

THE OBSERVER

BATTLE POINT ASTRONOMICAL ASSOCIATION

WWW.BPASTRO.ORG BAINBRIDGE ISLAND, WA



CALL TO ACTION: Oppose Soccer Lights at Battle Point Park!

As you have likely heard, there is a proposal to light the soccer fields for nighttime soccer practice and play, Monday through Friday 5 to 9 PM from October to March, but could expand to include longer hours, weekends, and other fields (pickle ball, tennis, field hockey, baseball).

Opposition has arisen to this proposal for all kinds of reasons, top of the list is the impact lights will have on the Ritchie Observatory. Other reasons are traffic and safety, as well as impacts to wildlife. We're doing our best to stop it at Battle Point Park and identify an alternative location.

A neighborhood group --- the Battle Point Alliance --- has joined with the Battle Point Astronomical Association to resist any plan to illuminate the park and the night sky there. Significant effort has been spent synthesizing the reasons why we are so passionate about our opposition. Our "Position Statement" can be found at: battlepointalliance.com. At that site, you can also sign up for their email list to stay informed and involved.

The Alliance has started a Petition to demonstrate the extent of opposition to this potential lighting. It's going to the Bainbridge Island Metro Park & Recreation District Board. If you agree that lights in the park are a terrible idea, the petition is posted at <http://chnng.it/rvXjXBKdy7> where you can add your name to it and support the resistance.

James Webb Space Telescope Event at KiDiMu

As was mentioned in the last newsletter, the Bainbridge Island Kids Discovery Museum (KiDiMu) has been selected by NASA to be an official host of the Webb Telescope Community Events Initiative. Based on the BPAA's agreement to partner with KiDiMu, planning has begun to assist them in this event.

The James Webb Space Telescope (JWST) launch has slipped from October 31st, based on the shipment of the telescope, the readiness of the Ariane 5 rocket, and the readiness of the spaceport in South America. Therefore, KiDiMu is planning a one-day event on November 20th (the Saturday before Thanksgiving), at which we would participate with activities and exhibits (a few telescopes that the kids can touch, for example). We are also planning to have some BPAA members each spending an hour or two at KiDiMu during the week leading up to the event to discuss space science, telescopes, and launches.

The KiDiMu staff are putting together static displays for the event, with generalized space topics downstairs and JWST related items upstairs. They are also investigating reserving the rooftop of Island Gateway to set up telescopes where we could engage the children with viewing Jupiter and Saturn. Additionally, they are working to procure materials about telescope making, based on a recent National Informal STEM Education Network (NISE) activity at the Everett children's museum.

If you'd like to volunteer to help support this activity, please contact any Board member.

Ritchie Observatory Upgrades

There's movement on the SaniCan replacement! The underground work is completed and the foundation slab was poured on August 23rd.

The installation of the internet upgrade to replace the slow, spotty DSL we currently have, has begun! But since the antenna is to be mounted on the doghouse, we've had to ask Parks to put it on hold until the doghouse replacement is completed. Ironic, waiting all this time on two projects that end up happening simultaneously.

The contractor replacing the doghouse started work the week of August 30th, estimating one week to complete. So hopefully by the time you are reading this, "The Doghouse" will be well on the way to becoming "The Star Portal".

BPAA Secretary Peter Moseley has donated a 65-inch OLED flat screen TV to BPAA. It replaces the old screen in our main meeting room and will be used for presentations, movies and videos, and of course displaying live images from the Ritchie Telescope. Thank you Peter!!!

BPAA Outreach with Bainbridge Island Girl Scouts

On August 12th, during their campout at Fay Bainbridge Park, about 80 members of the Girl Scouts of Bainbridge Island were treated to some astronomy activities by BPAA members Nels Johansen, Steve Ruhl, Erica Saint Clair, and Frank Petrie. Afternoon activities included learning about the planets while exploring a scaled solar system, and viewing the crescent moon and (properly filtered) sun through telescopes.

