsars known and has been detected at visible wavelengths. It is the 2nd optical pulsar known, one of the strongest radio pulsars, the strongest gamma-ray source in the sky, and a powerful X-ray source.

Stars in Vela:

12 Alpha; **17 I(Innes)**; **20 V(ariable)**; **5 Gli(ese)**; **1 Syd (Sydney Observatory)**; **1 B (van den Bos)**;

204 Lettered; 14 Dunlop (Δ); 9 Hu(ssey); 2 Finan; 7 See (λ); 2 Denner; 11 Rossiter (Rst); 1 Runker (Rmk); 2 Cap(O) – Capetown Observatory; 7 Cor(O) – Cordova Observatory; 1 Brs(O) – Brisbane Observatory; 1 Slr; 2 Jc - Jonckheere; 4 Ø; 5 R; 4 Hld (HdO) – Holden (Hn); 1 Pz; 36 h(erschel); 1 Numbered; 6 CD (Cordova Durchmusterund); 12 H(enary)D(raper); 3 HIP; 4 HR; and 3 SAO.

Sky Happenings: November 2023

(what follows pertains ONLY to the current month. Material above is good year after year.)

- Nov. 1st - Asteroid **Vesta** is stationary at 11 PM CDT.
- Nov. 2nd - Evening: In the east-northeast the waning gibbous **Moon** will rise alongside **Castor** and **Pollux** in **Gemini**. The trio will be in a triangular shape with the **Moon** just under 6° to the right of the stars.
- Nov. 3rd - **Jupiter** is in opposition at 12 AM CDT (midnight),
Pollux is 1.4° north of the **Moon** at 2 PM CDT.
- Nov. 4th - **Saturn** is stationary at 12 noon CDT.
- Nov. 5th - **Daylight Saving Time** ends at 2 AM CDT (reset clocks to 1 AM CST),
Last Quarter Moon occurs at 2:27 AM CST,
Southern Taurid meteor shower peaks at 8 PM CST,
Asteroid Melpomene is at opposition at 9 PM CST.
- Nov. 6th - Dawn: The waning crescent **Moon**, in **Leo** in the southeast, is 5° above **Regulus** with **Venus** to the lower left of the pair,
The **Moon** is at apogee (251,388 miles or 404,569 km from **Earth**) at 3:49 PM CST.
- Nov. 9th - **Venus** is 1° south of the **Moon** at 3 AM CST.
- Nov. 11th - Dawn: The thin crescent **Moon** will follow **Spica** by about 3° as they rise on the east-southeast horizon before sunrise.
- Nov. 12th - The **North Taurid** meteor shower peaks at 6 PM CST.
- Nov. 13th - **New Moon** occurs at 3:27 AM CST,
Uranus is at opposition at 11 AM CST.
- Nov. 14th - **Mercury** is 1.7° north of the **Moon** at 9 AM CST,
The **Moon** passes 0.9° north of **Antares** at 2 PM CDT.
- Nov. 16th - **Mercury** passes 3° north of **Antares** at 12 PM CST (noon).
- Nov. 18th - **Leonid** meteor shower peaks at 12 AM CST (midnight),
Mars is in conjunction with the **Sun** at 12 AM CST (midnight).
- Nov. 20th - **First Quarter Moon** occurs at 4:50 AM CST,
The **Moon** passes 3° south of **Saturn** at 8 AM CST,
Asteroid (Minor Planet) Ceres is in conjunction with the **Sun** at 10 AM CST.
- Nov. 21st - The **Moon** is at perigee (229,795 miles or 369,818 km from **Earth**) at 3:01 PM CST.
- Nov. 22nd - The **Moon** passes 1.5° south of **Neptune** at 2 AM CST.
- Nov. 25th - The **Moon** passes 3° north of **Jupiter** at 5 AM CST.
- Nov. 26th - The **Moon** passes 3° north of **Uranus** at 3 AM CST,
Evening: The **Moon** is about 1° below the **Pleiades (M45)** in **Taurus**.
- Nov. 27th - **Full Moon** occurs at 3:16 AM CST.
- Nov. 28th - **Venus** passes 4° north of **Spica** at 3 AM CST.
- Nov. 30th - Evening: The waning gibbous **Moon**, **Pollux**, and **Castor** will rise above the east-northeast horizon in a line. The **Moon** will be less than 2° below and to the right of **Pollux**.
- Dec. 1st - Dawn: Low in the southeast before sunrise **Venus** will be blazing 4.5° to the left of **Spica**.
- Dec. 3rd - Evening: The waning gibbous **Moon** and **Regulus** will rise in the east-southeast with about 3.5° between them.
- Dec. 4th - **Mercury** is at greatest eastern elongation (21°) at 8 AM CST,
The **Moon** is at apogee (251,249 miles or 404,346 km from **Earth**) at 12:42 PM CST,
Last Quarter Moon occurs at 11:49 PM CST.

