



Igniting passion for science through the lens of astronomy!



Photo Credit: Frank Petrie

THE OBSERVER

January 2025, Vol. 44

2025 Annual Business Meeting

7:00 pm

Wednesday, January 15, 2025

In person at the Ritchie Observatory
10800 Battle Point Drive NE
Bainbridge Island

Or register to attend on Zoom
(the registration link is in the meeting announcement emailed to members)

Agenda

1. 2024 Year in Review
2. 2024 Financial Report
3. Election of 2025 Board Slate
4. Look Ahead to 2025
5. Questions
6. Adjourn

You are invited to stay after the meeting
for a tour of the Observatory
and a look at work in progress

2024 Annual Report Available

Season's Greetings, Members and Supporters of BPAA!

At the close of 2024, we're pleased to report that it's been an incredible year of rebuilding and building anew. We're strengthening our ability to bring the wonder of astronomy to our community!

This has only been possible because of the support of our volunteers and donors. I'm so grateful to all of you who gave so generously of your time and treasure. If you haven't yet gotten involved in what we do, I encourage you to make it your New Year's resolution to find a way to participate in a way that's most meaningful to you. We need all of you to make 2025 our best year yet!

Please follow this link to read the report in its entirety: [BPAA 2024 Annual Report](#)

STEAM FUND SUCCESS!

What an amazing year for BPAA operational fundraising to support increased staffing!

The BPAA STEAM (Science, technology, engineering, art, and mathematics) fundraiser kicked off this year with a \$25k matching fund thanks to the generosity of a handful of dedicated supporters. Within just a few months donors contributed well past the goal to access the full matching fund and at last count we are well past the \$50k goal for this fund. Click [here](#) for some important FAQs about this fund.

The campaign culminated with our Cosmic Countdown Solstice Event at BARN on December 14th. We had a good turnout, and as shown, we were able to provide attendees with information about our STEAM initiatives. Through generous donations from some of our attendees, we hit that \$50k mark!

Stay tuned for updates as we expand our staffing to offer programming to schools for free and expand our public programming.



Credit: Denise Hidano

BPAA took over the BARN Great Room to show off some of our programs and activities during the Cosmic Countdown Solstice Event.



Credit: Denise Hidano

Chief Astronomer Cole Rees explains about some of our telescopes.



Credit: Denise Hidano

Connor Curran was on hand to explain the different types of telescopes and show the work he has done refurbishing some of our loaners.



Credit: Denise Hidano

Between Planetarium shows, Education Officer Erin Howard discusses our growing capabilities with attendees.

Donate Stocks to Inspire

As BPAA works to expand its programming for schools and the public, it now accepts stocks as donations through a Vanguard account. This is a great way to support BPAA and increase your charitable contributions. Start with your investment representative to identify what you would like to donate. Then contact our communications manager at info@bpastro.org to get the BPAA account details.

Volunteers Make the World Go 'Round!

In case you hadn't noticed, BPAA is a volunteer-run organization. It's people like you who make things happen around here, everything from Telescope Tuesday work parties, Planeteers running planetarium shows and Kids Club activities, Astro Ambassadors hosting star parties, to the Board of Directors and much, much more. If you'd like to volunteer for any of these roles or just to help out, contact Liz Walker info@bpastro.org or Frank Petrie president@bpastro.org.

In particular, we are in the final stages of completing the rooftop dome reconstruction and hope to have the new telescope installed and operating by spring. To get there, we could use some extra hands with skills in carpentry and simple electrical work. Contact Frank if this is you.

Here are some additional roles that need someone like you to be their champion:

- Grant Writer
 - Telescope Inventory manager
 - Network Administrator
 - Workshop renovation team
 - Landscaping & grounds upkeep
 - Board Secretary
 - Facility Manager
 - And much more – let us know where you'd like to make a difference!
-

Dome Repair Progress from Peter Moseley

We continue to make progress. The old decking wood that was on the roof has been disposed of. The wood that made up the scaffolding is under cover on the roof waiting for floor work.

The circuits needed to power the telescope are in place and we have rewired the under-floor lighting to replace the red bulbs with white and the white bulbs with power outlets. An 18" rack box is on order to house the computer, power supply and other items to support the telescope. We are waiting for a quote and then will order the refractor that will piggyback on the CDK. A camera and various fittings for the telescope are on order but won't be here until February. In the meantime, we will be rebuilding the dome center floor.