In the evening, telescopes were set up for viewing stars and planets. As the first stars appeared, one girl asked "What star is that?" and pointed skyward at bright Vega. All the girls looked up and just then, a Perseus fireball streaked across the sky! Everyone screamed with delight! That capped off what we hope was a memorable day at camp.

The Perils of a Trip to Mars: Low Gravitation and High Radiation

Back in May, SpaceX launched its Starship SN15 prototype to about the cruising altitude of a commercial airliner before landing it safely. The company claims future versions of the rocket will be able to take 100 passengers at a time to the moon, and even Mars.

An undergraduate team of researchers from Drake University, with the project name of Magneto-Ionization Spacecraft Shield for Interplanetary Travel, or MISSFIT, is trying to calculate the tradeoffs among different engineering solutions for radiation shielding and artificial gravity.

According to calculations by the Drake team, high-end estimates for radiation exposure during a round trip to Mars are in the range of several Sieverts (Sv). The U.S. Nuclear Regulatory Commission has set 0.05 Sv/year as the dose limit for workers who are exposed to radiation at their jobs.

Without any sci-fi level breakthroughs, the only practical way to imitate gravity on a trip to Mars is by spinning the spacecraft and creating a centripetal force.

(Source: Astronomy.com)

Red Dwarf Exoplanets Could Be Habitable

A study has found that exoplanets orbiting red dwarf stars may not be as badly affected by stellar radiation as scientists had previously suspected.

Red dwarfs are small stars that account for a large chunk of all stars in the galaxy. They are dimmer than our own sun, but that means it is easier for scientists to find smaller terrestrial planets around them.

Although red dwarfs are smaller and cooler than the sun, they tend to spin faster and be more active. This means they give off a lot of radiation that would be harmful for life on any planets that might orbit them.

Radiation is particularly intense during a flare—a short blast that is usually fired off in a particular direction—and red dwarf stars tend to flare more often than the Sun.

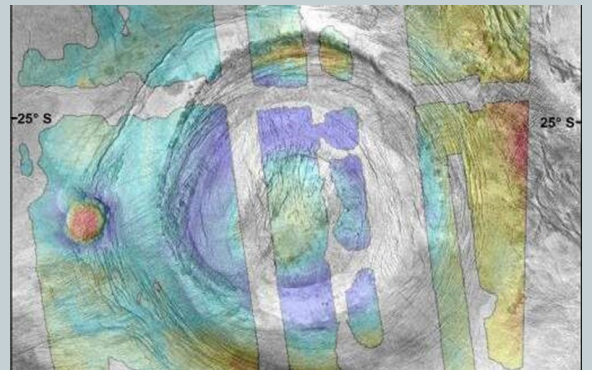
However, scientists have found evidence that red dwarfs tend to shoot their flares either upwards or downwards instead of out at the equator.

Since most planets tend to orbit stars roughly at their equators, this suggests the flares would simply miss, and the planets might not be bathed in deadly radiation.

The study manuscript was accepted for publication in the Monthly Notices of the Royal Astronomical Society (MNRAS) journal on August 5.

(Source: msn.com)

New Evidence of Geologically-recent Venusian Volcanism



Magellan SAR image of Aramaiti Corona. Narina Tholus (center left) appears as two adjacent domes that are superposed on the west outer fracture ring. (Credit: Planetary Science Institute)

New data analysis techniques allow evidence of recent volcanism to be found in old Magellan spacecraft data. It is unclear if this activity is occurring today, or if it occurred within tens of million years, but geologically speaking, either case is recent. This adds to the growing body of evidence that volcanoes on Venus didn't go extinct as long ago as many had thought. This work was conducted by Planetary Science Institute (PSI) researchers Megan Russell and Catherine Johnson.

"The question of whether Venus has had geologically recent or ongoing volcanism has been an enduring enigma from the Magellan mission: we still have no smoking gun regarding this but more and more lines of evidence suggest a recently, and potentially currently, active planet," said PSI Senior Scientist Catherine Johnson.

