JANUS
THE NEWSLETTER OF EWELL ASTRONOMICAL SOCIETY

June 2025

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Important Reminder:

To allow sufficient time to compile Janus and place it on the EAS Website by the 1st of the month any submissions for publication are required at least 3 days before the end of the month. Any items received after this date will be held over until the following month.

Editorial

Welcome to the June edition of Janus. June is marked by the Summer Solstice which both signals the longest day of the year and marks the beginning of a gradual lengthening of the nights.

This month's talk, to be given by Sian Prosser from the Royal Astronomical Society (RAS), is all about "Pioneering Women Astronomers". There will also be the usual presentation on the "Sky at Night" for the forthcoming month.

One of the more significant news items in recent weeks has been the (depressing) announcement that the Trump administration plans to slash NASA's overall budget by 24% to $18.8bn, the lowest figure since 2015. Space and Earth science missions would bear the brunt of the cutbacks, losing more than 53% of what was allocated to them in 2024. If approved by Congress, longstanding NASA labs will close, deep-space missions, including many already underway, will be abandoned, and a new generation of exploration and discovery will never reach the launchpad.

Two of the most notable casualties will be the Mars sample return mission, in doubt for a while, and the Davinci+ and Veritas projects. The latter two, announced during the Biden administration and planned for the early 2030s, would have sent NASA back to Venus for the first time since 1989.

As well as the planetary missions, a significant number of other science projects that have been in the works for years face the axe. Perversely, at the same time as the administration proposes to slash NASA's overall budget, it also seeks to prioritise and grant extra funding to crewed spaceflight – particularly the first human mission to Mars, a stated focus of the president and his as-yet unconfirmed pick for NASA administrator, the entrepreneur Jared Isaacman.

A particularly acute loss to science would be the $3.9bn Nancy Grace Roman space telescope, a successor to the James Webb and Hubble telescopes. If the telescope, which is nearing completion and is set for launch before May 2027 is scrapped, 200,000 possible planets beyond our solar system may never be discovered, more than one billion galaxies might never be surveyed, and secrets of black holes, dark matter and dark energy never uncovered – not to mention the money already spent, which will be wasted. Is this really a sensible thing to do !?

John

skyUpdate
What's up this month?

The Solar System June

MERCURY: recently passed behind the Sun at superior solar conjunction. It begins the month not observable reaching its highest point in the sky during daytime and being 2° below the horizon at dusk. Visibility remains poor throughout the month, and it ends the month barely visible as an evening object, having recently passed greatest elongation E, and reaching its highest point in the sky during daytime and being no higher than 3° above the horizon at dusk.

VENUS: is visible throughout the month as a morning object, having recently passed greatest elongation west. It begins the month rising at 03:12 BST – 1 hour and 35 minutes before the Sun – and reaching an altitude of 9° above the E horizon before fading from view as dawn breaks at around 04:20. By the end of the month, it rises at 02:27 – 2 hours and 18 minutes before the Sun – and reaches an altitude of 15° above the E horizon before fading from view as dawn breaks at around 04:17.

MARS: is currently an early evening object, now receding into evening twilight. It begins the month visible from around 22:18 BST, 27° above the W horizon, as dusk fades to darkness. It will then sink towards the horizon, setting at 01:21.

By the end of the month, it more difficult to observe, reaching its highest point in the sky during daytime and being no higher than 10° above the horizon at dusk.

JUPITER: will soon pass behind the Sun at solar conjunction. It begins the month slightly difficult to observe, reaching its highest point in the sky during daytime and being no higher than 5° above the horizon at dusk. Visibility decreases as the month progresses until, by the end of the month, it is very difficult to observe as it will reach its highest point in the sky during daytime and be 2° below the horizon at dawn.

SATURN: is currently emerging from behind the Sun and begins the month difficult to observe. It will reach its highest point in the sky during daytime and be no higher than 10° above the horizon at dawn. Visibility improves as the month progresses and, by the end of the month, it is visible in the dawn sky, rising at 00:39 BST and reaching an altitude of 25° above the SE horizon before fading from view as dawn breaks at around 03:42.

URANUS: recently passed behind the Sun at solar conjunction and, throughout the month is extremely difficult to observe. At the beginning of the month, it will reach its highest point in the sky during daytime and be 11° below the horizon at dawn. By the end of the month, it will reach its highest point in the sky during daytime and is no higher than 0° above the horizon at dawn.

