

Igniting passion for science through the lens of astronomy!



Ritchie Dome Replacement Update
from [Peter Moseley](#)



Welding of the new shutter at BARN is complete and it's now at the powder coating service.

We still have to engage some riggers and come up with the installation plan.



Meanwhile, the new shutter control system that Frank and Peter developed is now operational! This will enable fully remote operation of the telescope.

Planetarium Update from [Erin Howard](#)

Starting in January the planetarium will be open more often and bringing you new ways to learn. Join us on Wednesday evenings for Movies at the Planetarium where we will show entertaining and educational movies that are made to be enjoyed exclusively on planetariums!

We will also be tuning into the Kalamazoo Astronomical Society's Introduction to Astronomy lectures which will take place on select Saturday mornings from January to March. If you attend every lecture on zoom or with us, you'll get a certificate! Stay tuned for more details about how BPAA will host, and sign up with KAS if you plan to learn with us: <https://www.kasonline.org/amastro.html>.

Ritchie Observatory Updates from [Peter Moseley](#) and [Cole Rees](#)



New carpeting has been installed in the meeting room, the library/control room (shown in the above pictures), and the telescope storage room. Join us at our next 2nd Saturday program on December 9 and check it out!

Electronic Assisted Astronomy... The PNW Compromise!

by [Chuck Wraith](#)

Wizard Nebula



Credit: Chuck Wraith

I love astronomy and I love living in the Pacific Northwest. Unfortunately, these two loves are forever at odds with each other. Add in astrophotography and it sometimes seems like a very bad joke. Then I discovered electronic assisted astronomy (EAA) and my hobby became a joy again. EAA utilizes all the same equipment as astrophotography, just less... less expensive telescope, less expensive astro-camera, less expensive computer. My scope is a 30-year-old one that I rescued from somebody's closet and reconditioned, my camera is a mid-level one and my computer is a 7-year-old hand-me-down laptop. Most importantly, EAA takes less quality weather which we have plenty of here in the PNW.

Unlike "true" astrophotography, EAA focuses on short exposures and short total acquisition times. Most images are a series of very forgiving one minute or less exposures and have a total acquisition time of about an hour. And the best part is that the images are processed and "stacked" on the computer screen in real-time right before your eyes... or you can do other things while the image builds and check in from time to time. In my case, I look at the stars, play ball with my dogs, talk to my neighbors or sometimes all three. If it has been a particularly long, clear night, I can even save my live stacked image to process later. I know touching-up images technically isn't EAA, but heck, it's my hobby so I can do what I want! If I do post-process the image, I do it with a free photo app on my phone and it takes under five minutes. You won't see the jaw dropping, Hubble quality pictures that "true" astrophotography can produce, but those pictures can take twenty to thirty hours of imaging to get the data needed and days to process afterward. If you are familiar with the PNW weather, twenty hours of quality night imaging time could take two or more

months to gather! Longer in the winter!! And that's for just one picture. With EAA I can image two or three targets in a night if the clouds cooperate.

To be honest, I do cheat a little...I use an acquisition and live stacking software that is subscription (£12 a year for the "pro" version) and during COVID I built a permanent pier for my telescope and a shed with a roll-off roof that houses it. I did that mostly because I'm not getting any younger and hauling equipment in and out at night is a young person's game, but also so that when the rare clear night does happen, I can be outside imaging in 15 minutes. Then, when the inevitable clouds roll back in or if I just get cold, it takes less than 5 minutes to close up shop. Most imaging nights I'm in bed before midnight. How civilized is that? Living in the PNW, enjoying astronomy and playing with my dogs... Life is good again!

Phantom Galaxy - NGC628 - M74



Credit: Chuck Wraith with special thanks to Brian Puhl for identifying asteroid 420 Bertholda as the photo-bomber in the lower right corner.

Upcoming Event: 2nd Saturday Program

December 9, 6:00pm

The Wierdest Stars in the Universe

Ishan Ghosh-Coutinho, University of Washington

Join us at the Rudolph Planetarium on December 9th at 6pm where University of Washington undergraduate researcher and 2022 DiRAC Summer Research Prize recipient Ishan Ghosh-Coutinho will introduce us to The Weirdest Stars in the Universe. We'll take a look at some of the most bizarre stars in the universe, what they look like, how we study them, and what makes these stellar weirdos shine out from the crowd!

