



**BATTLE POINT
ASTRONOMICAL
ASSOCIATION**

Igniting passion for science through the lens of astronomy!



THE OBSERVER

January 2024, Vol. 32

2024 Annual Member Meeting and Board Elections

The BPAA Annual Members Meeting will be held on Wednesday, January 10th, in the newly renovated Rudolph Planetarium at the Ritchie Observatory. Doors open at 6:30 for socializing, and the meeting will convene at 7pm.

All members are encouraged to attend, participate in the discussion, and vote for the 2024 budget and slate of Directors. If you can't attend in person, you may register to attend on Zoom; registration details will be emailed to all members in good standing as of January 1.

After the meeting, you are invited to stay for a short demonstration of the new Planetarium, followed by tours of the Observatory.

Agenda:

1. Welcome
 2. Acknowledgement of Outgoing Board Directors
 3. Introduction and Election of New (N) and Continuing (C) Directors
 - President — Frank Petrie (C)
 - Vice President — Dan Schleseneer (N)
 - Treasurer — Kim Wilkes (C)
 - Secretary — Joe Mulligan (N)
 - Chief Astronomer — Cole Rees (C)
 - Education Officer — Erin Howard (N)
 - Facilities Officer — Denise Hidano (C)
 - Publicity Officer — Vacant - Nominations welcome
 - Director at Large — Peter Moseley (C)
 - Director At Large — Chuck Wraith (C)
 4. Review of 2023 Accomplishments
 5. Preview of Plans for 2024
 6. 2024 Budget Presentation and vote to approve
 7. Adjourn
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Planetarium Update from [Erin Howard](#)

The Rudolph Planetarium is bringing you new ways to enjoy the planetarium this year, and many of them start in January. This month, in addition to the Second Saturday show, you'll be able to enjoy Movies at the Planetarium (almost) every Wednesday starting on 1/3 and Community Hour every Fourth Saturday starting on 1/27. MATP will feature breathtaking and educational movies roughly 30 minutes long. Immerse yourself in the spectacular graphics built for planetarium domes! Community Hour will feature one public domain science talk each month followed by a discussion on that very talk. But wait, there's more! On top of our monthly events, we will also be hosting viewing sessions of Kalamazoo Astronomical Society's Introduction to Amateur Astronomy series. The first one is on January 13th, and we hope to see you at our viewing session or on Zoom.

In March we will be introducing two new shows: First Fridays and Saturday Kids Club. First Fridays will be short planetarium shows to inform you about the night sky for the upcoming month. Saturday Kids Club will be 1.5 hour long events held on Third Saturdays and will feature either a kid-friendly science talk+movie combo OR a planetarium show+craft combo. Stay tuned for more details!

To purchase tickets to any of our events, check out our new Givebutter landing page: <https://givebutter.com/bpaa>

For more information on KAS's lessons and to sign up, check out their website here: <https://www.kasonline.org/amastro.html>.

	<p>BATTLE POINT ASTRONOMICAL ASSOCIATION</p> <p>MOVIES AT THE PLANETARIUM</p> <p>JANUARY 3RD RUDOLPH PLANETARIUM BATTLE POINT PARK</p> <p>5PM 6PM</p>		<p>BATTLE POINT ASTRONOMICAL ASSOCIATION</p> <p>MOVIES AT THE PLANETARIUM</p> <p>JANUARY 17TH RUDOLPH PLANETARIUM BATTLE POINT PARK</p> <p>5PM 6PM</p>
	<p>BATTLE POINT ASTRONOMICAL ASSOCIATION</p> <p>MOVIES AT THE PLANETARIUM</p> <p>JANUARY 24TH RUDOLPH PLANETARIUM BATTLE POINT PARK</p> <p>5PM 6PM</p>		<p>BATTLE POINT ASTRONOMICAL ASSOCIATION</p> <p>MOVIES AT THE PLANETARIUM</p> <p>JANUARY 31ST RUDOLPH PLANETARIUM BATTLE POINT PARK</p> <p>5PM 6PM</p>

BPAA Website Update

The website will be going through some changes this year! If you want to be in on the discussion, please join our Discord server. All discussions will be handled publicly on the Website forum under the Maintenance category. Not sure how to navigate Discord yet? Simply click here to join the conversation:

<https://discord.gg/Gt5WJmc6TV>.