NEPTUNE: is currently emerging from behind the Sun and, throughout the month, will at best be very difficult to see. At the beginning of the month, it will reach its highest point in the sky during daytime and be no higher than 1° above the horizon at dawn. By the end of the month, although slightly easier to see, it will reach its highest point in the sky during daytime and be no higher than 16° above the horizon at dawn.

Notable Events:

Some observations will require a telescope, others will be visible with the naked eye. More information at: *https://in-the-sky.org*

June

1 Close approach of the Moon and Mars
Venus at dichotomy

2 The Great Globular Cluster in Hercules is well placed

3 Moon at First Quarter
Messier 12 is well placed

4 Conjunction of Venus and Eris

5 Messier 10 is well placed

6 Lunar occultation of Spica
Messier 62 is well placed

7 The Moon at apogee

10 Lunar occultation of Antares
Daytime Arietid meteor shower 2025

11 Full Moon
Messier 92 is well placed

12 The Moon at aphelion
Venus at aphelion

15 NGC 6388 is well placed

16 The Butterfly cluster is well placed
NGC 6397 is well placed

18 Moon at Last Quarter
The cluster IC 4665 is well placed

19 Close approach of the Moon, Saturn and Neptune
Conjunction of the Moon and Saturn

20 The Ptolemy cluster is well placed

21 June solstice

22 Conjunction of the Moon and Venus
The Lagoon Nebula is well placed

23 Close approach of the Moon and M45
The Moon at perigee
NGC 6541 is well placed

24 Jupiter at solar conjunction
Mercury at highest altitude in evening sky

25 The Moon at perihelion
New Moon

26 Jupiter at apogee

27 Conjunction of the Moon and Mercury
June Bootid meteor shower 2025

28 Mercury at dichotomy
The cluster NGC 6633 is well placed

29 Conjunction of Saturn and Neptune

30 Close approach of the Moon and Mars
Lunar occultation of Mars

July

1 Messier 22 is well placed
The cluster IC 4756 is well placed

2 Moon at First Quarter

3 Close approach of Mercury and M44
The Earth at aphelion
Lunar occultation of Spica

4 Conjunction of Venus and Uranus
Mercury at greatest elongation east
Neptune enters retrograde motion

5 The Moon at apogee

7 Lunar occultation of Antares

9 The Great Peacock Globular Cluster is well placed

10 The Moon at aphelion
Full Moon

13 Saturn enters retrograde motion

14 Mercury at aphelion

16 Close approach of the Moon, Saturn and Neptune
Conjunction of the Moon and Saturn

17 Messier 55 is well placed

18 Moon at Last Quarter

20 Close approach of the Moon and M45
The Moon at perigee

21 Conjunction of the Moon and Venus

22 Lunar occultation of Beta Tauri

23 Conjunction of the Moon and Jupiter

24 New Moon

25 134340 Pluto at opposition
The Moon at perihelion

28 Close approach of the Moon and Mars
Conjunction of the Moon and Mars
Piscis Austrinid meteor shower 2025

30 Southern δ-Aquariid meteor shower 2025
α-Capricornid meteor shower 2025

31 Lunar occultation of Spica

Collected Observations (and thoughts) – Gary Walker

M Planet X Again? - Posted 2 May

There have been studies by two groups of astronomers in Australia and Japan who, by using data from two probes, including the IRIS probe launched in 1983, think that they have detected Planet X, at the edge of the Solar System. It is thought to be at least 41-61 billion miles out!

If it is confirmed, then it orbits about 14X further out from the Sun than Pluto does. It is thought to be a Neptune type ice giant. Despite its size, it is not surprising that its detection has been so difficult - it will be extremely faint, as well as being very slow moving across the sky at only 3 arc minutes per year. Its "year" would have a duration of at least 10,000-20,000 years!

At present, absolute proof is not yet available, and earlier "detections" have proved not to be true. As always, time will tell!

A Huge Sunspot - Posted 4 May

In early May, there was a huge Sunspot crossing the Sun, with two umbrae and surrounded by an extensive penumbra. It was large enough to be visible to the naked eye (with an appropriate filter, of course!).

If Venus had a Moon and other things - Posted 10 May

This month's talk was by Greg Smye - Rumsby from the Royal Observatory, who gave a highly entertaining talk on "If Venus had a Moon". He was extremely flamboyant, spoke very well and amusingly, and often involved the audience in the talk (audience participation)!

