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Top News

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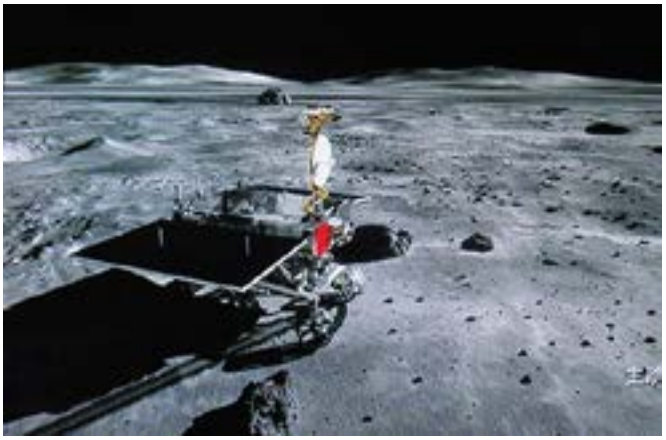
China launches historic mission to the moon's far side



This TV grab taken by CCTV (China Central Television) on Dec. 15, 2013, shows China's first moon rover Yutu, or Jade Rabbit, taken by the camera on the Chang'e 3 moon lander.Zhang bo / Zhang bo - Imaginechina file

China launched the world's first mission to the far side of the moon today.

The Chang'e 4 robotic spacecraft lifted off Friday at around 1:23 p.m. ET (2:23 a.m. in China, on Saturday, Dec. 8), the New York Times reported.

The spacecraft launched atop a Long March 3B rocket from the Xichang Satellite Launch Center in the southwestern province of Sichuan. Plans call for Chang'e 4, which carries both a lander and a lunar rover, to touch down on the moon in early January.

"Anything we land on the moon is significant, but this one is especially so," David Paige, a planetary scientist at the University of California, Los Angeles, said of the mission.

It is a successor to China's Chang'e 3 mission, which successfully placed a lander and rover on the moon's Earth-facing side in 2013.

Chang'e 4's planned landing site lies within the South Pole-Aitken basin. The sprawling basin, which is 8 miles deep and more than 1,500 miles across, is one of the moon's largest and oldest impact craters.

"This crater has the potential to tell us something about the creation of the Earth and moon system — how the moon formed, as well as how the early solar system evolved," Paige said. "Understanding exactly when this basin formed and how it relates to other lunar impact basins is key."

The lander and rover are each equipped with cameras. The rover also sports a ground-penetrating radar instrument designed to help scientists gain an understanding of the moon's geological history as well as a spectrometer to study its chemical composition.

Chang'e 4 won't be returning any moon rocks to Earth, but a successor mission planned for 2019, Chang'e 5, will. This would be the first time that materials from the moon have been brought back to Earth since the ...Read More...

No Global Cooling Miracle: Sun's Activity Lull Will Stop Soon, Study Suggests

Several large sunspots are visible in this image taken by NASA's Solar Dynamics Observatory. Higher sunspot numbers are correlated with greater solar activity. Credit: NASA/SDO

We can't count on waning solar activity to help bail us out of our climate-change problem in the near future, a new study suggests.

Solar activity waxes and wanes on 11-year cycles, which scientists have been monitoring for the past few centuries by carefully tracking sunspots — dark, magnetically active patches on the sun that serve as launch pads for flares and eruptions of superhot plasma known as coronal mass ejections (CMEs).

Variations in solar activity have significant consequences for us here on Earth. For example, powerful CMEs that slam into our planet can spawn big geomagnetic storms that disrupt satellite communications and power grids. High-activity solar cycles pump out more strong CMEs, triggering more such storms.