Planets:

Mercury – **Mercury** reappears in the evening sky in the second week of November. On the 14th, the planet, only 3° above the horizon 20 minutes after sunset, will be 5° to the right of a 38-hour old crescent **Moon**. The planet will reach 20° east of the **Sun** on the 27th, setting one hour after the **Sun**. At the end of the month the planet will stand 5° high in the southwest 30 minutes after sunset.

Venus – **Venus** is the brilliant morning star rising four hours before the **Sun** and will shine briefly at magnitude -4.4. The planet will cross from **Leo** into **Virgo** on November 3rd. The planet will be near **Beta Virginis** on the 5th and 6th and will move to a point 1.2° south of **Porrira (Gamma Virginis)** on the 18th. On the 9th, a crescent **Moon** will be 1° north of the planet. On the 27th, the planet will be 5° north of **Spica** and will end the month 4.3° northeast of **Spica**. Through a telescope the planet's phase will change from a 55% lit disk on the 1st to a 67% lit disk by the 30th. The disk will shrink from 22" to 17" during the month.

Mars – **Mars** is too close to the **Sun** for observing. The planet will be in conjunction with the **Sun** on November 18th.

Jupiter – **Jupiter** is visible all night and will reach opposition on November 3rd, at magnitude -2.9 with a 49.45" disk. The planet is in **Aries** at magnitude -2.9 and has an apparent diameter of 49". The planet will be higher in the sky for northern observers than anytime since 2015. It has three transits of the planet this month. The first transit is on November 4th starting at 10:55 PM CDT. The second is on the 12th beginning at 11:38 AM CST with the shadow lagging by 14 minutes, appearing at 11:52 AM CST. On the 20th the third transit begins at 7:49 PM CST with the shadow following 28 minutes later at 8:17 PM CST. **Europa** will transit on the third beginning at 8:15 PM CST with its shadow appearing one minute later. On the 10th, **Europa** will start transit at 9:29 PM CST with its shadow following 22 minutes later at 9:53 PM CST. **Ganymede** will be eclipsed by the planet's northern limb on the 6th at 9:44 PM CST. Even though the occultation will end at 11 PM CST, **Ganymede** is in the planet's shadow. The moon will reappear around 11:26 PM CST, taking more than 10 minutes to fully emerge. **Ganymede** will repeat this event on the 14th at 12:56 AM CST, with its shadow egressing at 3:36 AM CST.

Saturn – **Saturn** is in the southern sky as the sky darkens. The planet starts November at magnitude 0.7, standing 35° high. The planet will dim slightly to magnitude 0.8 in the third week of the month. The planet will end its retrograde motion on the 4th and will trek across southern **Aquarius**. The planet's motion away from **Iota Aquarii** will be barely noticeable until late in the month. The planet will set shortly before 2 AM local daylight time on the 1st and just before 11 PM local time on the 30th. A telescope will reveal rings spanning almost 40". **Titan**, at magnitude 8.6, will be roughly north of the planet on the 10th and 26th, and roughly south of the planet on the 2nd and 18th. On the 7th, the 10th magnitude moons **Tethys**, **Dione**, and **Rhea** will be joined by **Enceladus** and **Iapetus** – all on the western side of the rings. **Iapetus**, at inferior conjunction (unusually close to the planet) will lie between **Rhea** and **Dione**. **Enceladus**, at 12th magnitude, lies south of **Dione** in the early evening. Between 8 PM and 9 PM CST these five moons will curve around the western end of the rings. **Tethys** will transit the planet on the 18th and 20th. The transit on the 18th will begin around 10:35 PM CST and last almost 80 minutes. On the 20th the transit will start around 7:50 PM CST and last about 80 minutes. **Iapetus** will reach western elongation on the 27th, at nearly 10th magnitude, and will stand 8.5° west of the planet.