As he stated, he is involved with the "Astronomy Now" magazine, being the technical Illustrator for it, and also responsible for the Design and Layout of the magazine!

As it happens, he is not the only member of the Astronomy Now magazine team to come to EAS; Colin Stuart, who writes for the "Absolute Beginners" section in the magazine, Owen Brazell, who writes the 'Deep Sky Challenge" and Nik Szymanek, who does the "Imaging Masterclass", have all also lectured to EAS.

As for Venus not having a moon, I have often seen a "moon" near Venus but, of course, it is just a ghost reflection, caused by the intense brilliance of Venus in a dark sky. I have seen it adopting the same phase as whatever the current phase of Venus is. That was obviously what the early observers saw, which made them think that Venus had a moon! It is surprising that even these early observers didn't realise this!

Greg displayed some amateur images of Mercury showing features that can be correlated by the Messenger space probe. This, again, shows how the quality of amateur observations and imagery has advanced in recent years, far surpassing even the professional photographs taken by the 200" telescope at Mount Palomar in the 1950's.

He spoke about how difficult it is to see Venus in the daytime sky. However, if Venus is very close to the Moon, i.e. the Moon is about to occult Venus, then, in these cases, it is very easy to see Venus with the naked eye. This is because one's eyes have focused on an easily visible Moon, so are also in focus for Venus!

Usually, of course, Venus is not close to the Moon, and it is difficult to focus your eyes "on infinity", which means that one tends not to see it.

Another way to see it is if a passing cloud moves near Venus. If you have already checked where Venus is, with binoculars, then spot Venus, nearby with the naked eye. I have managed to do this experiment!

In the past, at public appearances by Napoleon and George Lincoln, they, and the attending crowds became aware of Venus in the daytime sky, much to their amazement!

Naturally, you really need a deep blue sky in order to be able to see this, when the atmosphere is at its most transparent. Venus can be easily seen with binoculars in the daytime sky, but it is amazing how hard it is to FIND it, in the first place!

Incidentally, on the case of light reflections, I once saw a fuzzy object close to Jupiter, which I was convinced was a new comet! I actually got as far as telephoning the Irish Astronomer magazine, hoping that eternal fame was coming my way! Sadly, however, this comet, was again just due to the brilliance of Jupiter creating ghost reflections!

The best way of checking what's really happening, if you see one of these effects, is to turn your eyepiece around in the tube. If the "moon" or "comet" turns with it, then you know that it's only a ghost reflection!

For tonight's talk, we had a "full house", with at least 34 people attending. For once, there seemed to be no-one on Zoom!

This talk was unprecedented for one reason - nobody asked questions at the end of it!

Another one bites the dust! – Posted 29 May

Yet another SpaceX Starship rocket exploded on 27 May, less than an hour after launch. The Super Heavy booster also exploded. This is the 3rd consecutive failed attempt to launch this rocket and, once again, SpaceX used the phrase "a rapid unscheduled disassembly" to describe its demise.

As this project is expected to transport humans to Mars, it is not exactly reassuring!

Another large sunspot – Posted 29 May

On 27 May, another large Sunspot appeared, upon the Sun. It consisted of 3 separate umbrae, with 2 circular ones, in a pair, and a linear one below. The whole thing resembled a human face and was surrounded by an extensive penumbra.

New form of dark matter could solve decades-old Milky Way mystery

Acknowledgement: This article was written by Shyam Balaji, Postdoctoral Research Fellow of Physics, King's College London and was first published in THE CONVERSATION on 16 April 2025. It is republished in full under a Creative Commons Licence. The original article, with additional links and images can be found here: *https://theconversation.com/new-form-of-dark-matter-could-solve-decades-old-milky-way-mystery-252194*

Astronomers have long been puzzled by two strange phenomena at the heart of our galaxy. First, the gas in the central molecular zone (CMZ), a dense and chaotic region near the Milky Way's core, appears to be ionised (meaning it is electrically charged because it has lost electrons) at a surprisingly high rate.

Second, telescopes have detected a mysterious glow of gamma rays with an energy of 511 kilo-electronvolts (keV) (which corresponds to the energy of an electron at rest).

Interestingly, such gamma rays are produced when an electron and its antimatter counterpart (all fundamental charged particles have antimatter versions of themselves that

are near identical, but with opposite charge), the positron, collide and annihilate in a flash of light.

