"The Southern Cross"

The Hermanus Astronomy Centre Monthly Newsletter

August 2024

Please note that all our regular meetings are scheduled for ***TUESDAYS,*** *commencing at 18.00 (6 pm) unless otherwise advised. The day and date may change; such changes will be notified via e-mail and on our website.*

MONTHLY MEETING

These meetings are scheduled for the **Third Tuesday** of each month except December.

Our last Monthly meeting was held virtually on Zoom on **Tuesday July 16th**: *"**The Intelligent Observatory**"* presented by **Dr Stephen Potter** of the SAAO.

This virtual thoroughly enjoyable and informative presentation on the SAAO was much appreciated by members and visitors. For a recommended revisit, herewith the link to the YouTube video and includes the subsequent question time and discussion amongst attendees:

https://www.youtube.com/watch?v=dO_islsnt8g&ab_channel=DerekDuckitt

Our next meeting, scheduled for **Tuesday August 20th** will be presented by Derek Duckitt and Pierre de Villiers, their topic will be ***"Astronomy Cell Phone Apps"*****.**

SPECIAL INTEREST GROUP ACTIVITIES

Cosmology

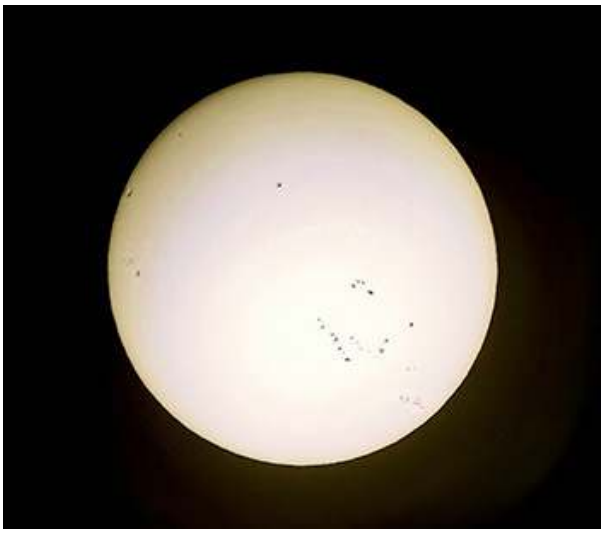
These meetings are scheduled for the **First Tuesday** of each month except January.

On **Tuesday June 2nd** , in the series "THE ENTIRE HISTORY OF THE UNIVERSE", we watched episode 21: ***"What Are The Hidden Rules Of The Universe?"***

https://www.youtube.com/watch?v=xJGaqe5t14g&list=PLROBLlvnR7BEF9b1NOvRf_zhboibmywJb&index=21&pp=iAQB

Episode number 22 is scheduled for **Tuesday August 6th**, ***"Why is Everything made of Atoms?"***

Astrophotography



It so happened that Derek and Pierre went to Betty's Bay at the request of a local resident, Mr Peter Mitchell who, using his newly collimated telescope and his cellphone, captured this fine image *(left)* of the current state of the Sun's activity.

Which brings me to remind you of our upcoming monthly meeting (see above), which will be presented by Derek and Pierre, discussing the astrophotography software available for Android and I-Phones.

This SIG is no longer scheduled but can be arranged as requested by group members.

For further information, please contact Deon Krige: krige.deon44@outlook.com and please keep an eye on our website calendar and our e-mail notices and invites.

Study Group

Scheduled for the **Last Tuesday** of each month.

On **Tuesday July 30th**, we watched and discussed *"The Walls of Tiwanaku"* part 2.

The YouTube video link:

https://www.youtube.com/watch?v=yXW1PU9xBRg&ab_channel=AncientAmericas

Our thanks to Derek for extracting a transcript which is added as a separate attachment.

The next Study Group is scheduled to meet on **August 27th**, the topic yet to be finalised. Details will be circulated via e-mail and on our website.

For further information regarding Study Group, please contact Peter Harvey petermh@hermanus.co.za

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Observing

This section includes recommended dates for **Stargazing**, **Moonwatch**, **Meteors**, **Solar observation** and whatever else deserves a close look.

Optimal dates for **August 2024**:

SUGGESTED EVENING OBSERVATION WINDOW
(Lunar observations notwithstanding)

Date	*Moon*		*Dusk End*
July 26 to **August 6**	*Rises* *Sets*	**23h53 (72%)** **20h04 (4%)**	**19h26** **19h32**
August 24 to **September 25**	*Rises* *Sets*	**22h50 (72%)** **20h44 (4%)**	**19h44** **19h51**

Moonwatch a few days either side of the **First Quarter** (Monday 12th)

Eclipses None observable from southern Africa in August 2024.

