https://www.hermanus.astronomy@gmail.com

"The Southern Cross"

The Hermanus Astronomy Centre's Monthly Newsletter

February 2026

MONTHLY MEETINGS

On Tuesday 20th, at our January Monthly meeting, held at Onrus Manor and on Zoom, **Prof Christo Venter**, a Full Professor of North-West University, presented "*Gamma-ray Pulsars: Treasures of the Dark Skies."*

"I have this lighthouse to the right because it's similar to a pulsar except a pulsar's rotation is much, much faster. The fastest ones are rotating at 1.4 to 1.5 milliseconds. So that's like hundreds of times, almost up to a thousand times per second, for these massive objects. When the gamma ray beam intersects with the line of sight, an observer will see a pulse."

So commences Christo's description of these fearsome but fascinating beasts of our Universe's jungle.

For a much recommended revisit of this dramatic presentation, herewith the YouTube link:

https://www.youtube.com/watch?v=-VrzruNhd9A

Also, please see the transcript attached to this e-mail.

Our **AGM** is scheduled for **Tuesday February 17th** at 18.00 and will be virtual on Zoom. Invites will be sent to all current members.

SPECIAL INTEREST GROUP ACTIVITIES

Cosmology

There being no January meeting, our next is episode 36 scheduled for **Tuesday 3rd February**, the topic being *"The Mystery of Free Will - Can You Change the Future?"*.

A man in court is at the mercy of judge and jury. He undoubtedly committed the crime and, having free will, it was his own decision and is therefore guilty. But without free will, is he really guilty and just a victim of circumstance?

For further information regarding the Cosmology Group, contact Derek Duckitt – derek.duckitt@gmail.com

The Study Group

The January meeting was cancelled at late notice for which I offer my apologies.

The topic for our next meeting, scheduled for **Tuesday February 24th**, will be advised in due course. For further information regarding the Study Group, contact Peter Harvey petermh@hermanus.co.za .

Observing

No suitable evenings were available during January. During the "moonless window" period, there were some clear evenings but visibility was pushed into the Bortle 8s and 9s by smoke from the fires.

Optimal dates for **February 2026**:

SUGGESTED EVENING OBSERVATION WINDOWS
(Lunar observations notwithstanding)

Date		*Moon*	*Dusk end*
February 4	**Rise**	**21h19 (95%)**	**21h21**
to **February 21**	**Set**	**21h32 (18%)**	**20h58**

ASSA

From Tim Cooper

The link to the latest Comet, Asteroid and Meteor Section:

https://assa.saao.ac.za/wp-content/uploads/sites/23/2025/12/ASSA-CAMnotes-2026-Number-1.pdf

MNASSA

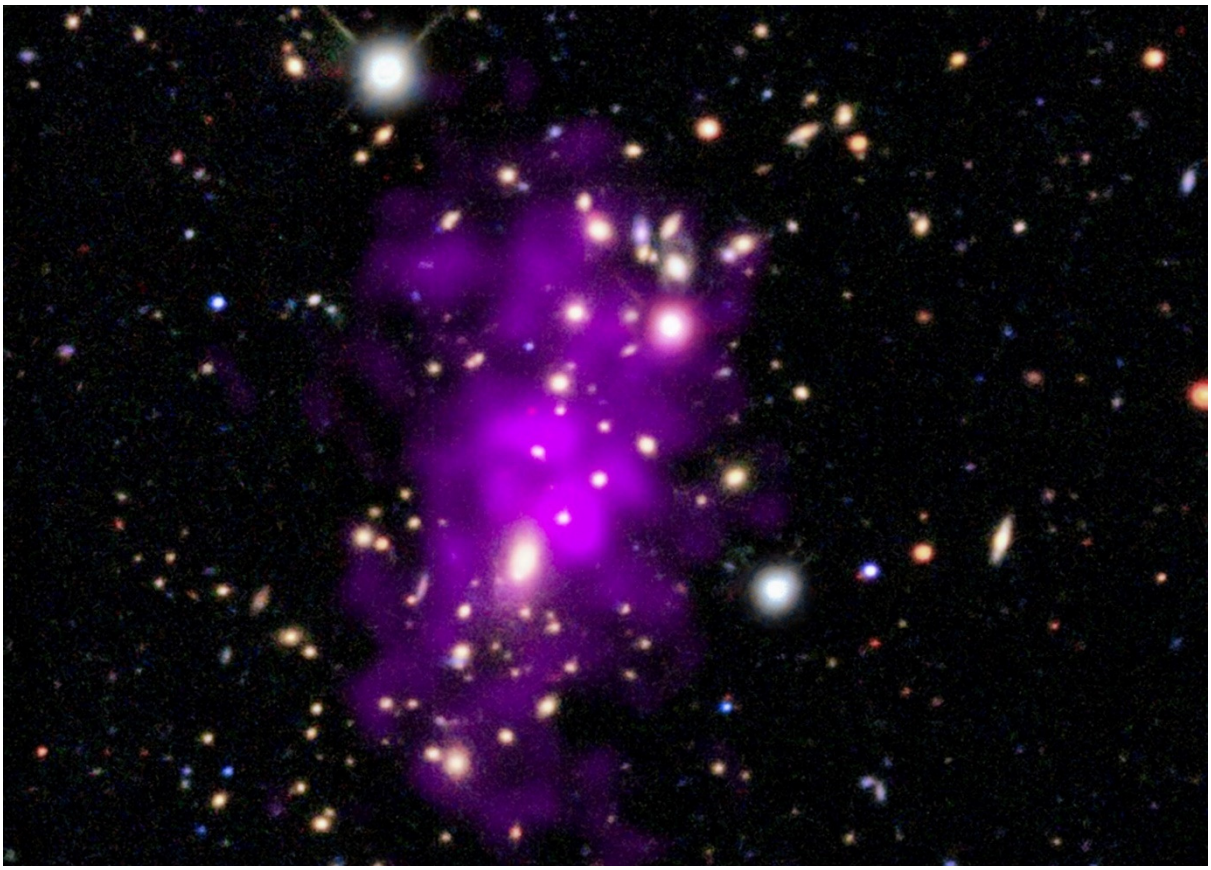
The Monthly Notes of the Astronomical Society of Southern Africa are available on:

http://www.mnassa.org.za/

Astronomy News January 2026 *continued overleaf…*

Compiled by Pieter Kotzé

JANUARY ASTRONOMY PICTURE



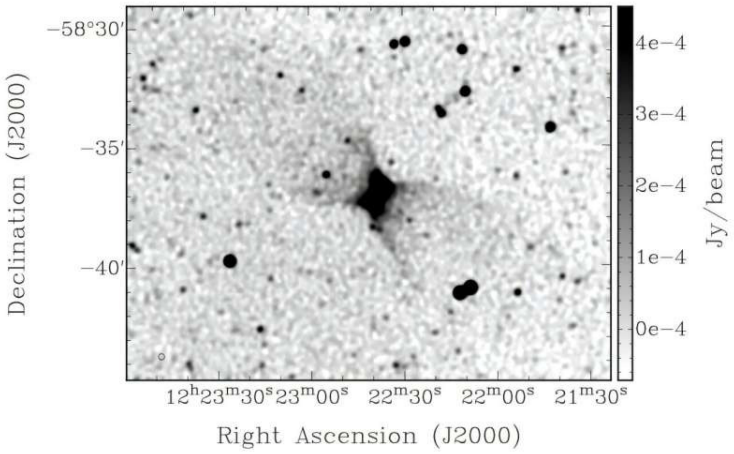
Credit: X-ray: NASA/CXC/UCDavis/F. Bouhrik et al.; Optical:Legacy Survey/DECaLS/BASS/MzLS; Image Processing: NASA/CXC/SAO/P. Edmonds and L. Frattare

Astronomers discovered this galaxy cluster on Dec. 31, 2020. The date, combined with the bubble-like appearance of the galaxies and the superheated gas seen with Chandra observations (represented in purple), inspired the scientists to nickname the galaxy cluster the Champagne Cluster, a much easier-to-remember name than its official designation of RM J130558.9+263048.4. The new composite image shows that the Champagne Cluster is actually two galaxy clusters in the process of merging to form an even larger cluster. The Champagne Cluster is a member of a rare class of merging clusters, which includes the well-known Bullet Cluster, where the hot gas in each cluster has collided and slowed down, and there is a clear separation between the hot gas and the most massive galaxy in each cluster. Multimillion-degree gas in galaxy clusters usually takes on an approximately circular or moderately oval shape in images, but in the Champagne Cluster, it is more widely spread from top to bottom, revealing the presence of the two colliding clusters. Two clumps of individual galaxies making up the colliding clusters can be seen toward the top and bottom of the centre.

Supernova from the dawn of the universe captured by James Webb Space Telescope

An international team of astronomers has achieved a first in probing the early universe, using the James Webb Space Telescope (JWST), detecting a supernova—the explosive death of a massive star—at an unprecedented cosmic distance. The explosion, designated SN in GRB 250314A, occurred when the universe was only about 730 million years old, placing it deep in the era of reionization. This remarkable discovery provides a direct look at the final moments of a massive star from a time when the first stars and galaxies were just beginning to form. The event was initially flagged by a bright burst of high-energy radiation, known as a long-duration Gamma-Ray Burst (GRB), detected by the space-based multi-band astronomical Variable Objects Monitor (SVOM) on March 14, 2025. Follow-up observations with the European Southern Observatory's Very Large Telescope (ESO/VLT) confirmed the extreme distance. The key finding came from targeted observations with JWST's Near-Infrared Camera (NIRCAM) approximately 110 days after the burst. Scientists were able to separate the light of the explosion from its faint, underlying host galaxy. Co-author, and astrophysicist at UCD School of Physics, Dr. Antonio Martin-Carrillo said, "The key observation, or smoking gun, that connects the death of massive stars with gamma-ray bursts is the discovery of a supernova emerging at the same sky location. Almost every supernova ever studied has been relatively nearby to us, with just a handful of exceptions to date. The findings challenge the assumption that the stars of the early universe, formed under extremely low-metallicity conditions, would lead to markedly different, perhaps brighter or bluer, stellar explosions than those seen today.https://phys.org/news/2025-12-supernova-dawn-universe-captured-james.html

