“What’s the real reason you can’t go faster than the speed of light?”

- The answer commonly given to the question, “Why can’t we travel faster than the speed of light?” involves the mass of objects becoming infinitely large. That answer is fine, but there’s a better one.
- Space and time are unified into a single entity known as spacetime. And every object travels through spacetime at the speed of light.
- Even a stationary object is moving at the speed of light, but it is moving only through time and not space.

Albert Einstein is frequently regarded as one of the most influential scientists of all times, with brilliant insights about the laws of nature. However, his work has one very disappointing consequence, especially for science buffs who hope one day to travel to distant stars. His theory demonstrated that there is a fastest speed in the Universe: the speed of light. That means the shortest possible round-trip to the nearest star will take nearly a decade.

But just how does that work? Even the most informed science enthusiasts often have a wrong, or at least incomplete, understanding of why you can't go faster than light.

Click here to read the entire article.

link submitted by Harold Boulette

" Fiery hourglass star seen by Webb"

Astronomers have used the Webb space telescope to catch a newly forming star in the shape of an hourglass. They said the star itself is hidden from view within the *neck* of this hourglass shape. But, if you look closely at the image above, you can see a thin dark line, right in the middle of the *neck*. It's a protoplanetary disk, in which new planets are forming. It probably looks much as our sun did from afar, 4 1/2 billion years ago.

ESA said this dark disk in the neck of the hourglass is about

the size of our solar system. Within it, clumps of gas and dust particles are sticking together, making the beginnings of planets.

Read the full article here.

“New sun-hugging asteroids: ‘Biggest in 8 years’”

New sun-hugging asteroids

NSF's NOIRLab, based in Tucson, Arizona, said on Monday (October 31, 2022) that astronomers used a special camera on a telescope in Chile to discover three new near-Earth asteroids *hiding* in the inner solar system. Why hiding? It's because they're talking about the part of the solar system closer to the sun than Earth or Venus. And that's a realm of space where asteroids are tough to spot. Because – when astronomers look that way – they're also looking into our sun's glare.

These astronomers said they took advantage of the "brief yet favorable observing conditions during twilight" – when the sun was just below the horizon, blocked from view – to find the sun-hugging asteroid trio. So their special camera was capable of picking faint objects out of the bright twilight.

Read the entire article here.

link submitted by Harold Boulette

"Cosmic Wonders on display in New Hubble video"

The Space Telescope Science Institute (STScI) released a new video of Hubble images this week (October 25, 2022). The video is titled *Cosmic Wonders*. It is, in essence, a tour through some bewitching phenomena in our universe. And with this in mind, it includes 18 visualizations of everything from nearby nebulae to deep and distant galaxies.

Learn more about the gorgeous objects that the video focuses on. For example, in the first half of the video you'll see the following:

The Bubble Nebula. See winds and radiation from a massive star.

Ultra Deep Survey Field. This dense cluster of galaxies 6 billion light-years away has satellite galaxies at more than twice that distance.

Arp 273. The two galaxies interact to form a shape like a long-stemmed rose.

The Lagoon Nebula. This star-forming region in the constellation Sagittarius lies toward the center of our Milky Way.

Click here to see the video and complete article on EarthSky News.

“Astrobiologists Say Planet Earth Itself Might Actually Be An Intelligent Being”

Do planets have intelligence? That seems to be the main idea behind a new hypothesis put forth by astrobiologists: that planets are also intelligent beings. This thought experiment is based on the idea that planets like Earth have undergone changes due to the collective activity of life, such as that of microorganisms or plants, which has given them the ability to develop a life of their own.

The research, which was published in the International Journal of Astrobiology, establishes a framework for evaluating a planet’s intelligence. To think of intelligence in terms of an intergalactic body rather than sentient creatures like humans is a startling prospect. But in a way, a planet can have a “**green mind**“; this paradigm offers fresh perspectives on how to deal with crises like climate change and technological upheaval.

Click here to see the complete article.

“Record-breaking ‘tsunami’ of gravitational waves detected”

This illustration shows merging two black holes. IMAGE CREDIT: NASA

The ripples created by massive cosmic collisions have reached Earth after traveling across the universe for billions of years. Scientists have detected the largest number of these gravitational waves since the cosmic events were first discovered in 2015, according to new research.