The causes of both effects have remained unclear, despite decades of observation. But in a new study, published in Physical Review Letters, we show that both could be linked to one of the most elusive ingredients in the universe: dark matter. In particular, we propose that a new form of dark matter, less massive than the types astronomers typically look for, could be the culprit.

Hidden process

The CMZ spans almost 700 light years and contains some of the most dense molecular gas in the galaxy. Over the years, scientists have found that this region is unusually ionised, meaning the hydrogen molecules there are being split into charged particles (electrons and nuclei) at a much faster rate than expected.

This could be the result of sources such as cosmic rays and star light that bombard the gas. However, these alone don't seem to be able to account for the observed levels.

The other mystery, the 511keV emission, was first observed in the 1970s, but still has no clearly identified source. Several candidates have been proposed, including supernovas, massive stars, black holes and neutron stars. However, none fully explain the pattern or intensity of the emission.

We asked a simple question: could both phenomena be caused by the same hidden process?

Dark matter makes up around 85% of the matter in the universe, but it does not emit or absorb light. While its gravitational effects are clear, scientists do not yet know what it is made of.

One possibility, often overlooked, is that dark matter particles could be very light, with masses just a few million electronvolts, far lighter than a proton, and still play a cosmic role. These light dark matter candidates are generally called sub-GeV (giga electronvolts) dark matter particles.

Such dark matter particles may interact with their antiparticles. In our work, we studied what would happen if these light dark matter particles come in contact with their own antiparticles in the galactic centre and annihilate each other, producing electrons and positrons.

In the dense gas of the CMZ, these low-energy particles would quickly lose energy and ionise the surrounding hydrogen molecules very efficiently by knocking off their electrons. Because the region is so dense, the particles would not travel far. Instead, they would deposit most of their energy locally, which matches the observed ionisation profile quite well.

Using detailed simulations, we found that this simple process, dark matter particles annihilating into electrons and positrons, can naturally explain the ionisation rates observed in the CMZ.

Even better, the required properties of the dark matter, such as its mass and interaction strength, do not conflict with any known constraints from the early universe. Dark matter of this kind appears to be a serious option.

The positron puzzle

If dark matter is creating positrons in the CMZ, those particles will eventually slow down and eventually annihilate with electrons in the environment, producing gamma-rays at exactly 511keV energy. This would provide a direct link between the ionisation and the mysterious glow.

We found that while dark matter can explain the ionisation, it may also be able to replicate some amount of 511keV radiation as well. This striking finding suggests that the two signals may potentially originate from the same source, light dark matter.

The exact brightness of the 511keV line depends on several factors, including how efficiently positrons form bound states with electrons and where exactly they annihilate though. These details are still uncertain.

A new way to test the invisible

Regardless of whether the 511keV emission and the CMZ ionisation share a common source, the ionisation rate in the CMZ is emerging as a valuable new observation to study dark matter. In particular, it provides a way to test models involving light dark matter particles, which are difficult to detect using traditional laboratory experiments.

In our study, we showed that the predicted ionisation profile from dark matter is remarkably flat across the CMZ. This is important, because the observed ionisation is indeed spread relatively evenly.

Point sources such as the black hole at the centre of the galaxy or cosmic ray sources like supernovas (exploding stars) cannot easily explain this. But a smoothly distributed dark matter halo can.

Our findings suggest that the centre of the Milky Way may offer new clues about the fundamental nature of dark matter.

Future telescopes with better resolution will be able to provide more information on the spatial distribution and relationships between the 511 keV line and the CMZ ionisation rate. Meanwhile, continued observations of the CMZ may help rule out, or strengthen, the dark matter explanation.

Either way, these strange signals from the heart of the galaxy remind us that the universe is still full of surprises. Sometimes, looking inward, to the dynamic, glowing centre of our own galaxy, reveals the most unexpected hints of what lies beyond.

Object of the month – The Great Hercules Cluster M13 - Martin Howe

Globular clusters are densely packed, spherical collections of stars that orbit the cores of galaxies. Each cluster typically contains tens of thousands to millions of stars, all bound together by gravity. Unlike open clusters, which are younger and loosely arranged, globular clusters are tightly concentrated and extremely old—often more than 10 billion years in age. It is still not well understood how these clusters form, but in some cases, it is thought that these might be the remnants of the cores of dwarf galaxies disrupted by the Milky Way.