Afterwards Erin will take us on a star-hopping journey through the winter skies and show you how to find constellations and interesting objects all with the help of Orion. Seating is limited so get your tickets early!

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

December 19, 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.

Upcoming Event: 2024 Annual Members Meeting

January 10, 2024, 7:00 pm

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.

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

Agenda:

1. Review of 2023 Accomplishments
2. Preview of Plans for 2024
3. 2024 Budget Presentation and vote to approve
3. Acknowledgement of Outgoing Board Directors
4. Introduction and Election of New (N) and Continuing (C) Directors

President — Frank Petrie (C)

Vice President — Dan Schlesener (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)

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.

Dec 6 – [December \$\phi\$ -Cassiopeid meteor shower peak](#)

Dec 9 – [Monocerotid meteor shower peak](#)

Dec 12 – New Moon

– [Comet 144P/Kushida passes perigee](#)

– [\$\sigma\$ -Hydrid meteor shower peak](#)

Dec 14 – [Geminid meteor shower peak](#)

Dec 15 – [The Running Man cluster is well placed](#)

Dec 16 – [Comae Berenicid meteor shower peak](#)

Dec 20 – [December Leonis Minorid meteor shower peak](#)

Dec 21 – [Asteroid 4 Vesta at opposition](#)

Dec 22 – [Asteroid 9 Metis at opposition](#)

Dec 23 – [Ursid meteor shower peak](#)

Dec 25 – [Comet 62P/Tsuchinshan passes perihelion](#)

Dec 26 – Full Moon

Dec 27 – [Asteroid 5 Astraea at opposition](#)

Dec 29 – [The cluster NGC 2232 is well placed](#)

Dec 30 – [The Rosette Nebula is well placed](#)

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 – [\$\gamma\$ -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

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!

JWST's Crab Nebula: Can It Solve the Mass Mystery?



As seen in its full glory, as imaged by JWST, the Crab Nebula possesses detailed features never spotted before, including doubly ionized sulfur atoms, dense dust grains located along a central belt, and wispy smoke-like signals that trace out synchrotron radiation. It's not just a visual feast, but a trove of scientific riches contained within. Credits: NASA, ESA, CSA, STScI, T. Temim (Princeton University)

All the way back in 1054, a spectacular sight was seen around the world: a new, brilliant star appeared, remained bright for months, and eventually faded away.

Hundreds of years later, in the 18th century, what we now know as a supernova remnant was discovered (and rediscovered) in the same region of sky: the Crab Nebula.

We've imaged it, spectacularly, many times ever since. And yet, one enduring mystery — of where all its mass is hiding — remains unsolved. New JWST imaging just might provide the solution.

(Source: [Big Think](#))

Webb Telescope: A Prominent Protostar in Perseus



The NASA/ESA/CSA James Webb Space Telescope reveals intricate details of the Herbig Haro object 797 (HH 797). Herbig-Haro objects are luminous regions surrounding newborn stars (known as protostars), and are formed when stellar winds or jets of gas spewing from these newborn stars form shockwaves colliding with nearby gas and dust at high speeds. HH 797, which dominates the lower half of this image, is located close to the young open star cluster IC 348, which is located near the eastern edge of the Perseus dark cloud complex. The bright infrared objects in the upper portion of the image are thought to host two further protostars. This image was captured with Webb's Near-InfraRed Camera (NIRCam). Credit: ESA/Webb, NASA & CSA, T. Ray (Dublin Institute for Advanced Studies)

This new Picture of the Month from the NASA/ESA/CSA James Webb Space Telescope reveals intricate details of the Herbig Haro object 797 (HH 797). Herbig-Haro objects are luminous regions surrounding newborn stars (known as protostars), and are formed when stellar winds or jets of gas spewing from these newborn stars form shockwaves colliding with nearby gas and dust at high speeds. HH 797, which dominates the lower half of this image, is located close to the young open star cluster IC 348, which is located near the eastern edge of the Perseus dark cloud complex. The bright infrared objects in the upper portion of the image are thought to host two further protostars.