The Sun	**The Sun and Auroral Activity**: Daily solar activity and predictions for auroral activity can be found at the following website: https://www.spaceweatherlive.com/en/solar-activity.html
	Meteors - eta Eridanids.
	Please see *Skynotes* page 2 and the *2024 Sky Guide* p. 86 for more details.
Comet	https://www.marthastewart.com/rare-green-comet-12p-pons-brooks-8610933
Observing	Please keep an eye on our activities calendar on the website –
	https://www.hermanusastronomy.co.za/

Outreach

HERMANUS SCIENCE AND TECHNOLOGY CLUB

On Tuesday August 23rd, lead by Pierre de Villiers, the Science and Technology club enjoyed a highly successful excursion to the Palmiet Pumped Storage facility. The participants included members from Mt Pleasant and Lukhanyo Primary Schools.

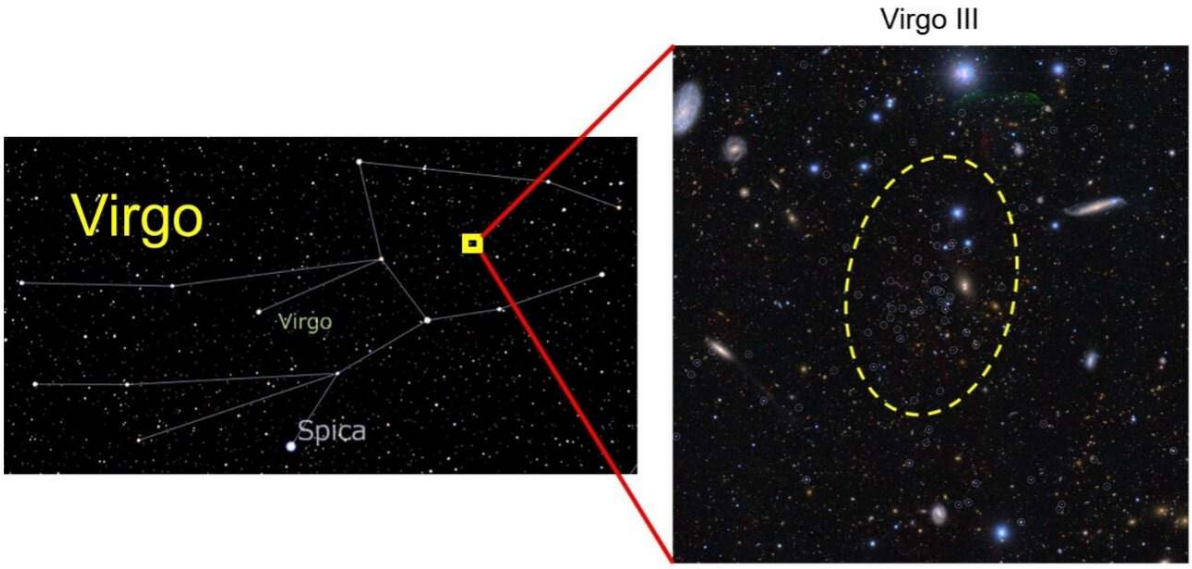
The planned excursion to the Caledon Middelvlei Wind Turbine on July 31st was postponed at short notice.

Caledon Middelvlei Wind Turbine facility – **Wednesday August 7th** *[to be confirmed]*.

An excursion to Cape Town to include the **Iziko Planetarium** *(Journey from Earth to the Universe),* **Noon Gun** and **SAAO Observatory** is planned for **Wednesday 21st August**.

(Compiled By Pieter Kotzé)

Astronomers discover two new Milky Way satellite galaxy candidates



The position of a newly found dwarf galaxy (Virgo III) in the constellation Virgo (left) and its member stars (right; those circled in white). The member stars are concentrated inside the dashed line in the right panel. Credit: NAOJ/Tohoku University

For years, astronomers have worried about how to explain why the Milky Way has fewer satellite galaxies than the standard dark matter model predicts. This is called the "missing satellites problem. "In order to bring us closer to solving this problem, an international team of researchers used data from the Hyper Suprime-Cam (HSC) Subaru Strategic Program (SSP) to discover two completely new

satellite galaxies.https://phys.org/news/2024-06-astronomers-milky-satellite-galaxy-candidates.html

Why is mystery object Cygnus X-3 so bright? Astronomers may now have the answer

The X-ray-emitting binary system Cygnus X-3 features a massive star donating matter to a compact object, probably a black hole. That may explain its perplexing brightness.

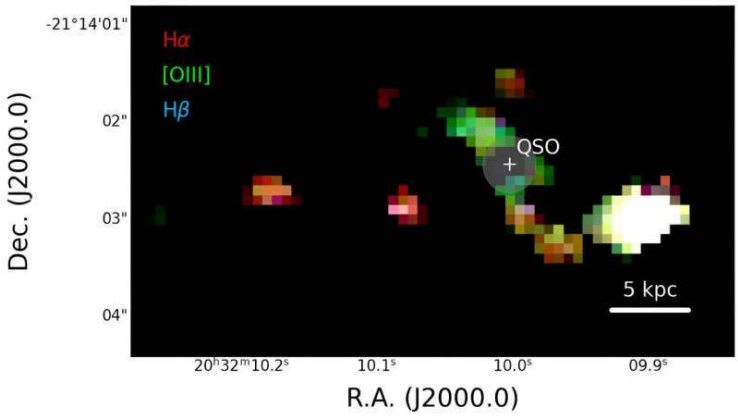
An artist's impression of the accretion disk around the compact object in the X-ray binary system Cygnus X-3, showing the X-rays scattering off the interior of the funnel-shaped cavity before being detected by IXPE. (Image credit: Alexander Mushtukov)

A binary system containing a massive star and what is probably a black hole, and which together are a source of intense X-rays, has been shown to be a smaller-scale example of some of the most luminous quasars in the universe.The new findings, from an international team that used NASA's Imaging X-ray Polarimetry Explorer spacecraft (IXPE), describe how an X-ray binary system located about 24,000 light-years away in our Milky Way galaxy is amplifying its X-ray emission in a funnel-shaped cavity that encircles the probable black hole.