BPAA Portable Planetarium at the Bainbridge Performing Arts Center



**BPA Theatre Maker students and
Teaching Artists**



**Portable planetarium dome inflated
and ready for action.**

In early December, BPAA members Erin Howard, Dan Schlesener, and Joe Mulligan volunteered to take our new planetarium projector and our old portable dome to the Bainbridge Performing Arts (BPA) center to give several shows. Coordinating with BPA Executive Director Elizabeth Allum, the shows were intended to provide a “unique performance opportunity exploring the intersection of astronomy and performance art.”

According to Ms. Allum, “Theatre Makers students will have the opportunity to learn from BPAA’s astronomers, about the myths and stories inspired by the cosmos. Students will immerse themselves in this magical world with the help of BPAA’s mobile planetarium, which will be set up in the studio at BPA! Then, the Teaching Artists of BPA Theatre School Elizabeth Allum and Terace Yeatts, will guide students through the process of creating an original performance piece, inspired by the cosmos, which will be presented as a public ticketed performance at BPA.”

Besides the presentation for the Theatre Maker students, additional shows were made over the course of three days to two groups of BPA Theatre School students as well as two groups from the Mosaic Home Education Partnership.

All five presentations were very well received!

Upcoming Event: 2nd Saturday Program

January 13, 6:00pm

Seasons on Earth and Other Planets

Erin Leigh Howard, BPAA and University of Washington

We made it to 2024 and winter is upon us! December 21st, the winter solstice, marked the start of winter and the shortest day of the year. Now that we’re past that our days are getting brighter...but why? What is the science behind the seasons, and what are seasons like on other planets? Join Erin as they take us on a journey through the solar system to discover what causes the seasons on every planet, including our own!

Access the [BPAA Events](#) page to register.

Upcoming Event(s): Telescope Tuesdays

Every Tuesday, 10:00am - 2:00pm

While we're making huge progress in the updates to the Ritchie observatory, we still need volunteers to support those activities! Every Tuesday at 10am, work parties are formed to tackle those modifications. An enormous amount of progress has been made, but we still have quite a bit more to do. If you can, please come out and support Telescope Tuesdays!

Upcoming Event: Cosmic Conversations

January 16, 7:00pm

Topic: TBD

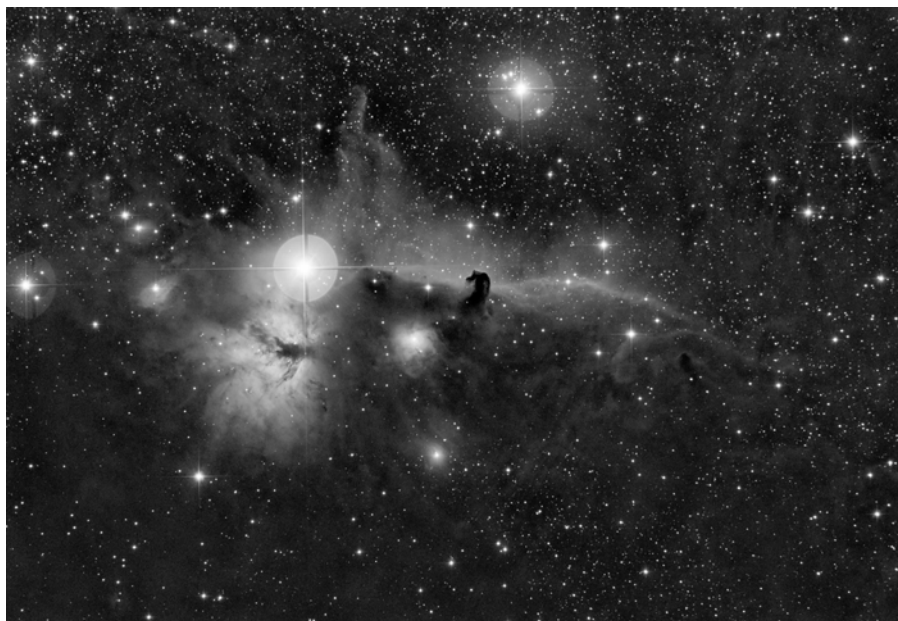
On the third Tuesday of each month, we have been engaging in COSMIC CONVERSATIONS at the Ritchie Observatory in Battle Point Park. These are open to members and operate much like a book group, wherein we pick a topic, read some background material and then discuss what we've learned. These are nonmathematical discussions where we hope to learn from each other.