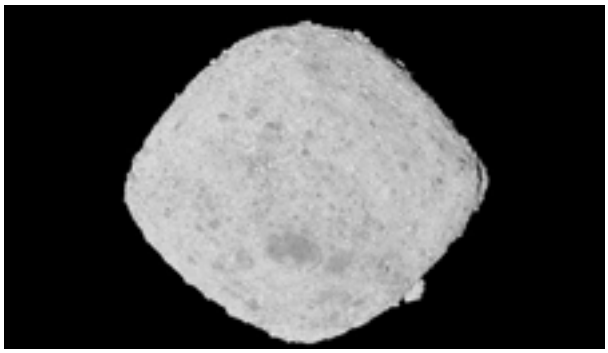
And these variations may also impact climate. For example, some recent research has tied big solar eruptions to reduced cloud formation, potentially affecting how much solar radiation makes it down to the planet's surface and how much gets bounced back to space.

Indeed, some scientists think a prolonged dip in solar activity known as the Maunder Minimum, which occurred from about 1645 though 1715, helped intensify the Little Ice Age. The Little Ice Age — which subjected Europe and North America to much colder winters than the ones we currently experience — lasted from about 1300 through the mid-19th century, so the Maunder Minimum sits right in the middle of it chronologically.

The potential association between these two events is debated, however; researchers still don't know for sure exactly what caused the Little Ice Age.

Solar activity has been trending downward over the last few cycles, and the most recent one, known as Solar Cycle 24, has been the weakest in more than a century. This has sparked some speculation that we could be headed toward another Maunder-like dip — and, perhaps, ...Read More...

Osiris-REX Arrives at Asteroid Bennu



Asteroid Bennu, captured by Osiris-REX's PolyCam on approach.
NASA / GSFC / University of Arizona

NASA's ambitious Osiris-REX mission will now survey 101955 Bennu and attempt to return a sample to Earth.

A tiny new corner of the solar system is now open for exploration, as NASA's Osiris-REX (the Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer) burned its engines for 20 seconds today for its arrival at asteroid Bennu. Acquisition of arrival signal occurred at 12:08 PM EST. Bennu is currently 7 light-minutes from Earth.
Welcome to Bennu

Osiris-REX isn't in orbit yet around tiny Bennu per se; a better description of its approach is a follow-along path keeping pace with the asteroid, a maneuver also known as station keeping. After a series of four engine burns starting in August 2018, Osiris-REX is now just over 12 miles (19 kilometers) from Bennu, with a relative approach speed to the asteroid of 0.10 mph (0.04 meters per second). In the coming weeks, the spacecraft will perform a series of polar flyovers of Bennu, passing 4 miles (7 kilometers) from the asteroid. Then, after a 20-day survey period, Osiris-REX will descend to just 2,400 feet (730 meters) above the asteroid's surface, for a preliminary mapping orbit around Bennu.

Launched from Cape Canaveral, Florida atop an Atlas V rocket on September 8, 2016, Osiris-REX made one Earth flyby on September 22, 2017, and took almost 26 months to finally catch up with asteroid Bennu. Osiris-REX also carried out a survey hunting for Earth-Trojan asteroids while enroute to Bennu, a search that came up empty. Osiris-REX's OCAMS camera suite started getting images of Bennu as a dot moving against the starry background just this past summer.

The LINEAR sky survey discovered the asteroid that would become known as Bennu (initially designated 1999 RQ36) on the night of September 11, 1999. The asteroid was later named during the Name That Asteroid! Contest after a mythical Egyptian bird. Orbiting the Sun once every 437 days, Bennu is 0.3 miles (0.5 kilometers) across, about the height of the Taipei 101 skyscraper. That is large enough to cause regional damage (but not global ..Read More...

Gravitational-Wave Observatories Bag Four Black-Hole Collisions

Two black holes prepare to merge in this artist's illustration.
LIGO / Caltech / MIT / Aurore Simonnet(Sonoma State)

A re-analysis of data from LIGO and Virgo brings the number of gravitational-wave detections to 11, including the most distant and most powerful black-hole merger yet discovered.

Some 5 billion years ago, in a galaxy far, far away, two huge black holes, weighing in at 34 and 51 solar masses, collapsed and merged into an 80-solar mass monster. The dramatic event unleashed the energy equivalent of 5 solar masses in the form of powerful gravitational waves, propagating through space at the speed of light. On July 29, 2017, these tiny ripples in spacetime — predicted over a century ago by Albert Einstein — reached Earth, where they were detected by the most precise measuring devices ever built by humans.

