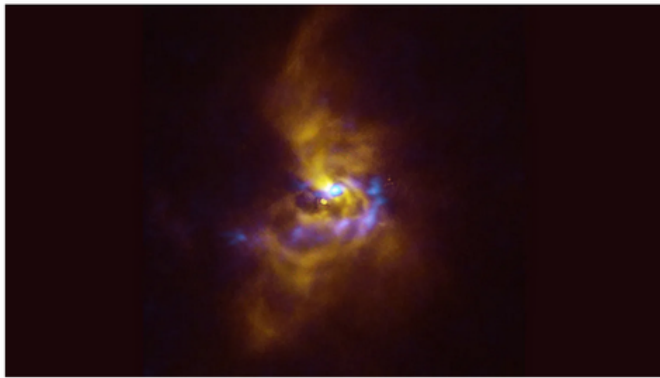


SKYWATCHER NEWSLETTER



Planets are likely forming in the dusty material that surrounds star V960 Mon, which is at the center of this simulated image. Credit: ESO/ALMA (ESO/NAOJ/NRAO)/Weber et al.

LATEST NEWS

In a recent EOS article it reports that Astronomers think they've spotted the formation of one or more planets around a star 5,000 light-years away, in the constellation Monoceros. In a recent study, a group of researchers discovered lumps of dust 3-10 times as massive as Earth nestled in a series of spiral arms around the star.

The researchers, led by astrophysicist [Philipp Weber](#) from the University of Santiago in Chile, speculated that the dust clumps could be the seeds of gas giant planets.

When the lumps become massive enough, they will have sufficient gravitational attraction to rapidly absorb gas from their surroundings, growing to Jupiter-mass in just a few thousand years. This way of forming planets has long been hypothesized, but the discovery is the first direct evidence of the process. The researchers published their findings in the [Astrophysical Journal Letters](#).

Read the full article at:

<https://eos.org/articles/astronomers-may-have-spotted-the-birth-of-a-planet>

Until next month... SLK



Looking Beyond the Stars

By: Brian Kruse

Looking up in awe at the night sky, the stars and planets pop out as bright points against a dark background. All of the stars that we see are nearby, within our own Milky Way Galaxy. And while the amount of stars visible from a dark sky location seems immense, the actual number is measurable only in the thousands. But what lies between the stars and why can't we see it? Both the Hubble telescope and the James Webb Space Telescope (Webb) have revealed that what appears as a dark background, even in our backyard telescopes, is populated with as many galaxies as there are stars in the Milky Way.

So, why is the night sky dark and not blazing with the light of all those distant galaxies? Much like looking into a dense forest where every line of sight has a tree, every direction we look in the sky has billions of stars with no vacant spots. Many philosophers and astronomers have considered this paradox. However, it has taken the name of Heinrich Wilhelm Olbers, an early 19th century German astronomer. Basically, Olbers Paradox asks why the night sky is dark if the Universe is infinitely old and static – there should be stars everywhere. The observable phenomenon of a dark sky leads us directly into the debate about the very nature of the Universe – is it eternal and static, or is it dynamic and evolving?

It was not until the 1960s with the discovery of the Cosmic Microwave Background that the debate was finally settled, though various lines of evidence for an evolving universe had built up over the previous half century. The equations of Einstein's General Theory of Relativity suggested a dynamic universe, not eternal and unchanging as previously thought. Edwin Hubble used the cosmic distance ladder discovered by Henrietta Swan Leavitt to show that distant galaxies are moving away from us – and the greater the distance, the faster they're moving away. Along with other evidence, this led to the recognition of an evolving Universe.

The paradox has since been resolved, now that we understand that the Universe has a finite age and size, with the speed of light having a definite value. Here's what's happening – due to the expansion of the Universe, the light from the oldest, most distant galaxies is shifted towards the longer wavelengths of the electromagnetic spectrum. So the farther an object is from us, the redder it appears. The Webb telescope is designed to detect light from distant objects in infrared light, beyond the visible spectrum. Other telescopes detect light at still longer wavelengths, where it is stretched into the radio and microwave portions of the spectrum.