These clusters are primarily found in a halo surrounding galaxies – our Milky Way hosts over 150 known globular clusters. Arguably the best one visible from the northern hemisphere is M13 in Hercules. This shines at magnitude +5.8, so technically visible to the naked eye from a very dark sky site, however you would need a pair of binoculars to spot this from London. Strictly speaking M22 in Sagittarius is brighter at magnitude +5.1 but it doesn't quite even reach an altitude of 15^{o} above the horizon as seen from London, so is not really a strong contender. By comparison, M13 culminates on the 15th of June around midnight at nearly 75^{o} in altitude! However, unfortunately, M13 pales in comparison to the two stand-out globular clusters in the sky which are only visible in the southern skies – Omega Centauri and 47 Tucanae, shining at magnitudes +3.6 and +4.0 respectively.

Located about 22,000 light-years away from Earth, M13 spans about 145 light-years across and could contain up to 300,000 stars. (Actual numbers are hard to estimate accurately, and estimates vary from "over 100,000" to up to 500,000!) Some basic maths would indicate that would equate to one star about every 5 cubic light years. This perhaps doesn't sound that dramatic, BUT, to put this into perspective, if we put our Sun in the centre of a sphere of radius 4.3 light years (ie, such that the nearest star, the alpha Centauri system, would be right on the edge of the sphere) then there would be just one star (ok, a triple star,…) within the 333 cubic light years of that sphere!

M13 was first catalogued in 1714 by Edmond Halley (best known for Halley's Comet), and later added to Charles Messier's famous list of deep-sky objects. In 1974, M13 became the target of humanity's first attempt to send a message to potential extraterrestrial life. The Arecibo Observatory in Puerto Rico transmitted a radio signal toward M13 containing information about Earth and humanity. One might question the choice of targets for our first inter-stellar message – yes it was a lot of stars to target in one go, but how conducive is such a cluster to being able to form planets, and even if they could, these systems would be upwards of 10 billion years old – would life even still exist? Can you decipher the message represented here? Remember it would have been transmitted as a continuous stream of 1,679 zeroes and ones, so you would also have to know to assemble those into 73 lines of 23 characters! Otherwise it would appear as complete gibberish (although one might say, apart from the recognisable form of the human and the crude representation of the Arecibo radio telescope at the

bottom, the rest of the symbols all look gibberish anyway!) You can read more here on the SETI web page: https://www.seti.org/seti-institute/project/details/arecibo-message

Back down to Earth, and in the twilight skies of June, M13 (and other bright globular clusters) provide at least one suitable type of target to observe and image whilst we wait for the summer solstice to pass.

The image below was taken with a 127mm refractor, coupled with an ASI294MC one-shot colour CMOS camera fitted with an L-Pro light pollution filter. It comprised of 30 x 60-second exposures.

Intergalactic Star Wars synchrotron ray-gun – John Pillar

Messier 87 (M87) is a giant amongst giants – it is one of the largest galaxies in our known universe…

- it is a supergiant elliptical galaxy of several trillion stars
- has a diameter of 132000 light-years,
- may be 200 times the mass of the Milky Way (if you include dark matter mass)
- has a swarm of at least 12000 globular clusters
- is 54 million light-years away
- is a strong source of radio waves
- has an active super massive black hole at its core
- is emitting a super-energetic jet of plasma at near light-speed – **a cosmic scale Star Wars light sabre**

M87 is located in the constellation Virgo (Figure 1) and was discovered by the French astronomer Messier who catalogued it as a nebula – a fuzzy blob he didn't want to be