As computers have improved, it has become possible to do more and more with Magellan's finite data set. Russell and Johnson used a high resolution stereo topography data set generated by other researchers to look at a volcano at the edge of the 350-kilometer across Aramaiti Corona.

"Instead of looking at the surface of the volcano or flows, we look at how the volcano deforms the ground around it," said Megan Russell. "From this deformation, we can infer properties like heat flow local to the volcano."

Over time, these kinds of structures can evolve, and the degree of deformation that is observed hints at how old or young a feature might be.

(Source: phys.org)

Nearby Star-forming Region Yields Clues to the Formation of Our Solar System

A region of active star formation in the constellation Ophiuchus is giving astronomers new insights into the conditions in which our own solar system was born. In particular, a new study of the Ophiuchus star-forming complex shows how our solar system may have become enriched with short-lived radioactive elements.

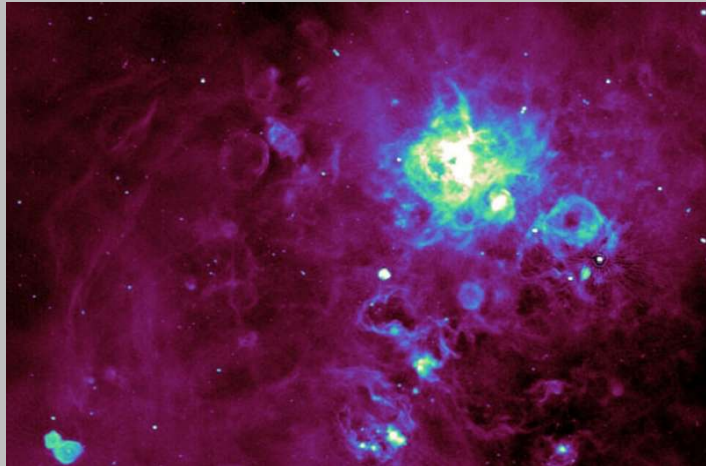
The authors of the new study, published August 16 in *Nature Astronomy*, used multi-wavelength observations of the Ophiuchus star-forming region, including spectacular new infrared data, to reveal interactions between the clouds of star-forming gas and radionuclides produced in a nearby cluster of young stars. Their findings indicate that supernovas in the star cluster are the most likely source of short-lived radionuclides in the star-forming clouds.

"Our solar system was most likely formed in a giant molecular cloud together with a young stellar cluster, and one or more supernova events from some massive stars in this cluster contaminated the gas which turned into the sun and its planetary system," said coauthor Douglas N. C. Lin, professor emeritus of astronomy and astrophysics at UC Santa Cruz.

First author John Forbes at the Flatiron Institute's Center for Computational Astrophysics said, "Many new star systems will be born with aluminum-26 abundances in line with our solar system, but the variation is huge -- several orders of magnitude. This matters for the early evolution of planetary systems, since aluminum-26 is the main early heating source. More aluminum-26 probably means drier planets."

(Source: [sciencedaily.com](https://www.sciencedaily.com))

Never-before-seen Radio Waves Detected From Nearby Stars and Distant Galaxies



(Credit: Keele University)

Scientists have measured thousands of nearby stars and far away galaxies that have never been identified before at radio wavelengths, while studying a galactic body that neighbors our own Milky Way galaxy—the Large Magellanic Cloud.

Led by Keele University Ph.D. student Clara M. Pennock and Reader in Astrophysics, Dr. Jacco van Loon, the international team of researchers used the Australian Square Kilometre Array Pathfinder (ASKAP) telescope to "photograph" the Cloud at radio wavelengths and study the stellar structures within, taking some of the sharpest radio images of the Cloud ever recorded.

The researchers not only used these new radio images, but during their analysis they also studied the stars themselves which form the cloud's structure, including the Tarantula Nebula, the most active star-formation region in the Local Group. Furthermore, newly detected radio emission has also been studied from distant galaxies in the background as well as stars in the foreground from our own Milky Way.