LOCAL EVENTS

Sep 20 - CADAS - Gadgets and Gizmos Evening followed by Observing Session

Oct 3 - WAS - AGM and the Bob Mizon Memorial Lecture presented by Barry Fitzgerald – A New Look at an Old Moon

Oct 18 - CADAS - Kate Earl Prehistoric Astronomy

Nov 7 - WAS - Robert Massey – (RAS) Satellite Constellation update

Dec 5 - WAS - Christmas Social and members' 10-min talks

Dec 20 - CADAS - Christmas Social and members' short talks

VISIT OUR WEBSITE FOR THE LATEST CLUB INFORMATION

The Milky Way wasn't always a spiral —and astronomers may finally know why it 'shape-shifted'

News By [Robert Lea](#) ([space.com](#))

A 100-year-old mystery surrounding the "shape-shifting" nature of some galaxies has been solved, revealing in the process that our Milky Way galaxy did not always possess its familiar spiral appearance.

Astronomer Alister Graham used old and new observations to show how the evolution of galaxies from one shape to another takes place —a process known as galactic speciation. The research shows that clashes and subsequent mergers between galaxies are a form of "natural selection" that drives the process of cosmic evolution.

This means that the [Milky Way's](#) history of cosmic violence is not unique to our home galaxy. Nor is it over. "It's survival of the fittest out there," Graham [said in a statement](#). "Astronomy now has a new anatomy sequence and finally an evolutionary sequence in which galaxy speciation is seen to occur through the inevitable marriage of galaxies ordained by gravity."

Galaxies come in an array of shapes. Some, like the Milky Way, are composed of arms of well-ordered stars revolving in a spiral shape around a central concentration or "bulge" of stellar bodies. Other galaxies like [Messier 87](#) (M87) are composed of an ellipse of billions of stars chaotically buzzing around a disordered central concentration.

Since the 1920s, astronomers have classified galaxies based on a sequence of varying galaxy anatomy called the "Hubble sequence." Spiral galaxies like ours sit at one end of this sequence, while elliptical galaxies like M87 sit at the other. Bridging the gap between the two are elongated sphere-shaped galaxies, lacking spiral arms, called lenticular galaxies. But what this widely-used system has lacked until now were the evolutionary paths that link one galaxy shape to another.

Reshaping galactic evolution

To cleave out evolutionary paths on the Hubble sequence, Graham looked at 100 galaxies near to the Milky Way in optical light images collected by the [Hubble Space Telescope](#) and compared them to infrared images from the Spitzer Space Telescope. This allowed him to compare the mass of all the stars in each galaxy to the mass of their central supermassive [black holes](#).



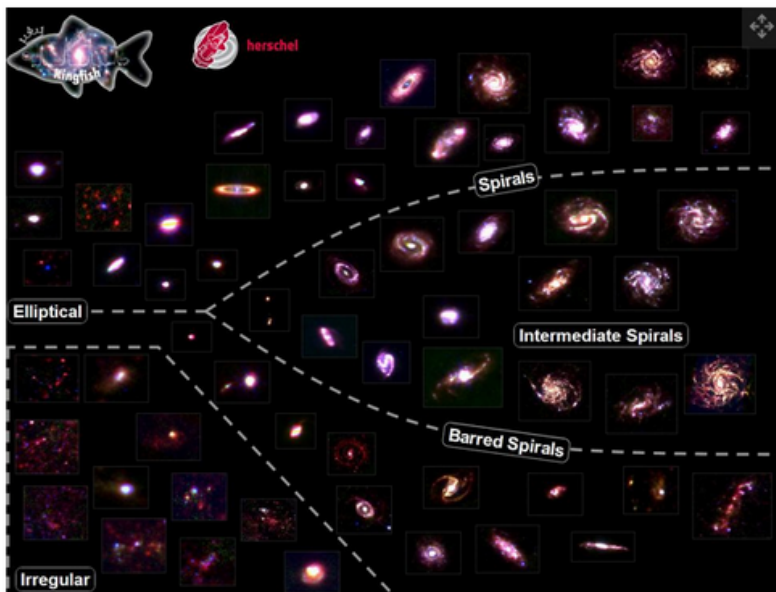
The Milky Way wasn't always a spiral —and astronomers may finally know why it...

A century-old mystery of how galaxies change shapes has been solved by considering 'survival of the fittest' collisions between cosmic titans

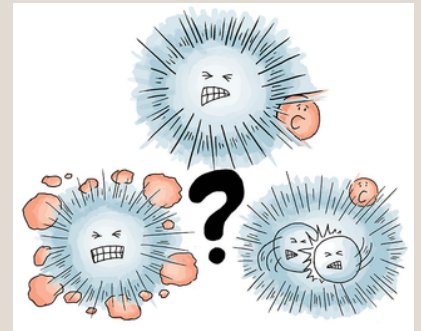
This revealed the existence of two different types of bridging lenticular galaxies: One version that is old and lacks dust, and the other that is young and rich in dust.