Astronomical League Update

As a perk to membership, BPAA members in good standing are automatically enrolled in the Astronomical League and receive a complimentary subscription to The Reflector Magazine, the AL's quarterly publication. If you wish to receive the magazine, go to <https://bpastro.org/members-portal/>, log in to your BPAA member profile, check the box "Yes, send me The Reflector" and make sure your correct mailing address appears in your membership record. If you do not want to receive the magazine, check "No, I wish to opt out." If you need help doing so, send an email to President@bpastro.org.

Member Contributed Image

The Horsehead Nebula - IC 434



Credit: Grace Bonow and Cole Rees

This image was taken by Grace Bonow and Cole Rees for her internship project with Hyla and BPAA. We worked together with other members of BPAA to process this image! It was taken with Cole's 8" EdgeHD.

WHAT'S UP(COMING)!

Source for events and links are In-The-Sky.org, Dominic Ford, Editor. The links provide details for each event including a scale on how difficult they are to observe.

Jan 2 – [The cluster Messier 41 is well placed](#)

Jan 4 – [Quadrantid meteor shower peak](#)

Jan 11 – New Moon

Jan 15 – [The cluster Messier 47 is well placed](#)

Jan 19 – [γ-Ursae Minorid meteor shower peak](#)

– [Asteroid 354 Eleonora at opposition](#)

Jan 25 – Full Moon

Jan 31 – [The Beehive cluster is well placed](#)

Feb 9 – New Moon

Feb 15 – [Conjunction of the Moon and Jupiter](#)

Feb 16 – [Close approach of the Moon and M45](#)

Feb 19 – [Messier 81 is well placed](#)

Feb 24 – Full Moon

Mar 1 – [Comet C/2021 S3 \(PANSTARRS\) reaches peak brightness](#)

Mar 3 – [Asteroid 3 Juno at opposition](#)

Mar 10 – New Moon

Mar 11 – [Asteroid 23 Thalia at opposition](#)

Mar 14 – [Comet C/2021 S3 \(PANSTARRS\) passes perigee](#)

Mar 19 – [March equinox](#)

Mar 24 – [Penumbral lunar eclipse](#)

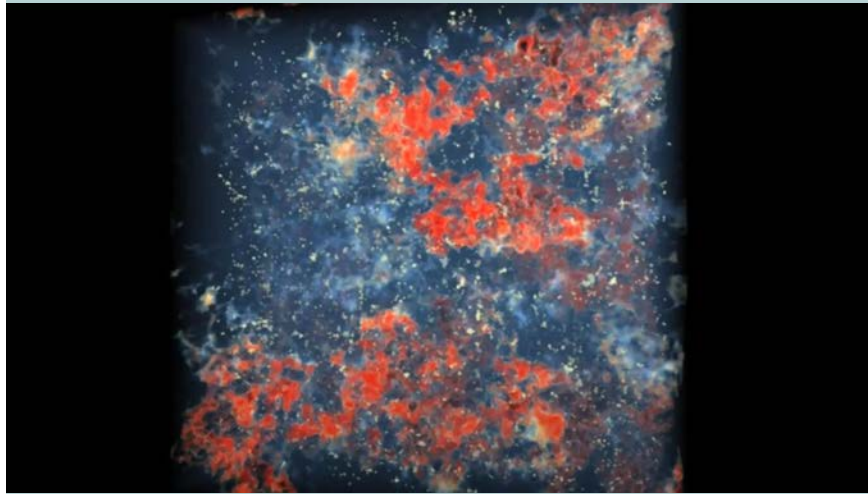
Mar 25 – Full Moon

– [Mercury at highest altitude in evening sky](#)

Mar 30 – [136472 Makemake at opposition](#)

Here are some interesting things going on in Astronomy. If they pique your curiosity, please follow the link at the bottom of each for the full article!

What Was It Like When the Cosmic Dark Ages Ended?



For the first 550 million years of the Universe, neutral, light-blocking atoms persist in the space between galaxies, continuing what's known as the cosmic dark ages. Once the last of that neutral matter becomes reionized, starlight can propagate freely through the Universe, marking the end of the reionization epoch. [Credit](#): M. Alvarez, R. Kaehler, and T. Abel

Forming stars sounds like the easiest thing in the Universe to do, given enough time. However, making stars that are actually visible to an observer is, perhaps surprisingly, a lot more challenging. Once you get a sufficiently large amount of mass together, so long as you give it enough time to gravitate, you'll be able to watch it collapse down into small, dense clumps. If enough mass comes together in those clumps under the right conditions, stars will no doubt ensue. This is how you form stars today, and it's how we've formed stars all throughout our cosmic history, going back to the very first ones some 50-100 million years after the Big Bang.