Lead author Clara Pennock from Keele University said: "The sharp and sensitive new image reveals thousands of radio sources we've never seen before. Most of these are actually galaxies millions or even billions of light years beyond the Large Magellanic Cloud.

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

The Milky Way Has a 'Broken' Arm



An illustration of the large-scale structure of the Milky Way. (Image credit: NASA/JPL-Caltech)

Scientists have found a strange "break" in the spiral arms our Milky Way galaxy that could tell us more about its galactic history.

The grouping of young stars and gassy regions is described by NASA's Jet Propulsion Laboratory (JPL) as looking like "a splinter poking out from a plank of wood" from the plane of the spiral Milky Way's arms.

Finding the feature was a feat in itself, because Earth is inside the Milky Way. In a statement, JPL officials said the difficulty of performing such research is somewhat like standing in Times Square while trying to draw a map of the island of Manhattan.

Researchers tracked the feature down using the infrared or heat-seeking eyes of NASA's Spitzer Space Telescope (before the observatory retired in January 2020) and the European Space Agency's Gaia mission, which measures stellar distances and motions. Gaia's latest major data release was in July.

The new study focused on a nearby region of one of the Milky Way's arms, called the Sagittarius Arm — home of the famous "Pillars of Creation" stacks of stars that form part of the Eagle Nebula (Messier 16.) Between Spitzer and Gaia, the combined data showed Sagittarius is full of young stars that move in space, at nearly the same velocity and direction.

Astronomers are still trying to figure out how and why the arms of galaxies form, and JPL said the new study may give a few clues. A peer-reviewed study based on the research was published in the July 2021 issue of *Astronomy and Astrophysics*.

(Source: [space.com](https://www.space.com))

Researchers Solve 20-year-old Paradox in Solar Physics

In 1998, the journal *Nature* published a seminal letter concluding that a mysterious signal, which had been discovered while analyzing the polarization of sunlight, implies that the solar chromosphere is practically unmagnetised, in sharp contradiction with common wisdom. This paradox motivated laboratory experiments and theoretical investigations, which instead of providing a solution, raised new issues, and even led some scientists to question the quantum theory of matter-radiation interaction.

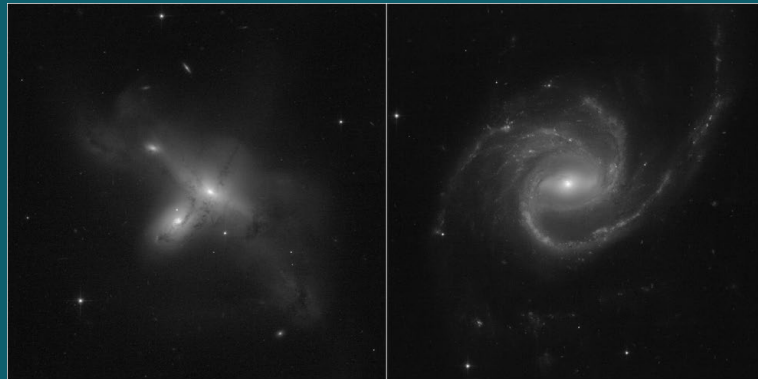
Today, researchers at the Istituto Ricerche Solari (IRSOL) in Locarno-Monti (affiliated to USI Università della Svizzera italiana), and the Instituto de Astrofísica de Canarias (IAC) in Tenerife, have found the solution to this intriguing paradox, opening up a new window for exploring the elusive magnetic fields of the solar chromosphere in the present new era of large-aperture solar telescopes.

The findings were achieved by carrying out the most advanced theoretical modeling of the solar D1 line polarization ever attempted, involving three years of work carried out through cooperation between IRSOL and IAC.

The researchers explain: "The solution of the long-standing paradox of solar D1 line polarization proves the validity of the present quantum theory of spectral line polarization, and opens up a new window to explore the magnetism of the solar atmosphere in the present new era of large-aperture solar telescopes."