ASKAP discovers a spectacular outflow in a nearby galaxy



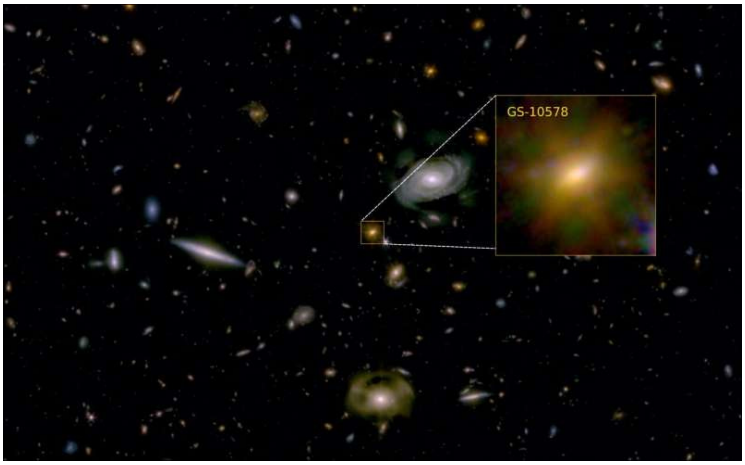
ASKAP EMU 944 MHz radio continuum image of the spectacular outflow from the edge-on galaxy ESO 130-G012. Credit: Koribalski et al., 2025.

Using the Australian Square Kilometre Array Pathfinder (ASKAP), an international team of astronomers has discovered a spectacular bipolar outflow from the disk of a nearby galaxy known as ESO 130-G012. ESO 130-G012 is an edge-on galaxy at a distance of some 55 million light years, with an estimated stellar mass of about 11 billion solar masses. The galaxy has a star-formation rate at a level of 0.2 solar masses per year and hosts a black hole approximately 50 million times more massive than the sun. A group of astronomers led by Bärbel S. Koribalski of the Western Sydney University in Australia decided to investigate a bright star-forming stellar disk of ESO 130-G012 utilizing ASKAP, as part of the Evolutionary Map of the Universe (EMU) project. The 944-MHz radio continuum images obtained with ASKAP revealed the presence of an outflow from the galaxy's disk. "While inspecting deep ASKAP EMU 944 MHz radio continuum images, we discovered a bipolar outflow extending at least 6′ (∼30 kpc) above and below the edge-on stellar disk.

https://phys.org/news/2025-12-askap-spectacular-outflow-nearby-galaxy.html#google_vignette

'Death by a thousand cuts': Pablo's galaxy ran out of fuel as black hole choked off supplies

Astronomers have spotted one of the oldest "dead" galaxies yet identified, and found that a growing supermassive black hole can slowly starve a galaxy rather than tear it apart. The researchers, led by the University of Cambridge, used data from the James Webb Space Telescope and the Atacama Large Millimetre Array (ALMA), to study a galaxy in the early universe—about three billion years after the Big Bang. The galaxy, called GS-10578 but nicknamed "Pablo's galaxy" after the astronomer who first observed it in detail, is massive for such an early period in the universe: about 200 billion times the mass of our sun, and most of its stars formed between 12.5 and 11.5 billion years ago. Pablo's galaxy appears to have 'lived fast and died young': it stopped forming new stars, despite its relatively young age, due to an almost total absence of the cold gas stars need to form.The supermassive black hole at the galaxy's centre appears to be the culprit. But instead of a single cataclysmic event, the galaxy suffered "death by a thousand cuts" as the black hole repeatedly heated the gas in and around the galaxy, preventing it from resupplying the galaxy with fresh gas and slowly strangling star formation. The results are reported in the journal *Nature Astronomy*.



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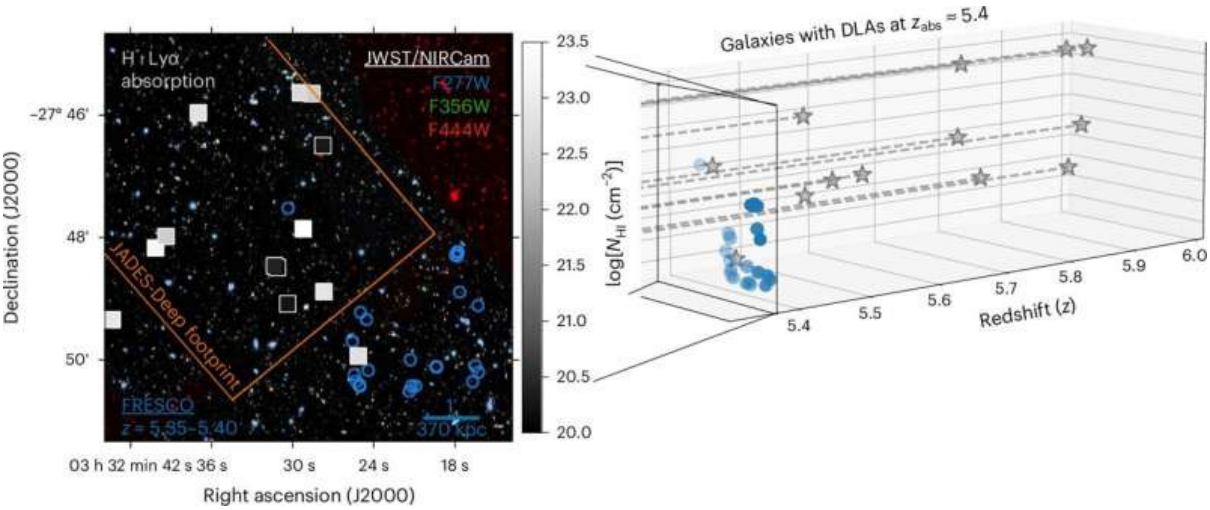
The researchers spent nearly seven hours observing the galaxy with ALMA, hoping to detect carbon monoxide—a tracer of cold hydrogen gas. Instead, they found nothing."What surprised us was how much you can learn by not seeing something," said co-first author Dr. Jan Scholtz from Cambridge's Cavendish Laboratory and Kavli Institute for Cosmology. "Even with one of ALMA's deepest observations of this kind of galaxy, there was essentially no cold gas left. It points to a slow starvation rather than a single dramatic death blow."