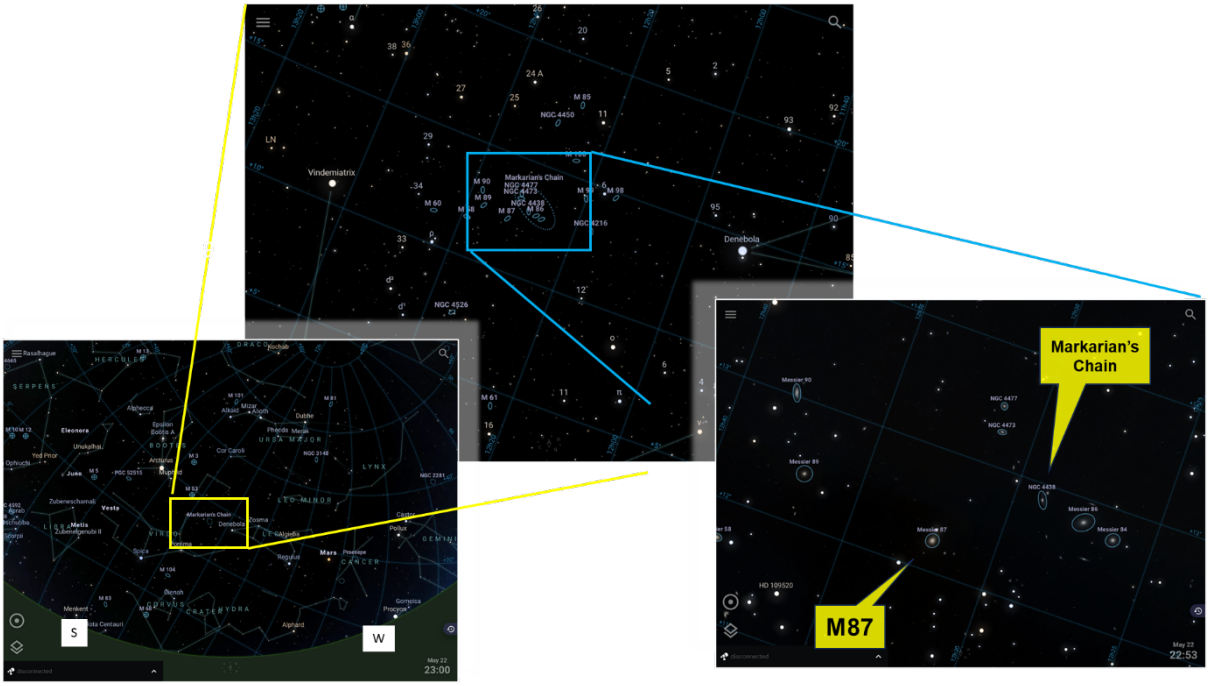


Figure 1: Location of M87 in Virgo. At the rear end of Leo, and close to the Markarian's chain of galaxies in Virgo

mistaken for a comet. M87 is a key member, maybe the central body, of the Virgo supercluster of ~2000 galaxies which includes the Milky Way and the beautiful string of pearls… Markarian's Chain, a line of galaxies visible in a small telescope or binoculars on a good night from Ranmore (perhaps on a February-March club viewing session we can seek it out 😊).

M87 is an elliptical galaxy (**Error! Reference source not found.**) – in a backyard telescope it is a blob of fuzzy light with a bright core, with no spiral arms or dust lanes. In 1922 Hubble classified M87 as an E0 galaxy – the E is for elliptical and the number (zero in this case) describes the degree of ellipticity (in a normal range of 0 to 7). Elliptical galaxies are believed to have formed by galaxy mergers – and M87 is believed to have absorbed a medium-sized star forming galaxy about 1 billion years ago, including a population of young,

blue stars. The elliptical shape of M87 is stable because its stars orbit the core in random directions, like bees around a honeypot, with no particular orbital direction.

Figure 2: Messier 87. Imaged with a Celestron 9.25" SCT. Stacked from the best 100 frames of 180x2 minute images taken over several nights.

M87 has been the focus of much scientific research. In 1918 an astronomer, Heber Curtis, studying M87, noted a 'curious straight ray, apparently connected with the nucleus by a thin line of matter'. M87 was recognised as a strong radio source in 1947, and in 1953 the linear 'jet' of material observed by Curtis was suggested as the cause. At around this time the 200" Hale Telescope on Mount Palomar detected an astounding cloud of 12000 globular clusters around M87 (may be an underestimate) – whereas our Milky Way has around 150. Further earth-bound telescopic studies in the late 1960s, plus rocket launched observations, confirmed that the radio, gamma-ray and X-ray source was the M87 active galactic nucleus and the linear jet of material. In 1993 the Hubble telescope demonstrated that M87 has a super massive black hole of 2.4 billion Solar masses at its centre, and more recently the Event Horizon Telescope revealed a direct image (Figure 3) of the event horizon of the M87 black hole and upgraded the mass estimate to 6.5 billion Solar masses… one of the highest known masses for such an object.