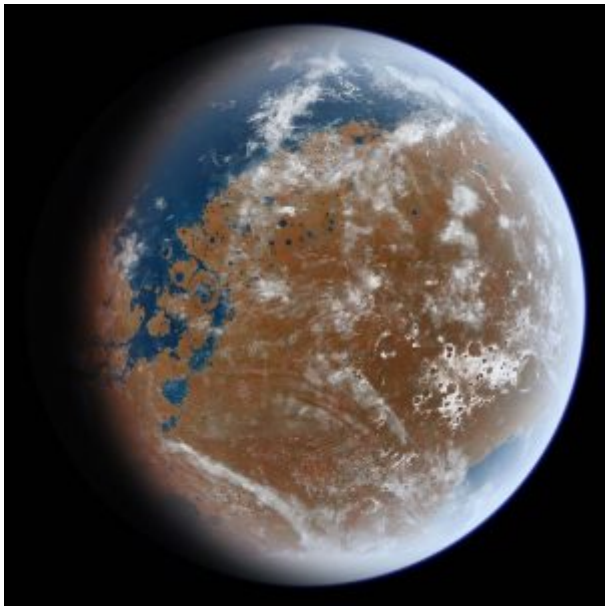
Astronomers made 35 new detections of gravitational waves, or ripples in space-time, between November 2019 and March 2020. The cosmic waves were largely created by pairs of merging black holes, but several were born of rare collisions between dense neutron stars and black holes.
It's a giant leap from when just three gravitational waves were detected between 2015 and 2016. This brings the known number of detected gravitational waves to 90 from 2015 to 2020.

They were detected by the Laser Interferometer Gravitational-Wave Observatory, or LIGO, in the US, and the Virgo gravitational-wave observatory in Italy. The results of the latest observation campaign were published Monday.

Read the entire article posted November 9, 2021 and watch a video on gravitational waves (4:43) at cnn.com.

link submitted by Gene Savoy Jr.

Was Mars a Blue Water World Before Earth?



Mars may once have been a blue and water-covered world *long before* Earth even finished forming. That's the tantalizing finding that researchers from Arizona State University and Stanford University announced on October 18, 2022. Scientists have seen evidence for early lakes, flowing rivers and even oceans in Mars' past. But now, new atmospheric models plus data from the Curiosity rover support the possibility of an early atmosphere of *molecular hydrogen*.

The researchers published the peer-reviewed results in the October 1, 2022, (Volume 595) edition of *Earth and Planetary Science Letters*. There is also a free preprint version available on arXiv.

[Read the entire article online at EarthSky.]

link submitted by Gene Savoy Jr.

“Michael Clarage: Solar Gamma Rays—Not So Much | Thunderbolts”

The Sun puts out very few gamma rays as detailed in “The Sun

Is Spitting Out Strange Patterns of Gamma Rays—and No One Knows Why" posted on Scientific American. It seems there are very few gamma rays in the entire Universe, at least in comparison to the number of photons that we see with our eyes.

Astrophysicist and Lead Scientist of The SAFIRE Project, Michael Clarage, PhD—reviewed Donald E. Scott's and Hannes Alfvén's models of the Sun's electrical connection to its larger environment, and discussed gamma ray data with Wal Thornhill—explains how electricity can help us think through the gamma ray mystery.

Watch the entire video posted December 25, 2021 at youtube.com. (18:54)

SOURCE STORY: Scientific American, Space & Physics – 03/28/2018, "The Sun Is Spitting Out Strange Patterns of Gamma Rays—and No One Knows Why"

links submitted by Robert Petrovich

"Searching for the sunken kingdom of Dwarka"

The city of Dwarka is one of the seven holy pilgrimage centers in India. It is the only place which is contemporary with the events described in the epic Mahabharata, where it is described as the ancient kingdom of Krishna. It is written that upon Krishna's death the city was sunk beneath the Arabian sea.

Today, archaeologists searching for the lost kingdom believe they have found evidence of its existence off the coast of the modern-day Dwarka, and are trying to understand what could have caused it to be lost beneath the sea.

Watch the entire video posted December 16, 2021 on bbc.com. (7:10)

link submitted by Gene Savoy Jr.

The Longest Days Begin the Shortest Season

We generally think of the Winter Solstice as the shortest day of the year, but that is only if you're just talking about the period between sunrise and sunset. If you are talking about the entire day, from noon to the next noon, you get a different result. View a video with more details here.

On the other hand, the Winter Solstice starts the shortest season of the year.

Here are the lengths of the astronomical seasons:

> *December solstice to March equinox: 88.99 days*
> *March equinox to June solstice: 92.76 days*
> *June solstice to September equinox: 93.65 days*
> *September equinox to December solstice: 89.84 days*
>
> *See the video here.*

Both videos from EarthSky News