https://phys.org/news/2026-01-death-thousand-pablo-galaxy-ran.html

Cold neutral gas in early universe prompts rethink of galaxy cluster evolution

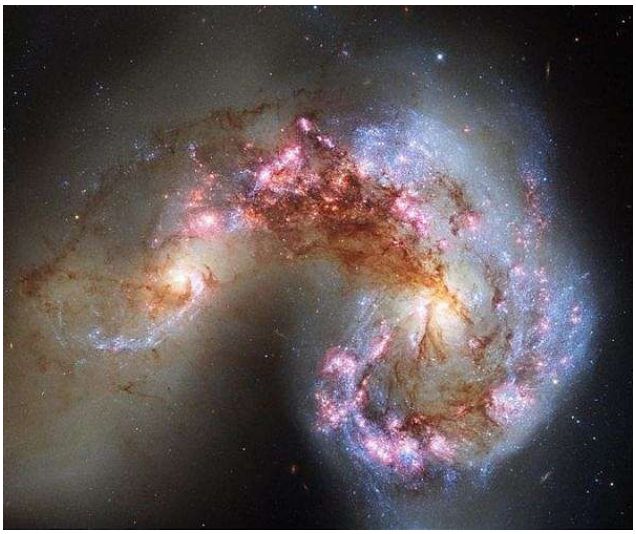


Spatial and redshift distribution of the galaxy proto-cluster members and the background galaxies with strong DLAs. Credit: Nature Astronomy (2026). DOI: 10.1038/s41550-025-02745-x

A small group of young researchers at the Cosmic Dawn Centre, Niels Bohr Institute, University of Copenhagen, have, through observations of the early stages of an extremely large galaxy cluster's evolution, shown that the largest structures we know have a different history than previously thought. The researchers began by observing a very high density of cold, neutral hydrogen gas—much greater than expected—which is still actively forming stars and galaxies within the cluster."This is not something we've seen before in these systems, nor this far back in the universe's history. The structure of the galaxy cluster we observed is unusual—it's massive; there is an enormous amount of material in it, and we expect that it would evolve into one of the largest galaxy clusters we've ever seen if we continued its development to the present day," explains Kasper Heintz, Assistant Professor at the Cosmic Dawn Centre, Niels Bohr Institute and first author of the study."In itself it was a bit mysterious that the galaxy cluster was so large, but that might make sense given that we found this huge amount of cold, neutral gas falling into the structure and 'feeding' the formation of galaxies."

https://phys.org/news/2026-01-cold-neutral-gas-early-universe.html

Galaxy mergers light up fastest growing black holes

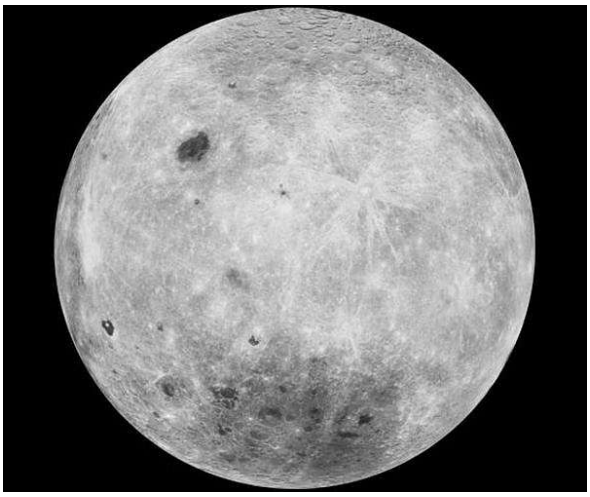


New Euclid satellite observations indicate that collisions between galaxies trigger the most powerful active galactic nuclei in the universe. The results strengthen the link between galaxy mergers and rapid growth phases of supermassive black holes at galactic centres. Active galactic nuclei are periods when supermassive black holes at the centre of galaxies accrete surrounding matter and gas and emit intense radiation. Our own Milky Way hosts a supermassive black hole at its centre, but it is currently in a quiescent state.

Previous research suggested that galaxy mergers might help drive the formation and evolution of supermassive black holes. The new Euclid data, published in a special edition of Astronomy and Astrophysics, provide the strongest evidence so far that mergers play a key role. Scientists, including University of British Columbia researcher Dr. Allison Man, used artificial intelligence to examine hundreds of thousands of galaxy mergers stretching back up to 10 billion years. The team reports that active galactic nuclei occur two to six times more often in merging galaxies than in comparable systems that are not merging. The association is especially strong for active galactic nuclei heavily obscured by dust, which are linked to rapid black hole growth as material falls into the central object. These dust-enshrouded nuclei are also the most luminous, outshining their host galaxies.

https://www.spacedaily.com/reports/Galaxy_mergers_light_up_fastest_growing_black_holes_999.html