Gary Baldasari used his roller to help me bend the back shell of the stairs. The stairs are ready for Patrick to weld up.

A stair side panel with a stiffener being attached for welding:



Many thanks to all who have so far participated in this!

Planetary Alignment Star Party

January 18, 5:30pm

A planetary alignment of six planets will take place during January 2025. In the evening, Mars, Jupiter, Uranus, Neptune, Venus, and Saturn will all be visible in the sky shortly after sunset!

In anticipation of this event, we are scheduling a star party on January 18. Hoping that the weather cooperates, we will set up telescopes to observe this event. However, Mars, Jupiter, Saturn, and Venus will also be visible to the naked eye!

If you want to bring your own telescope for the event, please get to the observatory by 4:30pm so you can get setup before sunset (4:51pm).

Please remember Star Party rules and be mindful of your headlights and how they negatively affect night vision. We encourage everyone to not drive up to the observatory unless they have telescopes to unload.

If Mother Nature doesn't accommodate us, we're planning on having a planetarium show as a backup.

Second Saturday

Volunteer Training

January 11, 12:00pm - 6:00pm

Sorry no traditional Second Saturday Program this January.

But we are using this time to train up our volunteers!

Join Erin anytime between 12pm and 6pm, on Zoom (link to be provided later) and at the observatory, to build your Google Drive (Docs, Sheets, Slides, etc.) skills and learn how we plan to organize our volunteering efforts in the new year.

Cosmic Conversations

January 21, 7:00pm

Topic: TBA

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.

Telescope Tuesdays

Every Tuesday, 10:00am - 3:00pm

There's always a lot to do at the Ritchie observatory! As you can see from Peter's progress report above, we're working on getting our new CDK telescope and its supporting infrastructure ready.

Come on out every Tuesday, 10am to 3pm, and get involved. Learn how stuff works. Help make improvements. An enormous amount of progress has been made, but there's always more to do. And we might even have pizza! Come on out and support Telescope Tuesdays!

Member Contributed Images

M33 - Traingulum Galaxy



Credit: Image acquisition by Brian Puhl, processed by Charles Hagen

The Dark Shark Nebula (LDN 1235)



Credit: Chuck Wraith

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 1](#) – [The cluster Messier 41 is well placed](#)
- [Jan 2](#) – [Asteroid 14 Irene at opposition](#)
- [Jan 3](#) – [Conjunction of the Moon and Venus](#)
 - [Quadrantid meteor shower 2025 peak](#)
- [Jan 10](#) – [Conjunction of the Moon and Jupiter](#)
- [Jan 11](#) – [Venus at dichotomy](#)
- [Jan 12](#) – [Mars at perigee](#)
- [Jan 13](#) – [Asteroid 887 Alinda at opposition](#)
 - [Lunar occultation of Mars](#)
 - Full Moon
- [Jan 14](#) – [The cluster Messier 47 is well placed](#)
 - [NGC 2403 is well placed](#)
- [Jan 15](#) – [Mars at opposition](#)
- [Jan 19](#) – [Conjunction of Venus and Saturn](#)
 - [γ-Ursae Minorid meteor shower 2025 peak](#)
- [Jan 29](#) – New Moon
- [Jan 30](#) – [The Beehive cluster is well placed](#)
- [Jan 31](#) – [Conjunction of the Moon and Saturn](#)
- [Feb 1](#) – [Conjunction of the Moon and Venus](#)
- [Feb 3](#) – [Conjunction of Venus and Neptune](#)
- [Feb 4](#) – [Venus at highest altitude in evening sky](#)
- [Feb 5](#) – [Close approach of the Moon and M45](#)
- [Feb 6](#) – [Close approach of the Moon and Jupiter](#)
- [Feb 9](#) – [Conjunction of the Moon and Mars](#)
- [Feb 12](#) – [Asteroid 29 Amphitrite at opposition](#)
 - Full Moon
- [Feb 16](#) – [Venus at greatest brightness](#)
- [Feb 19](#) – [Messier 81 is well placed](#)
- [Feb 27](#) – New Moon
- [Feb 28](#) – [Conjunction of the Moon and Mercury](#)
- [Mar 1](#) – [Conjunction of the Moon and Venus](#)
- [Mar 5](#) – [Close approach of the Moon and M45](#)
- [Mar 6](#) – [Conjunction of the Moon and Jupiter](#)
- [Mar 8](#) – [Mercury at highest altitude in evening sky](#)
 - [Conjunction of the Moon and Mars](#)