The system, Cygnus X-3, was discovered in the early 1970s when radio telescopes spotted powerful jets radiating out from it at nearly the speed of light. The radio emission from these jets lasts for a few days, before switching off, only to turn back on again later.

https://www.livescience.com/space/astronomy/why-is-mystery-object-cygnus-x-3-so-bright-astronomers-may-now-have-the-answer

Webb captures a staggering quasar-galaxy merger in the remote universe



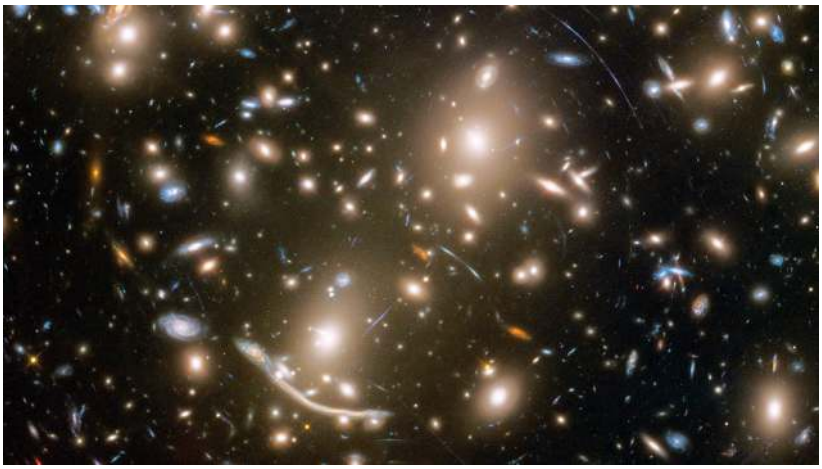
Map of the line emission of hydrogen (in red and blue) and oxygen (in green) in the PJ308-21 system, shown after masking the light from the central quasar ("QSO"). The different colors of the quasar's host galaxy and companion galaxies in this map reveal the physical properties of the gas within them. Credit: Decarli/INAF/A&A 2024

An international research group led by the Italian National Institute for Astrophysics (INAF) and comprising 34 research institutes and universities worldwide utilized the Near-Infrared Spectrograph (NIRSpec) on board the James Webb Space Telescope (JWST) to witness the dramatic interaction between a quasar inside the PJ308–21 system and two massive satellite galaxies in the distant universe. The observations, made in September 2022, unveiled unprecedented and awe-inspiring details, providing new insights into the growth of galaxies in the early universe. The results, presented July 5 during the European Astronomical Society (EAS 2024) meeting in Padua (Italy), will be published soon in *Astronomy & Astrophysics*.

https://phys.org/news/2024-07-webb-captures-staggering-quasar-galaxy.html#google_vignette

Strange observations of galaxies challenge ideas about dark matter

A new look at how light bends in the universe could point to an alternative theory of gravity.



As seen by the Hubble Space Telescope, the galaxy cluster Abell 370 reveals telltale streaks of light from more distant galaxies that have had their light bent and distorted by an effect called gravitational lensing.

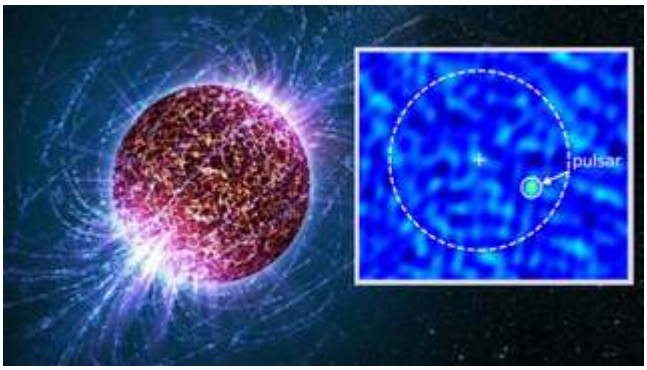
NASA, ESA, and J. Lotz and the HFF Team/STScI

Head-scratching observations of distant galaxies are challenging cosmologists' dominant ideas about the universe, potentially leading to the implication that the strange substance called dark matter doesn't exist. That's one possible conclusion from a new study published June 20 in *The Astrophysical Journal Letters*. The finding "raises questions of an extraordinarily fundamental nature," says Richard Brent Tully, an astronomer at the University of Hawaii at Manoa who was not involved in the work. Astronomers suspect dark matter exists because of the way stars and other visible material at a galaxy's visible edge rotate. The rotation speeds of objects far from a galactic centre are much higher than they should be given the amount of luminous stuff seen in telescopes. Under physicists' current understanding of gravity, this implies that a massive reservoir of invisible matter must be tugging on those stars.

https://www.sciencenews.org/article/observations-galaxies-ideas-dark-matter

Rapidly spinning 'extreme' neutron star discovered by US Navy research intern

"It was exciting so early in my career to see a speculative project work out so successfully."