Uranus – **Uranus** will reach opposition on November 13th, at magnitude 5.6 showing a 3.7" wide disk, standing roughly between **Jupiter** and the **Pleiades (M45)**. The planet can be found by locating **Delta Arietis** (magnitude 4.3), at about 9.5° southwest of **M45**, and will be roughly 2.2° south of this star all month. The planet is at magnitude 5.7 and will move about 1.2° west during the month. At opposition, a telescope will show a tiny, 3.7" wide disk.

Neptune – **Neptune** is visible most of the night in **Pisces**. Binoculars or a telescope will show a magnitude 7.7 planet with a 2" disk with a bluish tint. The planet is sitting 5° south of **Lambda Piscium**, with 20 **Piscium** (5th magnitude) about 1.5° east-northeast of the planet.

Moon – The **Moon** has the following attributes:

Greatest North declination: On the 2nd (+28.3°) and on the 30th (+28.1°)

Greatest South declination: On the 17th (-28.1°)

Libration in longitude: East limb most exposed on the 1st (+6.0°) and on the 29th (+5.0°)

West limb most exposed on the 15th (-4.8°)
Libration in latitude: North limb most exposed on the 18th (+6.7°)
South limb most exposed on the 4th (-6.8°)

Asteroids / Minor Planets All positions given are from the *RASC Observer's Handbook, 2023 USA Edition* unless otherwise noted.

Asteroid 4 Vesta: On November 2nd -06 30.25 +19 03.4, in **Orion** at magnitude 7.4; on the 12th - 06 29.06 +19 11.6, in **Orion** at magnitude 7.2; and on the 22nd - 06 24.73 +19 25.4, in **Orion** at magnitude 7.0.

Asteroid 8 Flora: On November 2nd - 22 18.04 -109 01.5, in **Aquarius** at magnitude 9.6; on the 12th - 22 27.54 -17 45.1, in **Aquarius** at magnitude 9.8; and on the 22nd - 22 39.41 -16 13.1, in **Aquarius** at magnitude 9.9.

Asteroid 9 Metis: On November 2nd - 06 29.17 +23 53.2, in **Gemini** at magnitude 9.7; on the 12th - 06 31.12 +24 26.7, in **Gemini** at magnitude 9.4; and on the 22nd - 06 29.19 +25 06.6, in **Gemini** at magnitude 9.2.

Asteroid 18 Melpomene: On November 2nd - 03 10.70 -03 41.6, in **Eridanus** at magnitude 8.1; on the 12th - 06 31.12 -04 33.9, in **Eridanus** at magnitude 8.2; and on the 22nd - 02 54.55 -04 46.8, in **Eridanus** at magnitude 8.4.

Asteroid 21 Lutetia: On November 2nd - 02 36.16 +11 27.9, in **Aries** at magnitude 9.8. **Lutetia's** positions, by my estimates, are as follows: On November 1st - about 2.8° east and a little north of **Xi Arietis**; on the 5th - about 2° east and a little north of **Xi Arietis**; on the 10th - about 0.8° east and a little north of **Xi Arietis**; on the 15th - about 0.4° northwest of **Xi Arietis**; on the 20th - about 1.3° due west of **Xi Arietis**; on the 25th - about 2° due west and a touch south of **Xi Arietis**; and on the 30th - about 2.8° due west and a touch south of **Xi Arietis**.

Asteroid 29 Amphitrite: On November 2 - 00 04.05 +04 04.2, in **Pisces** at magnitude 9.4; on the 12th - 00 01.01 +03 59.0, in **Pisces** at magnitude 9.7; and on the 22nd - 00 00.89 +04 08.6, in **Pisces** at magnitude 9.9.

Comets - All positions given are from the *Journal of the Association of Lunar and Planetary Observers (ALPO)* unless otherwise noted.

Comet 12P/Pons-Brooks, has not been seen since 1954. On November 30th - 18 24.3 +38 44, at magnitude 10.0 in **Lyre**.

Comet 62P/Tsuchinshan - On November 20th - 09 26.5 +18 02, at magnitude 9.8 in **Cancer**; on the 30th - 10 09.2 +15 57, at magnitude 9.4 in **Leo**. **Tsuchinshan's** positions, by my estimates, are as follows: On November 1st - about 3° south and a touch east of **Kappa Geminorum**; on the 5th - about 1.5° west and a touch south of **Mu Cancri**; on the 10th - about 3° west and a touch north of **Eta Cancri**; on the 15th - due north of **M44 (Beehive Cluster)**; on the 20th - about 4.5° northeast of **Delta Cancri** or 5° due north and a touch east of **Omicron Cancri**; on the 25th - about 4.5° south-southwest of **Lambda Leonis**; and on the 30th - about 5° north-northwest of **Psi Leonis**.