Mar 9 – [Conjunction of Venus and Mercury](#)

Mar 12 – [Asteroid 8 Flora at opposition](#)

Mar 13 – [Total lunar eclipse](#)

– Full Moon

Mar 20 – [March equinox](#)

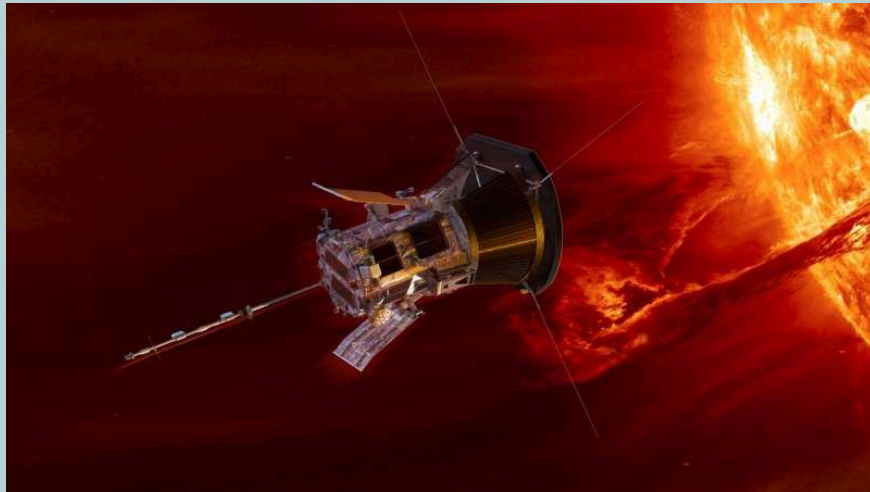
Mar 23 – [Saturn ring plane crossing](#)

Mar 29 – New Moon

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!

NASA's Parker Solar Probe Sets New Record for Sun Proximity



An artist's concept showing Parker Solar Probe. Credit: NASA/APL

Operations teams have confirmed NASA's mission to "touch" the sun survived its record-breaking closest approach to the solar surface on Dec. 24, 2024.

Breaking its previous record by flying just 3.8 million miles above the surface of the sun, NASA's Parker Solar Probe hurtled through the solar atmosphere at a blazing 430,000 miles per hour—faster than any human-made object has ever moved. A beacon tone received late on Dec. 26 confirmed the spacecraft had made it through the encounter safely and is operating normally.

This pass, the first of more to come at this distance, allows the spacecraft to conduct unrivaled scientific measurements with the potential to change our understanding of the sun.

"Flying this close to the sun is a historic moment in humanity's first mission to a star," said Nicky Fox, who leads the Science Mission Directorate at NASA Headquarters in Washington. "By studying the sun up close, we can better understand its impacts throughout our solar system, including on the technology we use daily on Earth and in space, as well as learn about the workings of stars across the universe to aid in our search for habitable worlds beyond our home planet."

(Source: phys.org)

NASA's Webb Finds Planet-Forming Disks Lived Longer in Early Universe



This is a James Webb Space Telescope image of NGC 346, a massive star cluster in the Small Magellanic Cloud, a dwarf galaxy that is one of the Milky Way's nearest neighbors. With its relative lack of elements heavier than hydrogen and helium, the NGC 346 cluster serves as a nearby proxy for studying stellar environments with similar conditions in the early, distant universe. Ten, small, yellow circles overlaid on the image indicate the positions of the ten stars surveyed in this study. Image Credits: NASA, ESA, CSA, STScI, Olivia C. Jones (UK ATC), Guido De Marchi (ESTEC), Margaret Meixner (USRA)

New data confirms Hubble finding and refutes current theories of planet formation in universe's early days.