GW170729, as the gravitational-wave signal is called, is the most distant and most powerful of four new events detected in existing observations of the two U.S. LIGO detectors (Laser Interferometry Gravitational-wave Observatory) and the Virgo detector in Italy. During its first two observing runs, in 2015 and 2017, LIGO spotted seven other events, two of which were also "felt" by Virgo during the 3.5 weeks in August 2017 when the European instrument was operating in parallel with LIGO. A thorough re-analysis of all available data, presented at a gravitational-wave conference in Maryland on November 1st and published online at the astronomy preprint site arXiv.org on November 30th, has now found yet another four events, bringing the total to 11. The other three new ones are designated GW170809, GW170818, and GW170823.

According to Patricia Schmidt (Radboud University, the Netherlands), co-chair of the team that wrote the discovery paper, the new finds help to characterize the population properties of binary black holes and the frequency of their collisions and mergers. In particular, astronomers are eager to learn more about the mass distribution of stellar-mass black holes — the leftovers of supernova explosions. For example, GW170729 poses something of a mystery, since existing stellar evolution models have trouble producing black holes heftier than 50 solar masses. ...Read More...

Kepler Telescope Captures First Moments of a Star's Death

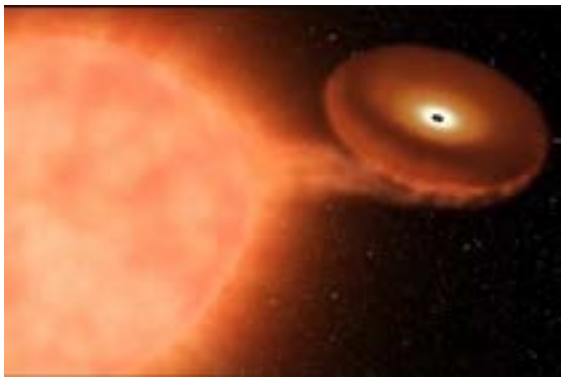


Illustration of a white dwarf siphoning material from its companion star. Over time, the white dwarf star can no longer support its own weight and implodes, creating a Type Ia supernova.
Credit: NASA/JPL-Caltech

NASA's Kepler space telescope captured the light of a stellar explosion that occurred about 170 million years ago.

When a massive star reaches the end of its life, a bright explosion expels stellar material into space, in what is known as a supernova. Using the now-retired Kepler telescope as well as ground-based telescopes, astronomers detected the bright light of a supernova called SN 2018oh on Feb. 4, 2018.

While Kepler observed the star's minute changes in brightness during the very early moments of the stellar explosion, the ground-based telescopes tracked changes in color and the atomic composition of the dying star, according to a statement from NASA. [Supernova Photos: Great Images of Star Explosions]

"With the combined data from these telescopes, astronomers achieved what they had hoped for — an unprecedented observation of the onset of a supernova," NASA officials said in the statement.

SN 2018oh resides in the spiral galaxy UGC 4780, in the Cancer constellation. It is classified as a Type Ia supernova, which typically brightens over the course of three weeks before gradually fading away.

However, this supernova, which Kepler observed only a few days after the initial explosion, brightened about three times faster than a typical supernova at this time period before reaching peak brightness, according to the statement. Data from the ground-based telescopes revealed a blue hue, indicating the supernova is extremely hot.

Additionally, using the data from the Dark Energy Camera at Cerro Tololo Inter-American Observatory in Chile and the Panoramic Survey Telescope and Rapid Response System at Haleakala Observatory in Hawaii, astronomers are able to study the evolution of dark energy, which is the mysterious force responsible for the universe's accelerating expansion. As a Type Ia supernova, SN 2018oh ...Read More..

Over 100 new exoplanets from Kepler and Gaia

Click here to see the video.

In recent decades, astronomers have confirmed a few thousand exoplanets, or planets orbiting distant stars. There are thousands more exoplanet candidates. On December 3, 2018, an international team of astronomers announced a plethora of new worlds to add to the list – not just one or two – but 104!