But even with the first stars burning, as they go about fusing hydrogen into heavier elements and converting that energy into a form that results in the emission of tremendous amounts of light, those stars aren't necessarily visible to anyone around to observe them. The Universe is simply too good at absorbing and blocking that light. The reason? All of the atoms in the Universe, during the time that the first stars exist, are neutral, and there are simply too many of them for the starlight to penetrate. It took hundreds of millions of years for the Universe to allow that light to freely pass through it: a time known (from the perspective of light) as the cosmic dark ages, but known (from the perspective of atoms) as the epoch of reionization. It's a vital part of the cosmic story of us whose importance is greatly underappreciated.

(Source: [Big Think](#))

NASA's Webb Rings in Holidays with Ringed Planet Uranus



This image of Uranus from NIRCam (Near-Infrared Camera) on NASA's James Webb Space Telescope exquisitely captures Uranus's seasonal north polar cap and dim inner and outer rings. This Webb image also shows 9 of the planet's 27 moons – clockwise starting at 2 o'clock, they are: Rosalind, Puck, Belinda, Desdemona, Cressida, Bianca, Portia, Juliet, and Perdita. Credit: NASA, ESA, CSA, STScI

NASA's James Webb Space Telescope recently trained its sights on unusual and enigmatic Uranus, an ice giant that spins on its side. Webb captured this dynamic world with rings, moons, storms, and other atmospheric features – including a seasonal polar cap. The image expands upon a two-color version released earlier this year, adding additional wavelength coverage for a more detailed look.

With its exquisite sensitivity, Webb captured Uranus' dim inner and outer rings, including the elusive Zeta ring – the extremely faint and diffuse ring closest to the planet. It also imaged many of the planet's 27 known moons, even seeing some small moons within the rings.

(Source: [NASA](#))

JWST Reveals Distant “Galaxy” Is Six-Way Galactic Crash



An illustration of HFLS3 when it was first perceived as a primordial maximum starburst galaxy. Credit: ESA - C. Carreau

Peering deep into the past, the James Webb Space Telescope’s keen detectors are revealing unprecedented details of some of the oldest structures in the universe. Formerly fuzzy images become sharp at the telescope’s highest resolution. One such re-examination of an energetic primordial galaxy has left many astronomers starstruck: Webb reveals the single galactic unit is actually six galaxies, crashing together to create a deluge of fresh stars.

In 2013 astronomers using data from the Herschel Space Observatory discovered the earliest star-forming galaxy yet seen. Bursting at the seams with new stars when the universe was only about 850 million years old, the existence of the object, christened HFLS3, defied accepted scenarios for how quickly galaxies could grow. The colossal stellar factory ignited new stars at a rate about 2,000 times greater than our Milky Way, despite having roughly the same mass.

In the universe’s infancy, astronomers had believed, galaxies should not nearly be this big with such a high birth rate. Several teams attempted to image the galaxy again using the Hubble Space Telescope and several ground-based telescopes. Yet the photos only hinted at the rough signatures of other nearby sources—with the potential influence of gravitational lensing, in which massive objects closer to us warp and magnify the light rays from distant objects behind them.

Now with [new data](#), scientists have proposed that HFLS3 is not a single giant starburst galaxy after all. “This galaxy was actually an interacting system of galaxies in the early universe,” says team lead Gareth Jones (University of Oxford), “which are still very bright and starbursting, but as a system rather than a single source.”

(Source: skyandtelescope.org)

A New Way to Characterize Habitable Planets



Dramatic plumes spray water ice and vapor from many locations along the famed "tiger stripes" near the south pole of Saturn's moon Enceladus. The tiger stripes are four prominent, approximately 84-mile- (135-kilometer-) long fractures that cross the moon's south polar terrain. Credit: NASA/JPL-Caltech/Space Science Institute

For decades, science fiction authors have imagined scenarios in which life thrives on the harsh surfaces of Mars or our moon, or in the oceans below the icy surfaces of Saturn's moon Enceladus and Jupiter's moon Europa. But the study of habitability—the conditions required to support and sustain life—is not just confined to the pages of fiction. As more planetary bodies in our solar system and beyond are investigated for their potential to host conditions favorable to life, researchers are debating how to characterize habitability.