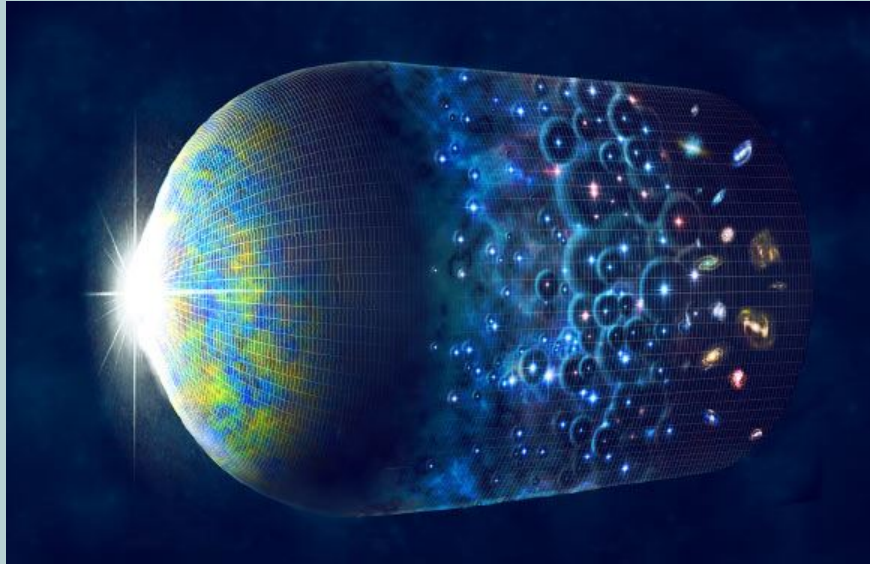
Thanks to its extraordinary sensitivity and resolution, Webb just solved a mystery more than two decades old. In 2003, the Hubble Space Telescope saw evidence of a massive planet around an ancient star. This puzzled astronomers, who knew that such stars in the early universe lacked a lot of the heavier elements considered essential for building planets. Current models predict that the disks around this type of star have short lifetimes, so short that planets cannot grow large, or maybe even form at all. Yet, there it was!

Astronomers then turned to a nearby proxy for the early universe – the star-forming region NGC 346. There, Hubble saw signs that planet-forming disks existed around stars 20 to 30 million years old, much older than theories predicted such disks could survive.

The Hubble findings were intriguing, but without a way to obtain spectra, scientists could not be sure they were witnessing genuine accretion and the presence of disks. Now, using Webb, researchers have confirmed the presence of planet-forming disks in NGC 346, and discovered that these disks are long-lived. The finding affirms the Hubble result, and it is causing scientists to rethink current models of planet formation.

(Source: hubblesite.org)

Dark Energy is Misidentification of Variations in Kinetic Energy of Universe's Expansion



This artist's impression shows the evolution of the Universe beginning with the Big Bang on the left followed by the appearance of the Cosmic Microwave Background. The formation of the first stars ends the cosmic dark ages, followed by the formation of galaxies. Image credit: M. Weiss / Harvard-Smithsonian Center for Astrophysics.

Dark energy is commonly thought to be a weak anti-gravity force which acts independently of matter and makes up around two thirds of the mass-energy density of the Universe.

The Lambda Cold Dark Matter (Λ CDM) model, which has served as the standard cosmological model for quarter of a century, requires dark energy to explain the observed acceleration in the rate at which the cosmos is expanding.

Astrophysicists base this conclusion on measurements of the distances to supernova explosions in distant galaxies, which appear to be farther away than they should be if the Universe's expansion were not accelerating.

However, the present expansion rate of the Universe is increasingly being challenged by new observations.

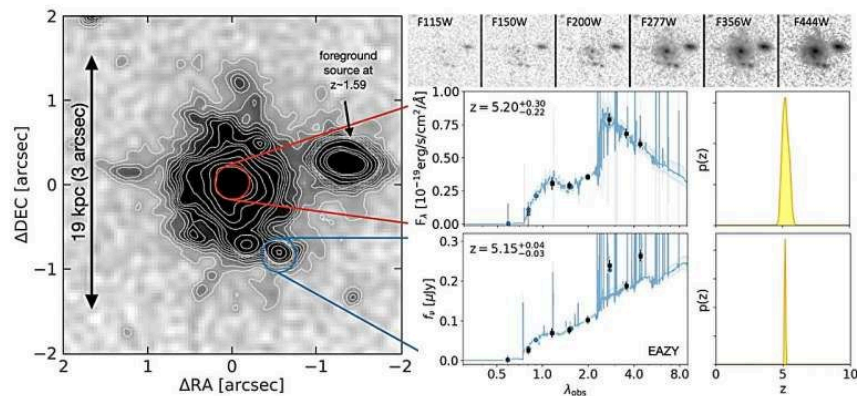
Firstly, evidence from the afterglow of the Big Bang — the Cosmic Microwave Background — shows the expansion of the early Universe is at odds with current expansion, an anomaly known as the Hubble tension.