Read the rest of the article at: <https://www.livescience.com/space/cosmology/the-milky-way-wasnt-always-a-spiral-and-astronomers-may-finally-know-why-it-shape-shifted#xenforo-comments-17921>

Graham's research is published in the journal Monthly Notices of the Royal Astronomical Society.



The Hubble tuning fork of galactic evolution as created by Key Insights on Nearby Galaxies: A Far-Infrared Survey with Herschel survey (Image credit: C. North, M. Galametz & the Kingfish Team)



WAC Upcoming Events

13TH OCTOBER - RICHARD MILES: THE HISTORY OF AN EXPLOSIVE COMET (FACE TO FACE AND ZOOM)

10TH NOVEMBER SHERI KARL (FACE TO FACE AND ZOOM)

8TH DECEMBER BARRY FITZGERALD (FACE TO FACE AND ZOOM)

MORE TO COME!!

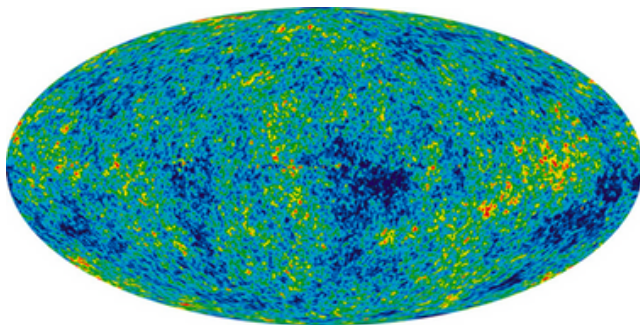
Continued from page 1:

The farther back we look, the more things are shifted out of the visible, past the infrared, and all the way into the microwave wavelengths. If our eyes could see microwaves, we would behold a sky blazing with the light of the hot, young Universe – the Cosmic Microwave Background.

The next time you look up at the stars at night, turn your attention to the darkness between the stars, and ponder how you are seeing the result of a dynamic, evolving Universe.

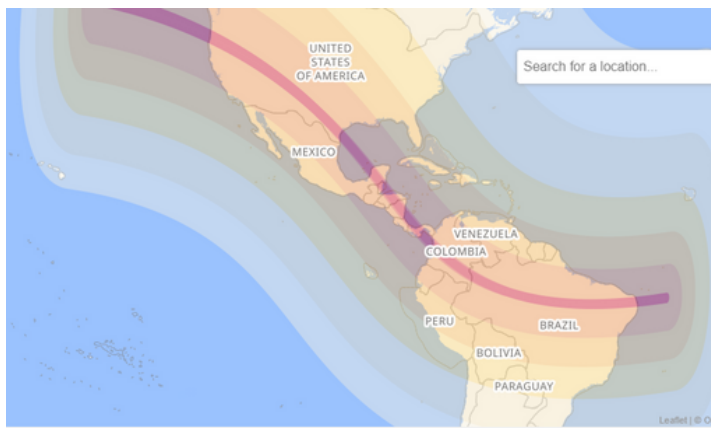
Deep Field image from page 1:

NASA's James Webb Space Telescope has produced the deepest and sharpest infrared image of the distant universe to date. Known as Webb's First Deep Field, this image of galaxy cluster SMACS 0723 is overflowing with detail. This slice of the vast universe is approximately the size of a grain of sand held at arm's length by someone on the ground. (Image Credit: NASA, ESA, CSA, STScI) <https://bit.ly/webbdeep>



Left: The oldest light in the universe, called the cosmic microwave background, as observed by the Planck space telescope is shown in the oval sky map. An artist's concept of Planck is next to the map. The cosmic microwave background was imprinted on the sky when the universe was just 380,000 years old. It shows tiny temperature fluctuations that correspond to regions of slightly different densities, representing the seeds of all future structure: the stars and galaxies of today. (Image credit: ESA and the Planck Collaboration - D. Ducros) <https://go.nasa.gov/3qC4G5q>

PRACTICAL OBSERVING



Saturday, Oct. 14, 2023, annular solar eclipse will cross North, Central, and South America. It will be visible in parts of the United States, Mexico, and many countries in South and Central America.