(Source: [NASA](#))

Euclid's First Science Images Reveal What JWST Cannot



This image shows Euclid's high-resolution view of globular cluster NGC 6397: only 7800 light-years from Earth, here in our own Milky Way. Despite the close proximity of this object, thousands upon thousands of distant galaxies are visible to Euclid from millions to billions of light-years beyond this tiny cluster. Euclid's primary science goal will be to map out the Universe across cosmic time. Credit: ESA/Euclid/Euclid Consortium/NASA, image processing by J.-C. Cuillandre (CEA Paris-Saclay), G. Anselmi, CC BY-SA 3.0 IGO

Sometimes, going "deeper" doesn't reveal the answers you seek. By viewing more Universe with better precision, ESA's Euclid mission shines.

ESA's Euclid spacecraft, after four months of commissioning, calibration, and testing, has begun science operations as of early November 2023. Its first science images have just been released.

Unlike JWST, which was optimized for deep views across a wide variety of infrared wavelengths, Euclid's wavelength range and light-gathering power is much smaller.

However, Euclid is a wide-field imaging telescope, designed for large-area views of the nearby and intermediate-distance Universe, and will teach us about the 3D structure of the cosmic web. It's already begun.

(Source: [Big Think](#))

This Rare Exoplanet System Has 6 'Sub-Neptunes' With Mathematically Perfect Orbits

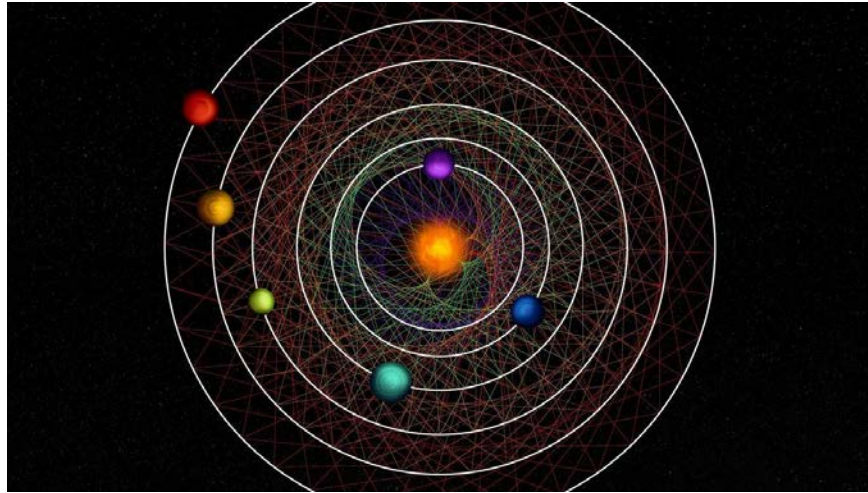


Image credit: CC BY-NC-SA 4.0, Thibaut Roger/NCCR PlanetS

Astronomers have discovered an uncommon star system located just 100 light-years away from us, with six planets huddled immensely close to their host star — so close, in fact, that all their orbits could fit within the distance between [Mercury](#) and our sun. Puzzlingly, unlike our own solar system, it appears this newfound slice of the cosmos has remained largely unchanged since its birth over a billion years ago.

"If the galaxy was the Empire State Building, we can only see and detect the planets next to [stars](#) that have apartments on our floor," study co-author Enric Pallé of the Instituto de Astrofísica de Canarias told reporters during a press briefing. "We just discovered our neighbor."

100 [light-years](#) may sound like quite a distance, but cosmically speaking, the system is incredibly close to us. Designated HD 110067, it sits in the constellation Coma Berenices, near Virgo in the northern sky.