In addition, in an analysis of new high precision data from the Dark Energy Spectroscopic Instrument (DESI), scientists found that the Λ CDM model does not fit as well as models in which dark energy is evolving over time, rather than remaining constant.

Both the Hubble tension and the surprises revealed by DESI are difficult to resolve in models which use a simplified 100-year-old cosmic expansion law — Friedmann's equation.

(Source: [sci.news](https://www.sci.news))

Astronomers Discover an Ultra-Massive Grand-Design Spiral Galaxy



The morphology and photometric redshift of Zhúlóng. Credit: Xiao et al., 2024.

Using the James Webb Space Telescope (JWST), an international team of astronomers has detected a new grand-design spiral galaxy as part of the PANORAMIC survey. The newfound galaxy, named Zhúlóng, is extremely massive and appears to be the most distant spiral galaxy identified so far. The finding was detailed in a paper [published](#) December 17 on the pre-print server arXiv.

Grand-design spiral galaxies are characterized by their prominent, well-defined arms, which circle outwards from a clear core. It is assumed that the arms in such galaxies are actually overdense regions of the disk which trigger star formation as incoming material is compressed in that region.

It is still not well understood when and how spiral galaxies first emerged in the early universe and such galaxies are generally rare at high redshifts. To date, only a few individual spirals have been found at a redshift higher than 3.0.

Now, a group of astronomers led by Mengyuan Xiao of the University of Geneva in Switzerland, reports the serendipitous detection of a new high-redshift grand-design spiral galaxy using JWST. The galaxy was named Zhúlóng, after a giant red solar dragon and god in Chinese mythology.

(Source: phys.org)

Devouring “The Kraken” Led to The Modern Milky Way



Whether we examine satellites orbiting around planets, planets orbiting around stars, stars moving around a galaxy, or galaxies moving within a galaxy cluster, the effects of gravity are what keep these objects moving in bound, stable orbits. Measuring the properties of the orbiting objects helps reveal the mass, and total gravitational effects, of all of these large-scale systems. Credit: Tony and Daphne Hallas/Astrophoto.com

Did the Milky Way form by slowly accreting matter or by devouring its neighboring galaxies? At last, we're uncovering our own history.

Although the Milky Way has been around for more than 90% of the Universe's history, we still don't know how it grew to be its present size.

Two processes are both expected to contribute: mergers with other, smaller galaxies and gravitational growth by absorbing intergalactic matter.

By examining the Milky Way's globular clusters, we can identify at least 5 galactic mergers in our past. “The Kraken,” 11 billion years ago, was the largest.

(Source: [Big Think](#))

Year Of Venus: How To See The 'Evening Star' At Its Best In 2025



Venus will put on a great show in 2025 as both the "evening star" and the "morning star." (Image credit: NASA/JPL-Caltech)

In early 2025, Venus will dazzle in the southwest sky after sunset, earning its "evening star" nickname.

This phenomenon, which occurs when Venus gets close to Earth, happens once every 19 months. However, as Venus brightens, it will retreat to a slim crescent as it goes through its astonishing moon-phase-like dichotomy.

As seen from Earth, Venus doesn't cross the night sky as the slower-moving planets appear to do. Instead, it can be seen only near sunrise and sunset, moving from "morning star" to "evening star" and back again every 584 days, or about 19 months. Venus orbits the sun every 225 days, compared with Earth's 365-day orbit. Those orbital periods combine to create an eight-year cycle in which Venus appears to orbit the sun 13 times, as seen from Earth. During that time, Venus traces a pentagram pattern in Earth's sky every eight years.

Because Venus is closer to the sun than Earth is and orbits faster, from Earth's point of view, Venus is always seen close to the sun, just after sunset, when it's called the "evening star," or just before sunrise, when it's dubbed the "morning star."

About once every 19 months, Venus gets exceptionally bright because it gets closer to Earth than any other planet and because its global clouds reflect a lot of sunlight.

Venus has spent much of the second half of 2024 climbing higher into the post-sunset night sky as the "evening star," but in 2025, its position above the western horizon will peak and then quickly decrease.

(Source: space.com)

2024 Officers

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Chief Astronomer - Cole Rees
Acting Treasurer - Peter Moseley
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