Comet 103P/Hartley (from the *Deep Impact Mission*); On November 10th - 08 42.3 -00 34, at magnitude 8.0 in **Hydra**; on the 20th - 08 54.7 -04 35, at magnitude 8.6 in **Hydra**; and on the 30th - 09 00.8 -08 40, at magnitude 9.1 in **Hydra**.

Comet C/2021 S3(PANSTARRS) position on November 30th is 12 57.0 -39 55, at magnitude 9.9 in **Centaurus**.

Meteor Showers - All information for meteor showers is from the **International Meteor Organization**. Note: mzhr = maximum zenith hourly rate.

There are three **Major (Class I)** meteor showers active in November: The **Orionids** - active from September 26th through November 22nd, peaked on October 21st; the **Leonids** - active from November 3rd through

December 2nd, peaks on November 18th with a mzhr of 15; and the **Geminids** – active from November 19th through December 24th, peaks on December 14th.

There are eight **Minor (Class II)** meteor showers active in November: The **Southern Taurids** – active from September 23rd through November 12th, peaked on October 19th; the **Epsilon Geminids** – active from September 27th through November 8th, peaked on October 19th; the **Leonis Minorids** – active from October 13th through November 3rd, peaked on October 21st; the **Southern Taurids** – active from October 11th through December 8th, peaks on November 6th with a mzhr of 5; the **Northern Taurids** – active from October 13th through December 2nd, peaks on November 13th with a mzhr of 5; the **November Orionids** – active from November 13th through December 12th, peaks on November 30th with a mzhr of 3; the **Sigma Hydrids** – active from November 22nd through January 4th, peaks on December 7th; and the **Monocerotids** – active from November 23rd through December 24th, peaks on December 11th.

There is one active **Variable (Class III)** meteor shower in November; the **Alpha Monocerotids** – active from November 13th through November 27th, peaks on November 22nd.