The Sun is never completely blocked by the Moon during an annular solar eclipse. Therefore, during an annular eclipse, it is never safe to look directly at the Sun without specialized eye protection designed for solar viewing. You can also use an indirect viewing method, such as a pinhole projector.

An annular solar eclipse happens when the Moon passes between the Sun and Earth while it is at its farthest point from Earth. Because the Moon is farther away from Earth, it appears smaller than the Sun and does not completely cover the star. This creates a "ring of fire" effect in the sky.

Observe the event remotely!

Ring of Fire Annular Eclipse - Slooh Event Starts the morning of October 14 at 11 AM EDT (15:00UTC)

LIVE RING OF FIRE ANNULAR ECLIPSE Slooh will be broadcasting a live Star Party on Saturday, October 14 at 11 AM EDT (15:00UTC) with commentary and live telescope views of the Ring of Fire annular eclipse. Everyone can watch on Slooh's social channels, and members can interact with Slooh's experts and capture images from the live telescope feeds.

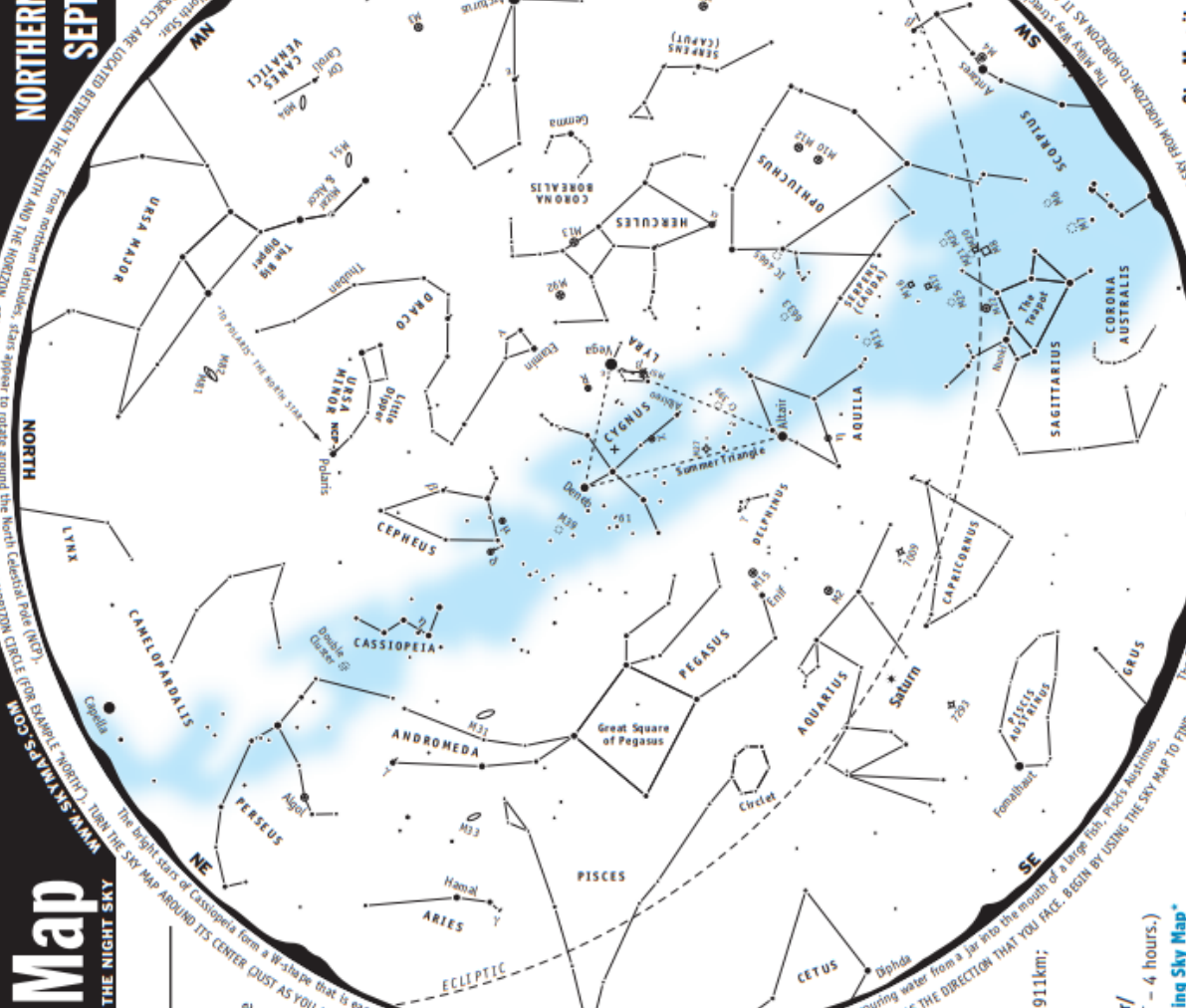
<https://www.slooh.com/families>

Skymaps.com—Feel free to download the full article directly each month.

NORTHERN HEMISPHERE SEPTEMBER 2023

SKY MAP SHOWS HOW
THE NIGHT SKY LOOKS

EARLY SEPT 9 PM
LATE SEPT 8 PM
SKY MAP DRAWN FOR
A LATITUDE OF 40°
NORTH AND IS
SUITABLE FOR
LATITUDES UP
TO 15° NORTH
OR SOUTH
OF THIS



The Evening Sky Map

FREE - EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

Sky Calendar - September 2023

- 4 Moon near Jupiter at 18h UT (morning sky). Mag. -2.6.
- 5 Moon near the Pleiades at 22h UT (morning sky).
- 6 Mercury at inferior conjunction with the Sun at 11h UT. The innermost planet passes into the morning sky.
- 6 Last Quarter Moon at 22:21 UT.
- 9 Moon near Castor at 22h UT (morning sky).
- 10 Moon near Pollux at 4h UT (morning sky).
- 11 Moon near Beehive cluster M44 at 9h UT (morning sky).
- 12 Moon at apogee (farthest from Earth) at 16h UT (distance 406,291km; angular size 29.4').
- 13 Moon near Regulus at 7h UT (morning sky).
- 14 Moon near Mercury at 0h UT (13° from Sun, morning sky). Mag. 1.9.
- 15 New Moon at 1:39 UT. Start of lunation 1246.