(Main) An illustration of a rapidly spinning neutron star or pulsar (inset) a VLITE 340 MHz image of GLIMPSE-C01A from February 27, 2021. (Image credit: NASA/National Radio Astronomy Observatory/NRL/Texas Tech)

A rapidly spinning neutron star that sweeps beams of radiation across the universe like a cosmic lighthouse has been discovered by U.S. Naval Research Laboratory (NRL) Remote Sensing Division intern Amaris McCarver and a team of astronomers. The rapidly spinning neutron star, or "pulsar," is located within the dense star cluster Glimpse-C01, which sits in the galactic plane of the Milky Way around 10,700 light-years from Earth. This millisecond pulsar, which spins hundreds of times per second, is the first of its kind found in the Glimpse-C01 star cluster. The Very Large Array (VLA) spotted the pulsar, which is designated GLIMPSE-C01A, on Feb. 27, 2021, but it remained buried in a vast amount of data until McCarver and colleagues found it in the summer of 2023.https://www.space.com/pulsar-us-navy-intern-discovery

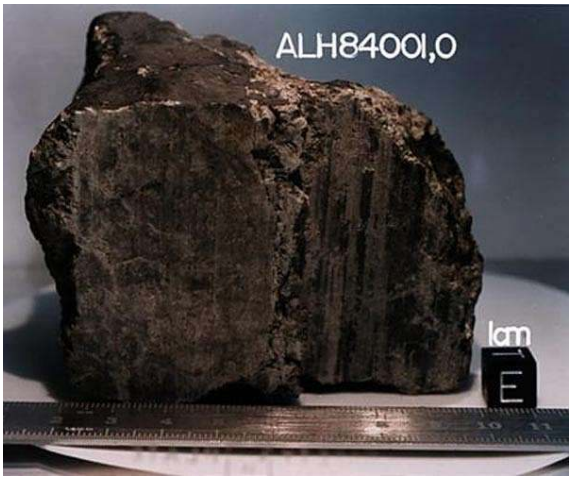
Mars orbiter captures Red Planet scar that's longer than the Grand Canyon (image)

There are lots of "scars" on Mars, but not many have been seen with such excellent resolution.

A snaking scar on Mars. (Image credit: ESA/DLR/FU Berlin)

New images published by the European Space Agency have captured a 600-kilometer-long (373-mile-long) snaking scar on Mars' surface in greater detail than ever before. The Red Planet is full of scratches and scars, and this one, named Aganippe Fossa, is another of these ditch-like grooves with steep walls — more specifically, however, Aganippe Fossa is what's called a "graben." "We're still unsure of how and when Aganippe Fossa came to be, but it seems likely that it was formed as magma rising underneath the colossal mass of the Tharsis volcanoes caused Mars's crust to stretch and crack," ESA officials wrote in a recent press release.https://www.space.com/esa-mars-express-red-planet-scar-image

Organic material from Mars reveals the likely origin of life's building blocks



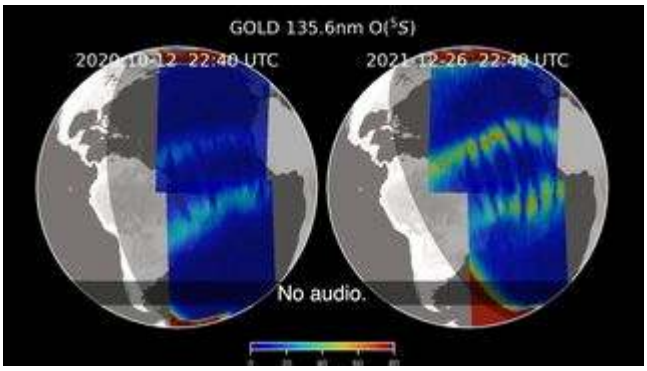
The discovery of organic sediments on Mars with a low ratio of carbon-13 completes the puzzle of empirical evidence for the photolysis theory, since researchers already found the other part of that puzzle years ago in the famous meteorite, Allan Hills 84001.