(Source: [space.com](#))

Solar Activity Likely to Peak Next Year, New Study Suggests

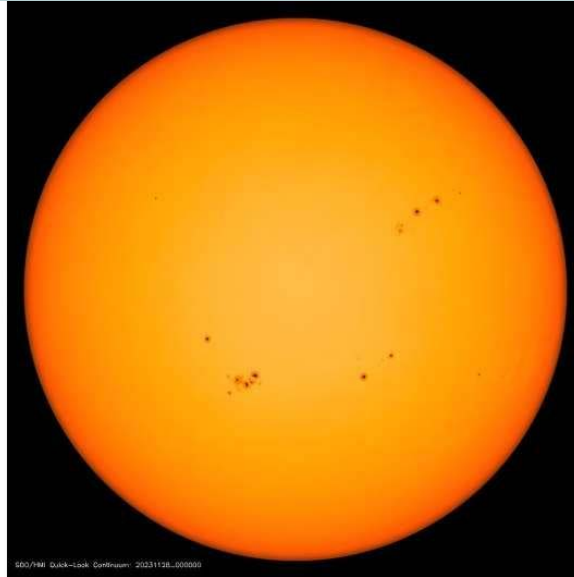
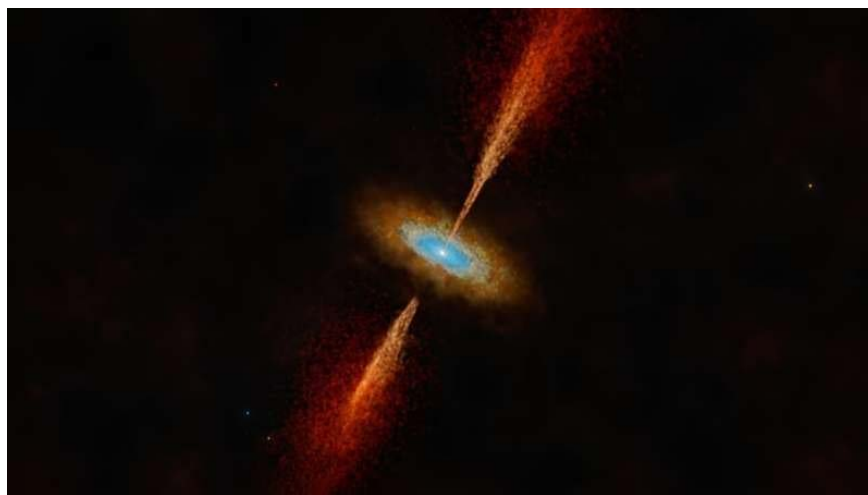


Image from the Solar Dynamics Observatory mission of the solar disk with multiple sunspots, which appear dark compared with their surroundings. Credit: HMI/SDO/NASA; License type: Attribution-ShareAlike (CC BY-SA 4.0)

Researchers at the Center of Excellence in Space Sciences India at IISER Kolkata have discovered a new relationship between the sun's magnetic field and its sunspot cycle, that can help predict when the peak in solar activity will occur. Their work indicates that the maximum intensity of solar cycle 25, the ongoing sunspot cycle, is imminent and likely to occur within a year. The [new research](#) appears in Monthly Notices of the Royal Astronomical Society: Letters.

(Source: [phys.org](#))

Astronomers Detect First Extragalactic Circumstellar Disk Around a Massive Young Star Outside of The Milky Way



Artist's impression of the disk and jet in the young star system HH 1177 Credit: European Southern Observatory.

An international team of astronomers led by Durham University and including astronomers at the UK Astronomy Technology Center has reported the first detection of a rotating disk structure around a forming high-mass star outside of our Milky Way in another galaxy.

The disk surrounds a young massive star located in a stellar nursery called N180, residing in a neighboring dwarf galaxy called the Large Magellanic Cloud.

At a distance of 163,000 light years from Earth, this is the most distant disk around a massive star ever to be directly detected.

Using the Atacama Large Millimeter/submillimeter Array (ALMA) in Chile, in which the European Southern Observatory (ESO) is a partner, researchers observed motions in gas around a young stellar object in the Large Magellanic Cloud consistent with a Keplerian accretion disk—the kind that feeds the growth of stars through infalling material.

(Source: phys.org)

2023 Officers

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