Figure 3: EHT image showing the dark central shadow of the M87 black hole, and the bright emission ring

M87 has an active galactic nucleus (AGN). These occur whenever a supply of material for accretion comes within the sphere of influence of the central black hole. The material gets sucked inward, forming an accretion disk around the black hole, and heating caused by

internal friction creates intense heat and light. Some of the material is ejected along incredibly strong magnetic fields into jets and winds. M87 experiences an infall of 2 to 3 solar masses of material per year, most of which gets accreted into the core region and powers the intense electromagnetic radiation.

The linear jet is shown in Figure 4, showing a Hubble image and a backyard image from my place in Dorking. In order to show the jet I had to tweak the processing (stretching) of the raw image such that most bright objects in the image are not properly displayed. The jet

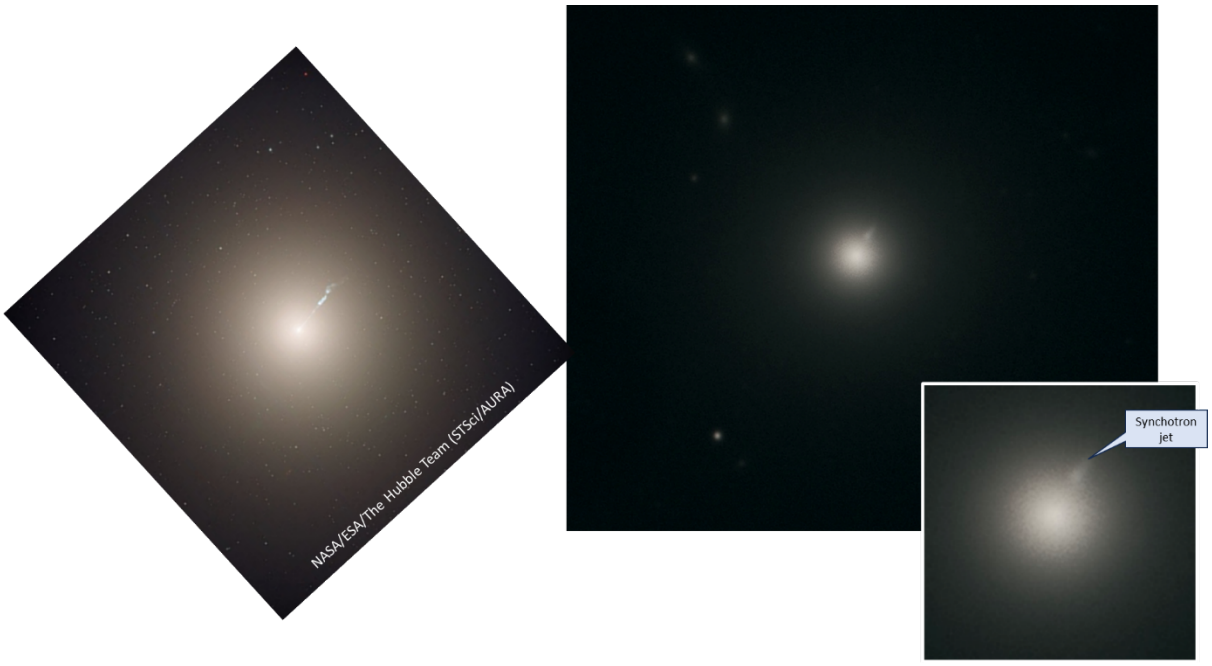


Figure 4: Images of the high-energy jet shooting out from the centre of M87. The image on the left is from Hubble, and right is my backyard image (and zoomed inset). (I've rotated the Hubble image so it's in line with my image on the right). The jet of material is pointing up to approximately 1:00 o'clock.

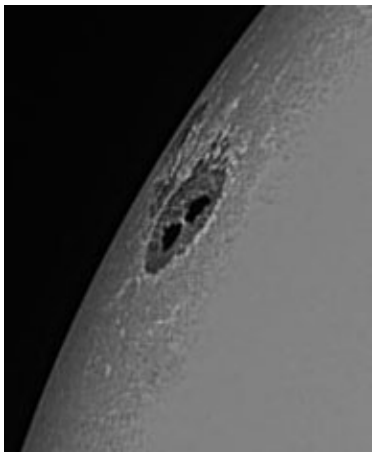
originates in the disk of superheated gas swirling around the central black hole and is propelled and concentrated by the intense, twisted magnetic fields trapped with this plasma. The light is generated by synchrotron radiation, produced by electrons in a super intense magnetic field. Synchrotron emissions are a very rare indicator of ultra-extreme conditions and are seen in only a few other celestial objects like the Crab Nebula (Messier 1).