- 16 Mercury 8.0° ESE of Regulus at 5h UT (23° from Sun, morning sky). Mags. 1.1 and 1.4.
- 16 Moon near Mars at 21h UT (19° from Sun, evening sky). Mag. 1.7.
- 17 Moon near Spica at 19h UT (evening sky).
- 18 Venus at its brightest at 12h UT (40° from Sun, morning sky). Mag. -4.5.
- 21 Moon near Antares at 10h UT (evening sky). Occultation visible from east Asia.
- 22 Mercury at greatest elongation west at 13h UT (18° from Sun, morning sky). Mag. -0.4.
- 22 First Quarter Moon at 19:31 UT.
- 23 September equinox at 6:50 UT. The time when the Sun reaches the point along the ecliptic where it crosses into the southern celestial hemisphere marking the start of autumn in the Northern Hemisphere and spring in the Southern Hemisphere.
- 27 Moon near Saturn at 4h UT (evening sky). Mag. 0.5.
- 28 Moon at perigee (closest to Earth) at 1:02 UT (distance 359,911km; angular size 33.2').
- 29 Full Moon at 9:57 UT.

The bright stars of Cassiopeia form a W-shape that is easy to recognize. The ancient constellation of Aquarius represents a young man pouring water from a jar into the mouth of a large fish. Find Aquarius by using the sky map to find a bright star pattern in the sky.

The ecliptic is the path that the Sun, Moon, and planets follow across the sky. The ecliptic is shown as a dashed line on the map.

The compass direction that appears along the bottom of the map is the same as the direction that you face when you are doing now.

The sky map shows the night sky as it appears on certain dates and times. The center of the map is the part of the sky directly overhead (zenith) and the outer circle is the horizon.

Use the Big Dipper (or Plough) to find Polaris (the North Star). The Big Dipper is a constellation in the Northern Hemisphere.

From the center of the map, draw a line to the horizon. This line is the meridian. The meridian is the line of celestial longitude that passes through the zenith.

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- Symbols**
- Galaxy
 - Double Star
 - Variable Star
 - Diffuse Nebula
 - Planetary Nebula
 - Open Star Cluster
 - Globular Star Cluster

- Star Magnitudes**
- 1
 - 0
 - 1
 - 2
 - 3
 - 4

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* Helping curious minds worldwide to explore the wonders of the Universe