Two samples from Mars together deliver the "smoking gun" in a new study showing the origin of Martian organic material. The study presents solid evidence for a prediction made over a decade ago by University of Copenhagen researchers that could be key to understanding how

organic molecules, the foundation of life, were first formed here on Earth. In a meteor crater on the red planet, a solitary robot is moving about. Right now it is probably collecting soil samples with a drill and a robotic arm, as it has quite a habit of doing. NASA's Curiosity rover has been active on Mars as the extended arm of science for nearly 12 years, and it continues to make discoveries that surprise and challenge scientists' understanding of both Mars and our own world here on Earth. Most recently, the discovery of sedimentary organic material with particular properties has had many researchers scratching their heads. The properties of these carbon-based materials, in particular the ratio of its carbon isotopes, surprised researchers.

https://www.spacedaily.com/reports/Organic_material_from_Mars_reveals_the_likely_origin_of_lifes_building_blocks_999.html

NASA spots unexpected X-shaped structures in Earth's upper atmosphere — and scientists are struggling to explain them



This visualization shows C-shaped and reverse-C-shaped plasma bubbles appearing close together in the ionosphere on Oct. 12, 2020, and Dec. 26, 2021, as observed by NASA's GOLD mission (Image credit: NASA's Scientific Visualization Studio)

NASA's GOLD mission found unexpected X- and C-shaped structures in the plasma of Earth's ionosphere, the layer of electrified gas in the planet's atmosphere that allows radio signals to travel over long distances. The ionosphere is an electrified region of Earth's atmosphere that exists because radiation from the sun strikes the atmosphere. Its density increases during the day as its molecules become electrically charged. That's because sunlight causes electrons to break off of atoms and molecules, creating plasma that enables radio signals to travel over long distances. The ionosphere's density then falls at night — and that's where GOLD comes in.

https://www.livescience.com/space/the-sun/nasa-spots-unexpected-x-shaped-structures-in-earths-upper-atmosphere-and-scientists-are-struggling-to-explain-them

First SKA-Mid Dish Installed in South Africa

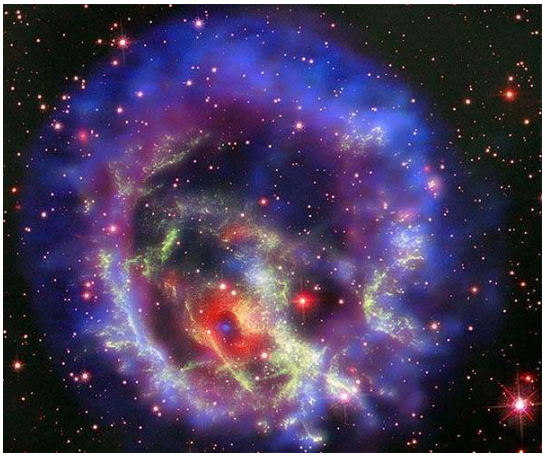
A team from the SKAO, South African Radio Astronomy Observatory (SARAO), and China's CETC54 successfully mounted the 15-meter-wide main reflector onto the SKA-Mid telescope pedestal in South Africa. This milestone is part of a larger effort involving a consortium from ten countries, led by CETC54, which is also manufacturing the dishes.

Over the past year, construction has accelerated at SKAO's telescope sites, including the deployment of SKA-Low telescope antennas in Western Australia this past March."The progress this year across the Observatory has been amazing, and seeing the first SKA-Mid dish being erected is a significant moment as we head towards the first stage of telescope delivery," said SKAO Acting Director of Programmes Luca Stringhetti. "There have been challenges, as we anticipated there would be, but it is thanks to the coordinated effort and support of our partners across the globe, combined with significant logistical work by teams at the telescope sites and our HQ,

that we have been able to deploy the first dish structure and four stations on the ground in both of our telescope host countries."

https://www.spacedaily.com/reports/First_SKA_Mid_Dish_Installed_in_South_Africa_999.html

Researchers Uncover New Insights into Neutron Star Matter



Neutron stars, with their extreme densities and mysterious interiors, remain enigmatic to astrophysicists. Despite having a radius of around twelve kilometres, they can possess over twice the mass of the sun, with matter packed up to five times denser than an atomic nucleus. Alongside black holes, neutron stars are the densest objects in the universe. Under such intense conditions, matter can transform into exotic states, including a theorized formation known as "nuclear pasta," where protons and neutrons deform into plates and strings.

Scientists at the Department of Physics at TU Darmstadt and the Niels Bohr Institute in Copenhagen have adopted a novel theoretical approach to explore the state of nuclear matter within the inner crust of neutron stars. Their research has revealed that both neutrons and protons can "drip out" of atomic nuclei, stabilizing the nuclear pasta structure. This significant discovery was published in "Physical Review Letters."

https://www.spacedaily.com/reports/Researchers_Uncover_New_Insights_into_Neutron_Star_Matter_999.html

Many nearby young star clusters formed in three massive regions

An international team of astronomers led by the University of Vienna has deciphered the formation history of young star clusters. The team, led by Cameren Swiggum and Joao Alves from the University of Vienna and Robert Benjamin from the University of Wisconsin-Whitewater, reports that most nearby young star clusters belong to only three families, originating from very massive star-forming regions.