While many studies have focused on the information obtained by orbiting spacecraft or telescopes that provide snapshot views of ocean worlds and exoplanets, a new paper emphasizes the importance of investigating complex geophysical factors that can be used to predict the long-term maintenance of life. These factors include how energy and nutrients flow throughout the planet.

"Time is a crucial factor in characterizing habitability," says Mark Simons, John W. and Herberta M. Miles Professor of Geophysics at Caltech. "You need time for evolution to happen. To be habitable for a millisecond or a year is not enough. But if habitable conditions are sustained for a million years, or a billion...? Understanding a planet's habitability takes a nuanced perspective that requires astrobiologists and geophysicists to talk to each other."

(Source: phys.org)

Hubble Captures Throng of Spiral Galaxies



Credit: ESA/Hubble & NASA, J. Dalcanton, Dark Energy Survey/DOE/FNAL/NOIRLab/NSF/AURA; CC BY 4.0 Acknowledgement: L. Shatz

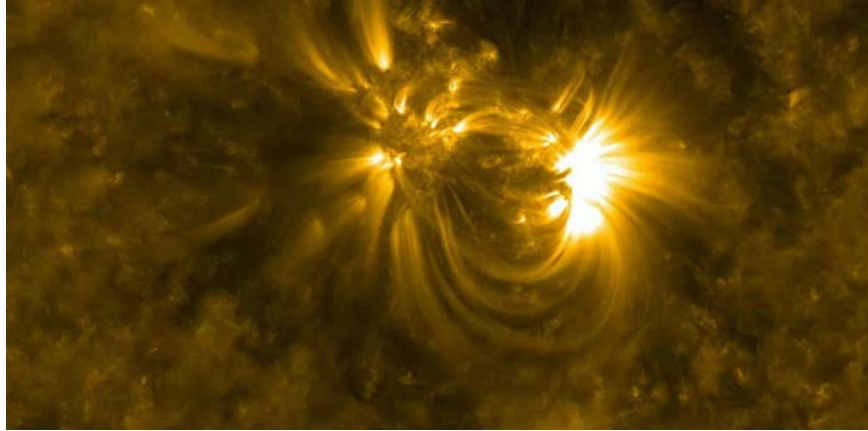
This Hubble Picture of the Week features a richness of spiral galaxies: the large, prominent spiral galaxy on the right side of the image is NGC 1356; the two apparently smaller spiral galaxies flanking it are LEDA 467699 (above it) and LEDA 95415 (very close at its left) respectively; and finally, IC 1947 sits along the left side of the image.

This image is a really interesting example of how challenging it can be to tell whether two galaxies are actually close together or just seem to be from our perspective here on Earth. A quick glance at this image would likely lead you to think that NGC 1356, LEDA 467699, and LEDA 95415 were all close companions, while IC 1947 was more remote.

However, we have to remember that two-dimensional images such as this one only give an indication of angular separation: that is, how objects are spread across the sphere of the night sky. What they cannot represent is the distance objects are from Earth.

(Source: phys.org)

Larger and More Frequent Solar Storms Will Make for Potential Disruptions and Spectacular Auroras on Earth



A sunspot emitting a flare on the surface of the sun. Credit: [NASA/GSFC/Solar Dynamics Observatory](https://www.nasa.gov/content/goddard/solar-dynamics-observatory)

Bright auroras, with dancing lights in the sky, characterize the clear winter nights of northern Canada. Longer nights during the fall and winter also favor seeing more auroras, but the show is best outside of light-polluted cities. Impressive auroral events allowed bright auroras to be seen [as far south as the United States recently](#).

Auroras are produced through the sun's interaction with the Earth's magnetic field. The number of auroras is increasing as [the sun's activity becomes stronger](#), approaching a solar maximum.

Perhaps surprisingly, the same space disturbances that cause auroras can affect our technologies.

In 1859, a geomagnetic storm—the largest in recorded history—disrupted technological systems, such as they were at the time, on Earth. Referred to as the "[Carrington Event](#)" after Richard Carrington, the amateur astronomer who made the connection between a bright solar flare and subsequent auroral and magnetic effects.

That sun-Earth link was slow to be accepted, but we now know that the sun can trigger disturbances in near-Earth space, although it seems that events as large as that of 1859 are rare.

(Source: [phys.org](https://www.phys.org))

2023 Officers

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Chief Scientist - Steve Ruhl
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Chuck Wraith

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