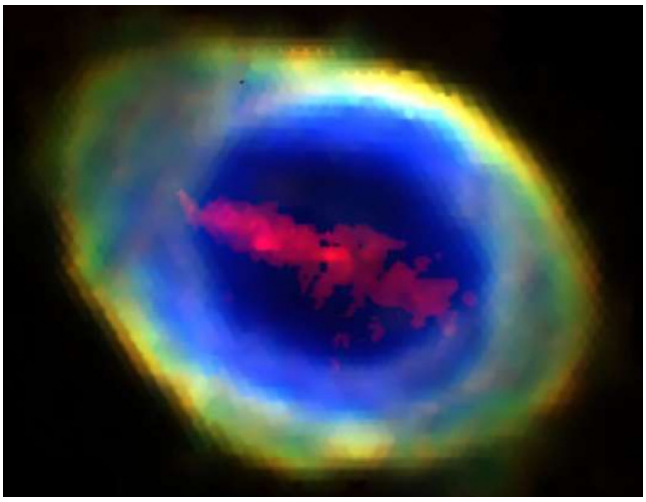
Ancient impact may explain moons contrasting sides



For decades scientists have puzzled over why the moons two hemispheres look so different despite sharing a common origin in the early solar system. The near side that always faces Earth is dominated by dark flat volcanic plains called maria that create the familiar man in the moon pattern seen with the naked eye. In contrast the far side has a much thicker crust and appears as a rugged heavily cratered highland region with very little sign of large scale lava flooding. New research published Tuesday in the journal Proceedings of the National Academy of Sciences points to a giant impact early in lunar history as a key driver of this stark dichotomy. A team from the Institute of Geology and Geophysics of the Chinese Academy of Sciences analyzed microscopic samples returned by Chinas Chang'e 6 mission from the moon's far side. Chang'e 6 achieved the first sample return from the lunar far side by landing within the vast South Pole Aitken basin one of the largest known impact structures in the solar system. The mission returned tiny grains weighing only about as much as a few grains of salt yet they preserve detailed chemical records of ancient events in the lunar crust and mantle. Led by professor Tian Hengci, the researchers focused on potassium a moderately volatile element that occurs in multiple isotopes with different atomic masses. During extremely high temperature events such as a giant asteroid impact lighter potassium isotopes tend to evaporate and escape more readily than heavier ones leaving behind material that is enriched in the heavy isotopes.

https://www.spacedaily.com/reports/Ancient_impact_may_explain_moons_contrasting_sides_999.html

Mysterious iron 'bar' discovered in famous nebula

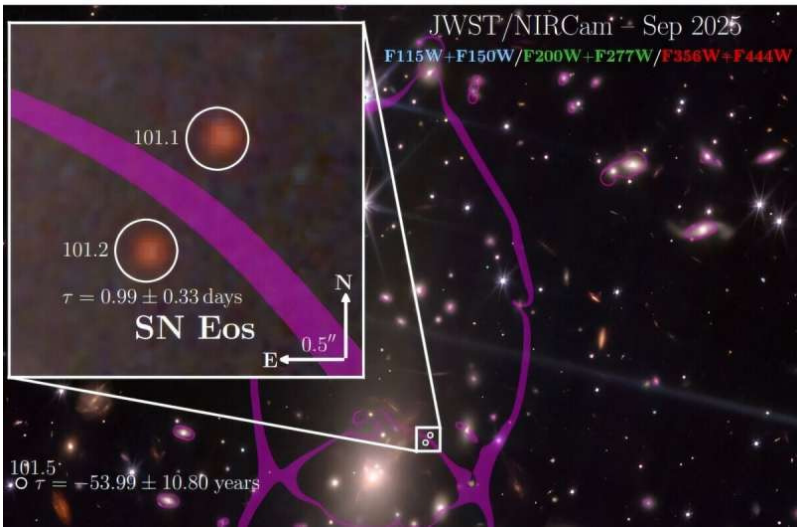


A composite RGB image of the Ring Nebula (also known as Messier 57 and NGC 6720) constructed from four WEAVE/LIFU emission-line images. The bright outer ring is made up of light emitted by three different ions of oxygen, while the "bar" across the middle is due to light emitted by a plasma of four-times-ionised iron atoms. North is up and East is to the left in the image. Credit: University College London

A mysterious bar-shaped cloud of iron has been discovered inside the iconic Ring Nebula by a European team led by astronomers at University College London (UCL) and Cardiff University. The cloud of iron atoms, described for the first time in *Monthly Notices of the Royal Astronomical Society*, is in the shape of a bar or strip: it just fits inside the inner layer of the elliptically shaped nebula, familiar from many images including those obtained by the James Webb Space Telescope at infrared wavelengths. The bar's length is roughly 500 times that of Pluto's orbit around the sun and, according to the team, its mass of iron atoms is comparable to the mass of Mars. The Ring Nebula, first spotted in 1779 in the northern constellation of Lyra by the French astronomer Charles Messier, is a colourful shell of gas thrown off by a star as it ends the nuclear fuel-burning phase of its life. Our own sun will expel its outer layers in a similar way in a few billion years' time.