The Hubble telescope has shown the jet is an active, violent churning mass of energetic matter, focussed into a narrow beam… a 'knot' of concentrated matter within the beam has increased in X-ray emission intensity by 50 times over a period of a few years.

The visible 5000 light-year long jet seems to race outward at five times the speed of light – an impossible speed. In fact, the jet is moving at a little less than the speed of light, but because time slows at near light speed the GCSE physics 'distance / time = velocity' equation gives an invalid, impossibly fast, superluminal, result.

The total energy of the M87 jet is extreme – many times that produced in the Milky Way in one second. Indeed, the M87 galaxy wields a synchrotron light-sabre of immense intergalactic proportion and power.

The Sun – Active Region 4079 – Ron Johnson



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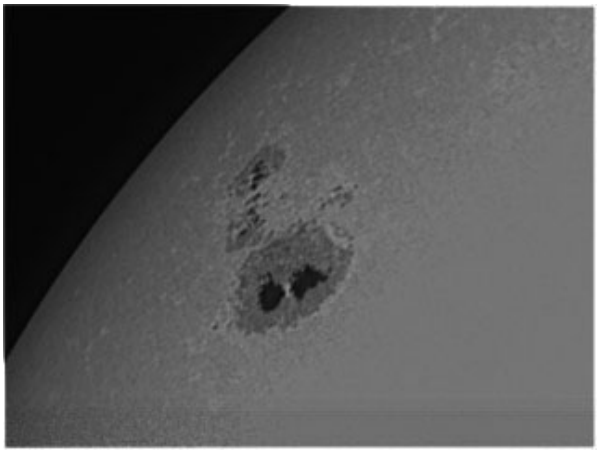

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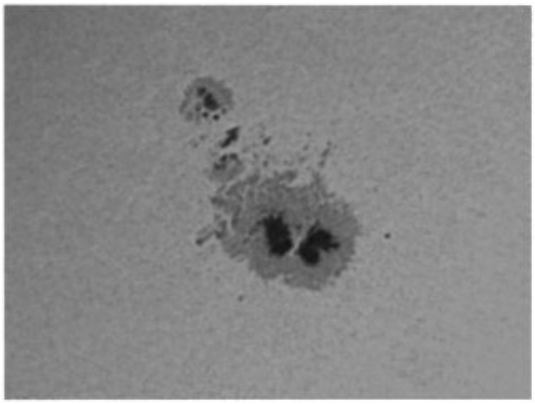

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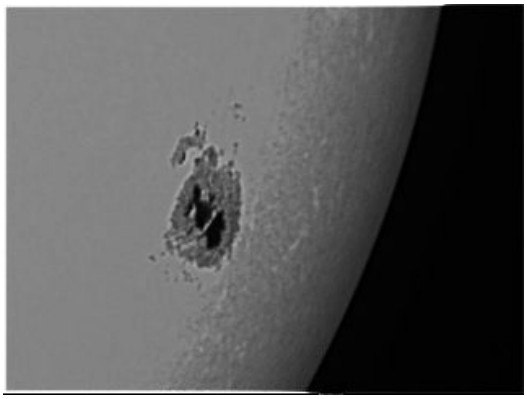

9 May 2025. 09:56UT

The four images show the development and decay of a large sun spot group over a ten-day period. Both umbra areas are large enough to contain the Earth.

Up Next:

NEXT MEETING: 8pm Friday 13 June – Nonsuch High School

Sian Prosser from the Royal Astronomical Society (RAS) will talk about "Pioneering Women Astronomers".

As usual, there will also be a presentation on the sky at night for the coming month.

NEXT USER GROUP:
Suspended until further notice.

NEXT DENBIES OBSERVING SESSION:

The next sessions, allowing for moon rise & set times and cloud conditions, should be sometime around the new moon which is on 25 June.

The precise date and timings of any session will be advised by email and WhatsApp a few days in advance but should be within the period 23 – 27 June.

AD HOC OBSERVING AT WARREN FARM:

These will be at short notice when the weather is favourable, and may replace, or be additional to, sessions at Denbies. Please watch our WhatsApp feed for alerts