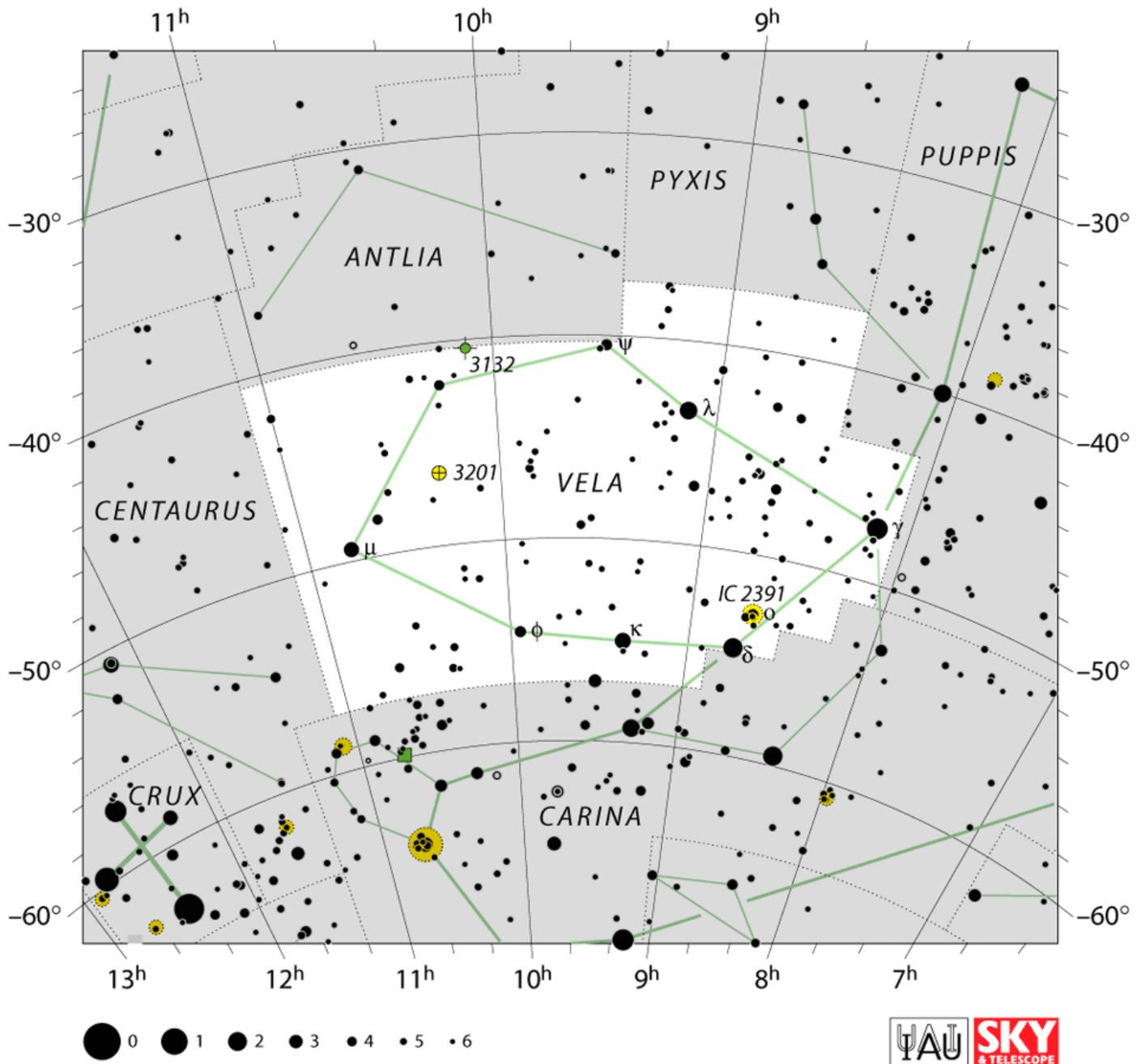
There are 16 **Weak(Class IV)** meteor showers active in November – all have a mzhr of <2; The **Tau Cancrids** – active from September 23rd through November 12th, peaked on October 21st; the **Lambda Ursae Majorids** – active from October 18th through November 7th, peaked on October 28th; the **Southern Lambda Draconids** – active from October 29th through November 8th, peaks on November 4th; the **Chi Taurids** – active from October 24th through November 13th, peaks on November 4th; the **Kappa Ursae Majorids** – active from October 26th through November 7th, peaks on November 5th; the **Andromedids** – active from October 24th through December 2nd, peaks on November 6th; the **Omicron Eridanids** – active from October 23rd through December 2nd, peaks on November 13th; the **November Sigma Ursae Majorids** – active November 17th through December 2nd, peaks on November 24th; the **Theta Pyxidids** – active from November 28th through December 6th, peaks on December 1st; the **Southern Chi Orionids** – active from November 14th through December 16th, peaks on December 7th; the **December Kappa Draconids** – active from November 29th through December 13th, peaks on December 3rd; the **Psi Ursae Majorids** – active from November 29th through December 11th, peaks on December 4th; the **December Phi Cassiopeiids** – active from November 28th through December 10th, peaks on December 4th; the **December Rho Virginids** – active from November 29th through December 22nd, peaks on December 5th; the **Eta Hydrids** – active from November 26th through January 1st, peaks on December 12th; and the **December Sigma Virginids** – active from November 26th through January 24th, peaks on December 22nd.

Mythology:

Vela – the Sails

One of the three sections, into which the French astronomer Nicolas Louis de Lacaille, divided the Greek constellation of *Argo Navis*, the *Argonaut's ship*, in 1763. Vela represents the ship's sails. The other sections are *Carina – the Keel*, and *Puppis – the Stern*. As a result of the dismantling of *Argo Navis*, Vela has no stars labeled Alpha or Beta, since these stars were retained in *Carina*. Vela's brightest star is Gamma Velorum, a second magnitude star.

Argo Navis represented the fifty-oared galley in which Jason and the Argonauts sailed to fetch the *Golden Fleece* from Colchis in the Black Sea.



The End

Proxy Form for Baton Rouge Astronomical Society

I, _____ (Member Name), as a member in good standing of BRAS, do hereby authorize _____ (Officer of the above club), to

_____ represent me in all matters to be conducted during the ____/____/____ (Date) Business Meeting.

or

Vote YES _____ or NO _____ on the _____ (matter before the membership).

or

Cast my vote for _____, in the upcoming election for _____.

Date

Signature