https://phys.org/news/2026-01-mysterious-iron-bar-famous-nebula.html

Ancient Type II supernova discovered from universe's first billion years

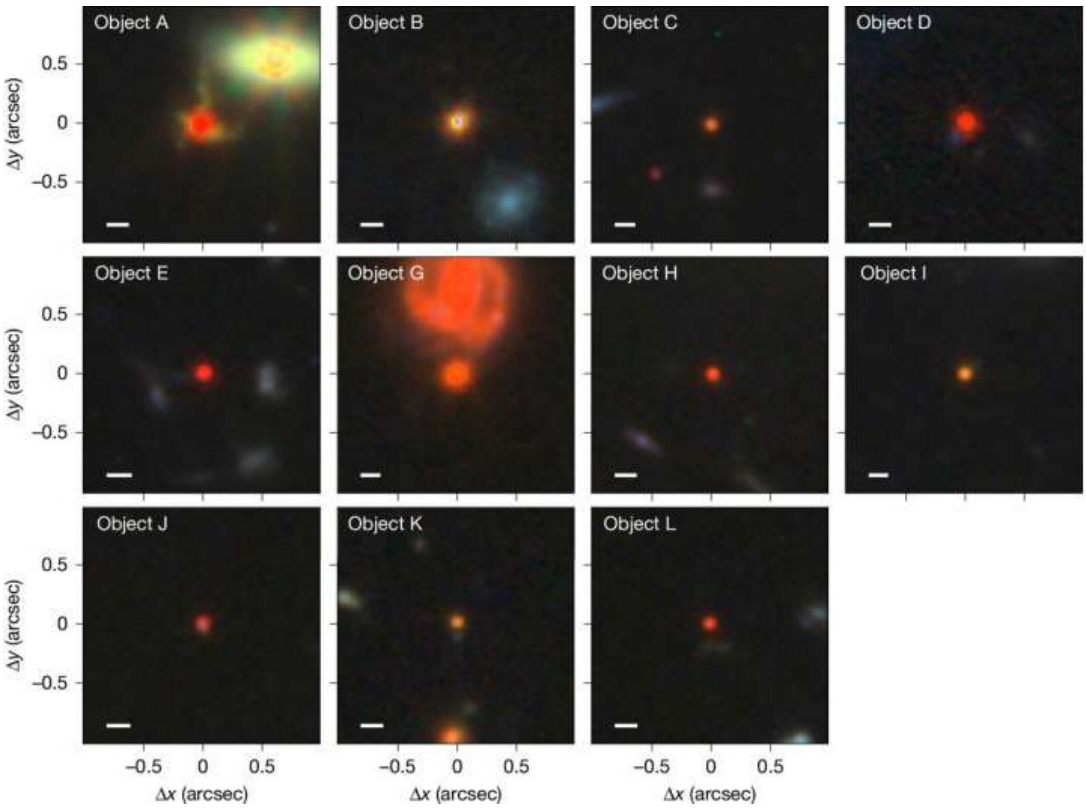


JWST discovery image of the MACS 1931.8-2635 galaxy cluster containing SN Eos. Credit: arXiv (2026). DOI: 10.48550/arxiv.2601.04156

Using the James Webb Space Telescope (JWST), an international team of astronomers has discovered a new Type II supernova. The newly detected supernova, named SN Eos, exploded when the universe was only 1 billion years old. Supernovae (SNe) are powerful and luminous stellar explosions. They are important for the scientific community as they offer essential clues into the evolution of stars and galaxies. In general, SNe are divided into two groups based on their atomic spectra: Type I (no hydrogen in their spectra) and Type II (showcasing hydrogen spectral lines).Type II SNe are the result of rapid collapse and violent explosion of massive stars (with masses above 8.0 solar masses). Type II core-collapse supernovae (CC SNe), which can be brighter than the total emission of their host galaxies, allow astronomers to probe the final stages of stellar evolution, and studies of early-universe Type II CC SNe could be crucial to constrain early stellar evolution models.The collected data indicate that SN Eos exploded when the universe was only about 1 billion years old, shortly after it reionized and became transparent to ultraviolet radiation. The measurements conducted by Coulter's team suggest that SN Eos exploded in an environment with a metal concentration below 10% that of the solar abundance.

https://phys.org/news/2026-01-ancient-ii-supernova-universe-billion.html

Researchers solve mystery of universe's 'little red dots'



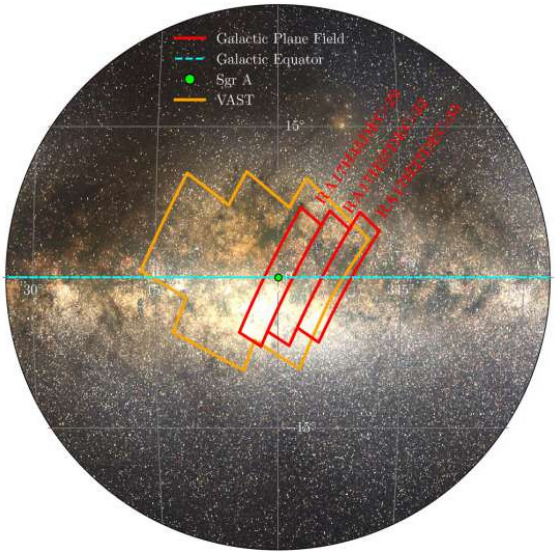
JWST/NIRCam images of the sample objects. Credit: Nature (2026). DOI: 10.1038/s41586-025-09900-4