This research also provides new insights into the effects of supernovae on the formation of giant gas structures in galaxies like the Milky Way. The results were published in the journal Nature."Young star clusters are excellent for exploring the history and structure of the Milky Way. By studying their movements in the past and thus their origin, we also gain important insights into the formation and evolution of our galaxy," says Joao Alves from the University of Vienna, co-author of the study. Using precise data from the European Space Agency's (ESA) Gaia mission and spectroscopic observations, the team traced the origins of 155 young star clusters within a radius of about 3,500 light-years around the Sun.

https://www.spacedaily.com/reports/Many_nearby_young_star_clusters_formed_in_three_massive_regions_999.html

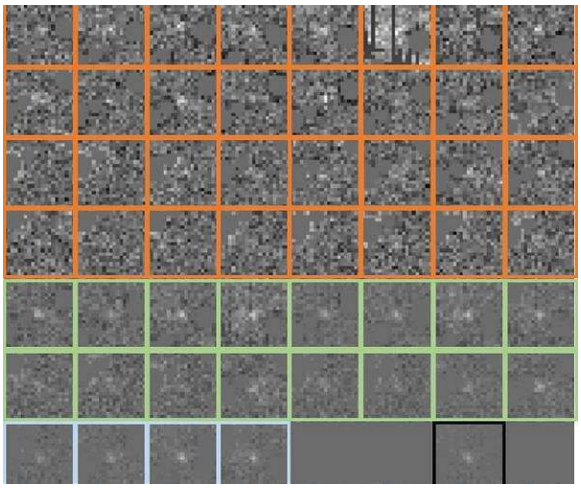
Tiny bright objects discovered at dawn of universe baffle scientists

A recent discovery by NASA's James Webb Space Telescope (JWST) confirmed that luminous, very red

objects previously detected in the early universe upend conventional thinking about the origins and evolution of galaxies and their supermassive black holes. An international team, led by Penn State researchers, using the NIRSpec instrument aboard JWST as part of the RUBIES survey identified three mysterious objects in the early universe, about 600-800 million years after the Big Bang, when the universe was only 5% of its current age.The team studied spectral measurements, or intensity of different wavelengths of light emitted from the objects. Their analysis found signatures of "old" stars, hundreds of millions of years old, far older than expected in a young universe.

https://www.spacedaily.com/reports/Tiny_bright_objects_discovered_at_dawn_of_universe_baffle_scientists_999.html

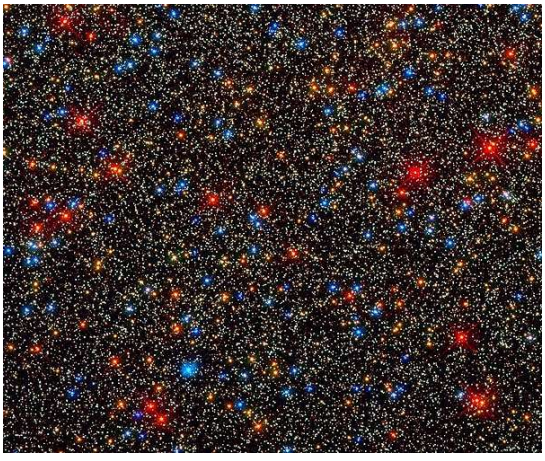
Subaru Telescope Discovers New Objects Beyond the Kuiper Belt



The Subaru Telescope's comprehensive imaging has significantly contributed to the New Horizons mission, revealing potential extensions of the Kuiper Belt in the outer Solar System. By utilizing a unique analytical method on images captured by the telescope's ultra-wide-field camera, researchers have identified objects that might extend the known boundaries of the Kuiper Belt. Beyond Neptune lies the Kuiper Belt, a region filled with asteroids and small celestial bodies. This zone, extending to the Oort Cloud, constitutes the outer Solar System, a region still shrouded in mystery."Looking outside of the Solar System, a typical planetary disk extends about 100 AU from the host star (100 times the distance between the Earth and the Sun), and the Kuiper Belt, which is estimated to extend about 50 AU, is very compact. Based on this comparison, we think that the primordial solar nebula, from which the Solar System was born, may have extended further out than the present-day Kuiper Belt," says Dr. Fumi Yoshida (Industrial Medical University of Japan; Center for Planetary Exploration Research, Chiba Institute of Technology), who led the research.

https://www.spacedaily.com/reports/Subaru_Telescope_Discovers_New_Objects_Beyond_the_Kuiper_Belt_999.html

Astronomers spot mysteriously elusive mid-sized black hole

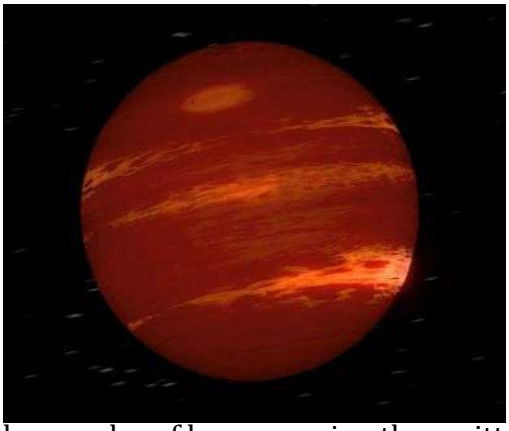


Astronomers said they have found the strongest evidence yet of a medium-sized black hole, the strange absence of which has been one of the enduring mysteries of the cosmos. The universe is riddled with black holes, from supermassive ones at the heart of galaxies to smaller ones around 100 times the mass of the Sun. But scientists have struggled to find black holes between these two extremes, considered the "missing link" in their evolution. To find out more, an international team of researchers analysed Omega Centauri, the biggest cluster of stars in the Milky Way around 18,000 light years from Earth. They spotted "something peculiar," Maximilian Haeberle, a PhD student at Germany's Max Planck Institute for Astronomy, told AFP.