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

Hubble Returns to Full Science Observations



These images, from a program led by Julianne Dalcanton of the University of Washington in Seattle, demonstrate Hubble's return to full science operations. [Left] ARP-MADORE2115-273 is a rarely observed example of a pair of interacting galaxies in the southern hemisphere. [Right] ARP-MADORE0002-503 is a large spiral galaxy with unusual, extended spiral arms. While most disk galaxies have an even number of spiral arms, this one has three. (Credits: Science: NASA, ESA, STScI, Julianne Dalcanton (UW) Image processing: Alyssa Pagan (STScI))

Science observations restarted the afternoon of Saturday, July 17. The telescope's targets this past weekend included the unusual galaxies shown in the images above.

"I'm thrilled to see that Hubble has its eye back on the universe, once again capturing the kind of images that have intrigued and inspired us for decades," said NASA Administrator Bill Nelson.

Hubble's payload computer, which controls and coordinates the observatory's onboard science instruments, halted suddenly on June 13. When the main computer failed to receive a signal from the payload computer, it automatically placed Hubble's science instruments into safe mode. That meant the telescope would no longer be doing science while mission specialists analyzed the situation.

The Hubble team moved quickly to investigate what ailed the observatory. Complicating matters, Hubble was launched in 1990, so to fix a telescope built in the 1980s, the team had to draw on the knowledge of staff from across its lengthy history.

Hubble alumni returned to support the current team in the recovery effort, lending decades of mission expertise. Together, team members new and old worked their way through the list of likely culprits, seeking to isolate the issue to ensure they have a full inventory for the future of which hardware is still working.

The successful recovery came around 11:30 p.m. EDT July 15. The science instruments were then brought to operational status, and Hubble began taking scientific data once again on July 17. Most observations missed while science operations were suspended will be rescheduled.

(Source: [nasa.gov](https://www.nasa.gov))

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NASA Mars Photos Show Rocks That Were Once Under Liquid Water



This photo shows a sharply-eroded rock on the right. Scientists think the Jezero Crater once had a lake in it. (Image source: NASA/JPL-CALTECH/ASU)

NASA's Mars Perseverance rover has released photos of Martian rocks that are thought to have once been under liquid water. The rover took the photos on August 10, its 168th Martian day. One shows a collection of rocks that appear to have been sharply eroded.

When the photos were taken, the rover was situated in a place known as South Séítah, inside the Jezero Crater. The crater is where Perseverance first landed earlier this year, and the spot was chosen by scientists because they believe it was once flooded with water billions of years ago.

"This area was under at least 100 meters [328 feet] of water 3.8 billion years ago," said Kevin Hand, an astrobiologist at NASA's Jet Propulsion Laboratory in a statement in June.

Conceivably, the Jezero Crater could have been home to microbial life during this wet period of Mars' history. If this microbial life did exist, NASA thinks the crater is a good place to look for it because there may be telltale signs left behind.

(Source: [newsweek.com](https://www.newsweek.com))

WHAT'S UP(COMING)!

Sep 1 – [Aurigid shower peak](#)

Sep 6 – New Moon

Sep 9 – [September ε-Perseid shower peak](#)

Sep 14 – [Neptune at opposition](#)

Sep 20 – Full Moon

Sep 22 – September equinox

Sep 27 – [Daytime Sextantid shower peak](#)

Oct 5 – [October Camelopardalid shower peak](#)

Oct 6 – New Moon

Oct 10 – [Southern Taurid shower peak](#)

Oct 18 – [ε-Geminid shower peak](#)

Oct 20 – Full Moon

Oct 24 – [Leonis Minorid shower peak](#)

Nov 4 – New Moon

Nov 12 – [Northern Taurid shower peak](#)

Nov 17 – [Leonid shower peak](#)

Nov 19 – Full Moon

[Partial lunar eclipse](#)

Nov 21 – [α-Monocerotid shower peak](#)

Nov 28 – [November Orionid shower peak](#)