Since the James Webb Space Telescope (JWST) went into operation, red dots in its images have puzzled researchers around the world. Now, researchers from the University of Copenhagen have explained these enigmatic findings, revealing the most violent forces in the universe concealed in a cocoon of ionized gas. The discovery is published in *Nature*. Since December 2021, when the James Webb super telescope saw first light, some 1.5 million kilometres from Earth, researchers around the world have been scratching their heads over unexplained red dots among stars and galaxies in the images taken by the telescope. The so-called 'little red dots' can be seen when the universe was "only" several hundred million years old, and a billion years later, they seem to disappear again. So what were they? Some scientists argued that they were massive galaxies, powerful enough for the James Webb Space Telescope to detect them 13 billion years later. But that theory did not fit well with how long these galaxies took to evolve after the Big Bang—they came later." The little red dots are young black holes, a hundred times less massive than previously believed, enshrouded in a cocoon of gas, which they are consuming in order to grow larger. This process generates enormous heat, which shines through the cocoon. This radiation through the cocoon is what gives little red dots their unique red colour," says Professor Darach Watson, one of the principal researchers behind the study.

https://phys.org/news/2026-01-mystery-universe-red-dots.html

South Pole Telescope detects energetic stellar flares near centre of galaxy

Researchers from the South Pole Telescope project team looked deep into the centre of the Milky Way, discovering powerful, surprising bursts of light from two accreting white dwarf systems. It marks the first time such events have been captured in a millimetre-wavelength survey and opens a new window of research opportunity into the dynamic environments at the centre of the galaxy. The events were published in *The Astrophysical Journal*. Texas Tech University's Tom Maccarone, professor in the Department of Physics and Astronomy within the College of Arts & Sciences, was a collaborator on the project. The South Pole Telescope was originally developed to measure the cosmic microwave background, and as the team started making surveys of the Galactic Plane, they recruited Maccarone for his expertise in interacting binary stars to help understand new phenomena as they were discovered.

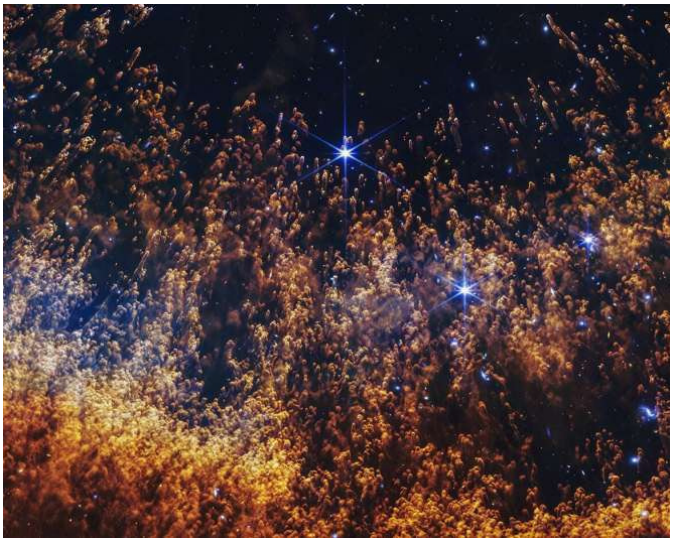


The footprint of the Galactic Plane field overlaid on Mellinger's all-sky panorama image of the Milky Way (A. Mellinger 2009) in Galactic coordinates. The Galactic equator (b = 0°) is marked by the dashed aqua line. The three SPT-3G Galactic subfields are shown by the blue boxes, and the position of Sgr A is indicated by the green dot. For comparison, the orange region shows region 5 from the VAST Pilot Survey (T. Murphy et al. 2021). Credit: The Astrophysical Journal (2026). DOI: 10.3847/1538-4357/ae2de8

The discovery is important because, rather than targeting a pre-selected list of candidate objects, the survey repeatedly scanned a large portion of the Galactic Plane, uncovering short-lived bursts of light from two known accreting white dwarf systems within one of the most complex regions of the sky.

https://phys.org/news/2026-01-south-pole-telescope-energetic-stellar.html

Intricacies of Helix Nebula revealed with Webb

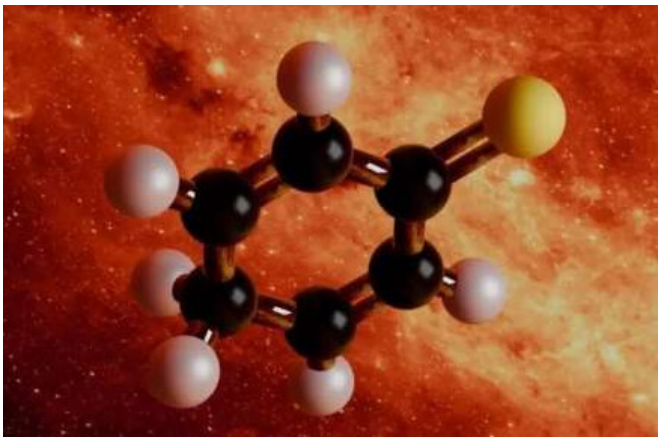


This new image of a portion of the Helix Nebula from NASA's James Webb Space Telescope highlights comet-like knots, fierce stellar winds, and layers of gas shed off by a dying star interacting with its surrounding environment. Credit: NASA, ESA, CSA, STScI; Image Processing: Alyssa Pagan (STScI)