https://www.spacedaily.com/reports/Astronomers_spot_mysteriously_elusive_mid-sized_black_hole_999.html

https://www.space.com/closest-massive-black-hole-earth-hubble

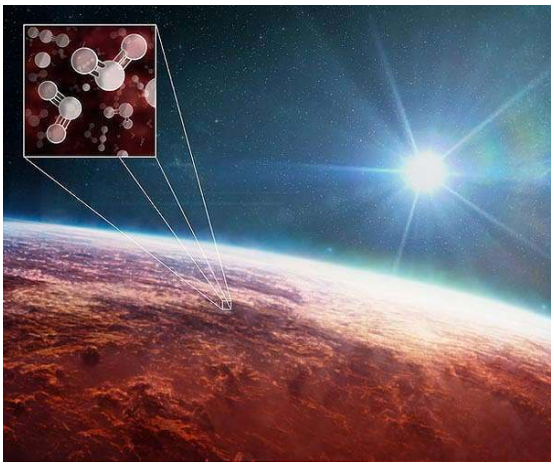
Scorching Storms Unveiled on Nearby Brown Dwarfs



Astronomers have produced the most comprehensive weather report yet for two distant brown dwarfs, showcasing extreme atmospheric conditions. This groundbreaking international study reveals that these celestial objects, enveloped in swirling clouds of hot sand, endure temperatures of 950 C (1,742 F). Using NASA's $10 billion (Pounds 7.6 billion) James Webb Space Telescope (JWST), researchers targeted the weather on a pair of brown dwarfs. These cosmic bodies, larger than planets but smaller than stars, are collectively named WISE 1049AB and are the brightest and closest of their kind to Earth, approximately six light-years away. The team tracked the atmosphere of each brown dwarf by measuring the emitted light waves, which change as cloudier regions rotate in and out of view. By visualizing this data through light curves-a plot of how the brightness of light from each object changes over time-they built a detailed 3D picture of the brown dwarfs' weather over a complete rotation, lasting between five and seven hours.

https://www.spacedaily.com/reports/Scorching_Storms_Unveiled_on_Nearby_Brown_Dwarfs_999.html

NASA's Webb Explores Atmospheric Differences on Exoplanet WASP-39 b



Researchers using NASA's James Webb Space Telescope have confirmed atmospheric differences between the perpetual morning and evening sides of the exoplanet WASP-39 b. This gas giant, with a diameter 1.3 times that of Jupiter but a mass similar to Saturn, orbits a star 700 light-years away and is tidally locked, meaning it has a permanent dayside and nightside. Using Webb's Near-Infrared Spectrograph (NIRSpec), astronomers observed a temperature difference between the two sides of WASP-39 b. The evening side is about 300 Fahrenheit degrees (200 Celsius degrees) hotter than the morning side. Additionally, they detected more cloud cover on the morning side compared to the evening side.https://www.spacedaily.com/reports/NASAs_Webb_Explores_Atmospheric_Differences_on_Exoplanet_WASP_39_b_999.html

NASA's Curiosity rover accidentally reveals ultra-rare sulphur crystals after crushing a rock on Mars

NASA's Curiosity rover revealed an 'oasis' of rare elemental sulphur on Mars after accidentally crushing a rock with its tires. The yellow crystals have never been spotted on the Red Planet before. NASA's Curiosity Mars rover has accidentally uncovered an abundance of never-before-seen crystals on the Red Planet after inadvertently running over a rock. On May 30, the rover was exploring Gediz Vallis — a channel carved into the steep slopes of Mount Sharp in the heart of Gale Crater — when it accidentally drove over a small rock, cracking it open. When the rover's cameras focused on what the

robot had tripped over, scientists spotted peculiar yellow crystals gleaming among the rock's newly exposed innards.

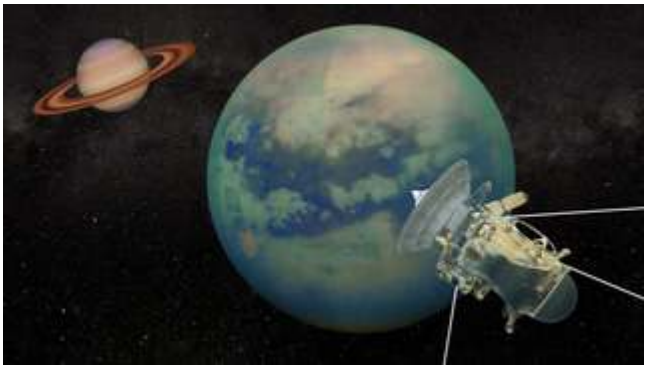
Yellow crystals of pure, elemental sulfur appear inside a crushed Mars rock that NASA's Curiosity rover accidentally drove over. (Image credit: NASA/JPL-Caltech/MSSS)

The crystals in the cracked rock were too small and delicate for the rover to properly handle. But when the robot drilled into another nearby rock, it revealed the crystals were made of pure sulfur.

https://www.livescience.com/space/mars/nasas-curiosity-rover-accidentally-reveals-ultra-rare-sulfur-crystals-after-crushing-a-rock-on-mars

Before plunging to its death, NASA's Cassini spacecraft saw secrets in the seas of Saturn's moon Titan

Cassini's mission may have ended when it crashed into Saturn, but it is still delivering results.



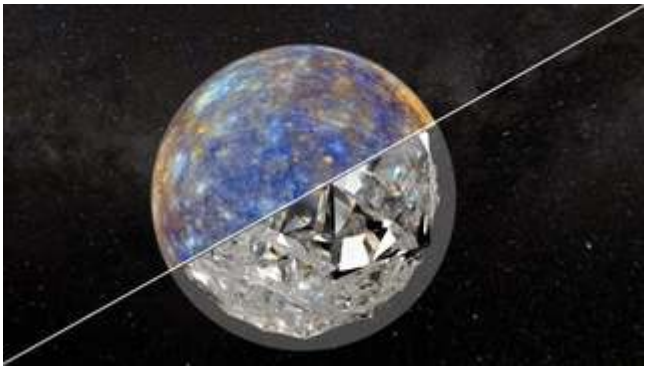
An illustration shows the Cassini spacecraft investigating Titan with its parent planet Saturn in the background (Image credit: NASA/Robert Lea)

NASA's Cassini-Huygens spacecraft may have dramatically ended its 20-year mission to explore Saturn's neighbourhood seven years ago, when it plunged to into the gas giant, but it is still delivering the scientific goods. Using radar data collected by Cassini, astronomers from Cornell University have gathered fresh information about the liquid ocean of Saturn's largest moon, Titan, which is comprised of hydrocarbons, a class of organic chemicals made up of carbon and hydrogen. For instance, that class includes chemicals like methane and ethane. The team was able to analyze the composition and the "roughness" of Titan's sea, which is located near the world's north pole. The researchers found calm seas of methane with a gentle tidal current. Not only is this something that prior examinations of Titan's seas have failed to reveal, but it also lays down a foundation for future investigations into the solar system's ocean moons.

https://www.space.com/cassini-titan-methane-seas

Mercury has a layer of diamond 10 miles thick, NASA spacecraft finds

NASA's MESSENGER mission has revealed that Mercury, the solar system's tiniest planet and the closest to the sun, hides a big secret. The solar system's tiniest planet may be hiding a big secret. Using data from NASA's MESSENGER spacecraft, scientists have determined that a 10-mile-thick diamond mantle may lie beneath the crust of Mercury, the closest planet to the sun. Mercury has long puzzled scientists as it possesses many qualities that aren't common to other solar system planets. These include its very dark surface, remarkably dense core, and the premature end of Mercury's volcanic era.



(Left) A colourful view of Mercury produced using images from the colour base map imaging campaign during MESSENGER's primary mission (Right) what Mercury may look like were its outer layers stripped to expose its 10-mile-thick layer of diamond (Image credit: Robert Lea (created with Canva)/NASA/Johns

Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington)

Also among these puzzles are patches of graphite, a type (or "allotrope") of carbon on the surface of the innermost planet of the solar system. These patches have led scientists to suggest that in Mercury's early history, the tiny planet had a carbon-rich magma ocean. This ocean would have floated to the surface, creating graphite patches and the dark-shaded hue of Mercury's surface.

https://www.space.com/mercury-diamond-layer-10-miles-thick-nasa-messenger

Astronomers catch a planet changing into a hot Jupiter

Exactly how planets end up so close to their stars is still unknown, but this world's strange orbit may hold clues.

This artist's impression shows a Jupiter-like exoplanet that is on its way to becoming a hot Jupiter — a large, Jupiter-like exoplanet that orbits very close to its star. Credit: NOIRLab/NSF/AURA/J. da SilvaCredit: NOIRLab/NSF/AURA/J. da Silva.

Hot Jupiters, massive worlds that orbit close to their host star, likely weren't always so hot. Astronomers believe that these exoplanets formed cold, in the outer regions of their star systems, and later migrated inward toward their star. Researchers have now spotted a juvenile planet in the process of doing just that, on its way to becoming a fully fledged hot Jupiter. The planet, dubbed TIC 241249530 b, is on a narrow elliptical orbit that swings close to its host star before barrelling far away. To put the orbit in perspective, the planet passes by its sun at a distance about ten times closer than Mercury is to our Sun, before going past the distance of Earth's orbit and then back again, all in about 167 days.

https://www.astronomy.com/science/astronomers-catch-a-planet-changing-into-a-hot-jupiter/

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