NASA's James Webb Space Telescope has zoomed into the Helix Nebula to give an up-close view of the possible eventual fate of our own sun and planetary system. In Webb's high-resolution look, the structure of the gas being shed off by a dying star comes into full focus. The image reveals how stars recycle their material back into the cosmos, seeding future generations of stars and planets, as NASA explores the secrets of the universe and our place in it. In the image from Webb's NIRCam (Near-Infrared Camera), pillars that look like comets with extended tails trace the circumference of the inner region of an expanding shell of gas. Here, blistering winds of fast-moving hot gas from the dying star are crashing into slower-moving, colder shells of dust and gas that were shed earlier in its life, sculpting the nebula's remarkable structure. The iconic Helix Nebula has been imaged by many ground- and space-based observatories over the nearly two centuries since it was discovered. Webb's near-infrared view of the target brings these knots to the forefront compared to the ethereal image from NASA's Hubble Space Telescope, while its increased resolution sharpens focus from NASA's retired Spitzer Space Telescope's snapshot. Additionally, the new near-infrared look shows the stark transition between the hottest gas to the coolest gas as the shell expands out from the central white dwarf.

https://phys.org/news/2026-01-intricacies-helix-nebula-revealed-webb.html

Astrophysicists discover largest sulphur-containing molecular compound in space

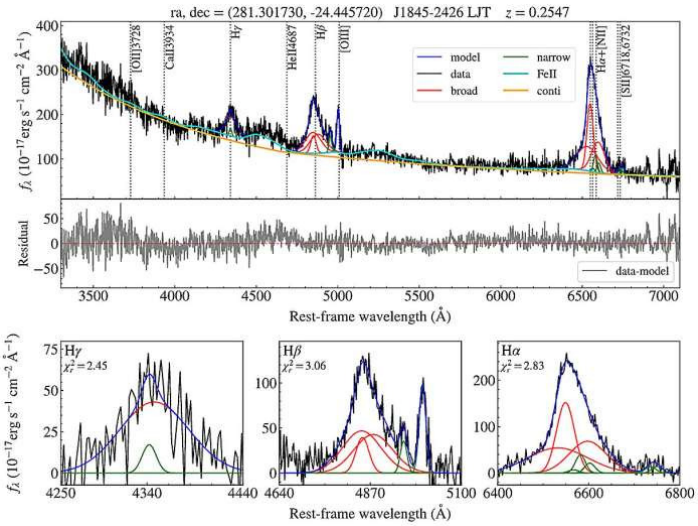


In the heart of our galaxy, scientists discovered the first sulphur-bearing six-membered ring molecule hiding in an interstellar cloud. Credit: MPE/ NASA/JPL-Caltech

Researchers at the Max Planck Institute for Extraterrestrial Physics (MPE), in collaboration with astrophysicists from the Centro de Astrobiología (CAB), CSIC-INTA, have identified the largest sulphur-bearing molecule ever found in space: 2,5-cyclohexadiene-1-thione (C_6H_6S). They made this breakthrough by combining laboratory experiments with astronomical observations. The molecule resides in the molecular cloud G+0.693–0.027, about 27,000 light-years from Earth near the centre of the Milky Way. With a stable six-membered ring and a total of 13 atoms, it far exceeds the size of all previously detected sulphur-containing compounds in space. The study is published in *Nature Astronomy*." This is the first unambiguous detection of a complex, ring-shaped sulphur-containing molecule in interstellar space—and a crucial step toward understanding the chemical link between space and the building blocks of life," says Mitsunori Araki, scientist at MPE and lead author of the study. Until now, astronomers had only detected small sulphur compounds—mostly with six atoms or fewer—in interstellar space. Large, complex sulphur-containing molecules were expected, particularly due to sulphur's essential role in proteins and enzymes, yet these larger molecules had remained elusive. This gap between interstellar chemistry and the organic inventory found in comets and meteorites had been a central mystery in astrochemistry. The newly discovered C_6H_6S is structurally related to molecules found in extraterrestrial samples—and is the first of its kind definitively detected in space. It establishes a direct chemical "bridge" between the interstellar medium and our own solar system.00

https://phys.org/news/2026-01-astrophysicists-largest-sulphur-molecular-compound.html

Multiwavelength variability reveals dust structure in quasars



Spectral fitting results for VVV J1845-2426 (Lijiang 2.4m optical telescope). In the top panel, the spectrum (black line) is decomposed into a power-law continuum (orange line), Fe II emission (cyan line), and emission lines (blue line). The emission lines include broad (red line) and narrow (green line) components. The middle panel shows the residuals between the spectrum and the fitted model. The bottom panel presents the fitting results for the Hα, Hβ and Hγ emission lines, respectively. Credit: SHAO

A research team has investigated quasar variability by tracking optical to mid-infrared (MIR) wavelengths of variability information. This multiband joint analysis provides an opportunity to probe the dust structure in the quasar's central region and holds promise for revealing key properties such as its scale and distribution. It offers crucial observational evidence for refining the "unified model" of active galactic nuclei (AGNs).

https://phys.org/news/2026-01-multiwavelength-variability-reveals-quasars.html

Committee Members

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Pierre de Villiers	(Vice-chairman, Speaker Selector, Projects and Outreach)	082 854 2277
Elaine Sykes	(Treasurer)	083 286 2683
Peter Harvey	(Secretary, Membership, "Skynotes", "Southern Cross", Study Group SIG co-ordinator, Observing co-ordinator)	081 212 9481 petermh@hermanus.co.za
Mick Fynn	(Educational outreach)	082 443 0848

Non-committee members with portfolio:

Deon Krige	Astro-photography (SIG coordinator)
Pieter Kotzé	"Southern Cross" (Astronomy News, Speaker Selector)