Astronomer John Livingston at the University of Tokyo led the newest of two studies describing the new worlds. He also created the video visualization above, which depicts the newly discovered exoplanet orbits. In the visualization, small exoplanets are Mercury-sized, large ones are Jupiter-sized. The colors indicate those planets' temperatures; blue indicates roughly Earth's temperature; white shows temperatures similar to the surface of Venus; and red shows lava-like temperatures. That's a lot of information, for these distant, newly discovered worlds!

In the meantime, Livingston and colleagues' results have also been published in a new peer-reviewed paper in Astronomical Journal.

This new planetary haul is particularly exciting when it comes to smaller rocky planets like Earth. As Livingston noted:

Eighteen of the [newest] 60 planets are less than two times larger than the Earth, and are likely to have rocky compositions with little to no atmosphere.

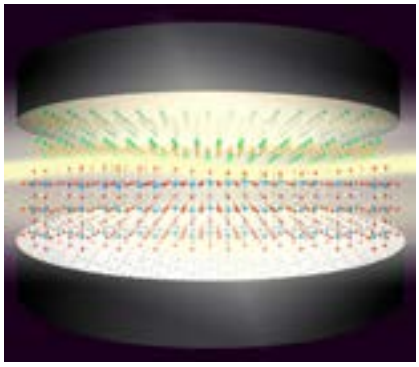
Eighteen of the newly discovered planets are super-Earths – as depicted here – planets that are larger than Earth but smaller than Neptune. Image via Aldaron/Wikipedia (CC BY-SA 3.0).

Little or no atmosphere means those planets don't have thick, deep atmospheres like the gas or ice giants in our own solar system. Rather, they could be more like Earth and other rocky planets with relatively thinner atmospheres.

Or, in some cases, they might be worlds with little to no atmospheres, like Mercury.

About two dozen of the new planets are in multi-planet systems. Several have orbital periods of less than 24 hours. Astronomers call these worlds ultra-short period (USP) planets. USP planets tend to usually ...Read More...

The force of the vacuum



The vacuum fluctuations of light (yellow wave) are amplified in an optical cavity (upper and lower reflecting mirrors). Crystal lattice vibrations (red atoms) at a two-dimensional interface surf this strong light wave. The thus mixed light-vibrational waves couple particularly strongly to electrons in a two-dimensional atomically thin material (green and yellow atoms), changing its properties. Credit: J. M. Harms, MPSD

Scientists from the Theory Department of the Max Planck Institute for the Structure and Dynamics of Matter (MPSD) at the Center for Free-Electron Laser Science (CFEL) in Hamburg, Germany have shown through theoretical calculations and computer simulations that the force between electrons and lattice distortions in an atomically thin two-dimensional superconductor can be controlled with virtual photons. This could aid the development of new superconductors for energy-saving devices and many other technical applications.

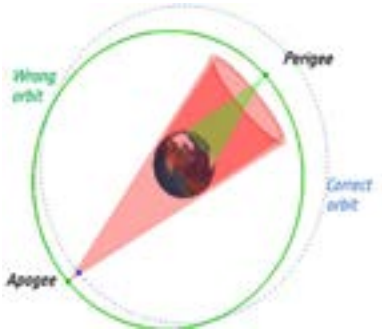
The vacuum is not empty. It may sound like magic to laypeople but the problem has preoccupied physicists since the birth of quantum mechanics. The apparent void bubbles incessantly and produces fluctuations of light even at absolute zero temperature. In a sense, these virtual photons are just waiting to be used. They can carry forces and change the properties of matter.

The force of the vacuum, for instance, is known to produce the Casimir effect. When one moves two parallel metallic plates of a capacitor very close together, they feel a microscopically small but measurable attraction between each other, even if the plates are not electrically charged. This attraction is created by the exchange of virtual photons between the plates, like two ice skaters who throw a ball back and forth and are subjected to the recoil. If the ball was invisible, one would assume that a repellent force acts between them.

Now, the MPSD team of Michael Sentef, Michael Ruggenthaler and Angel Rubio has published a study in Science Advances, which draws a connection between the force of the vacuum and the most modern materials. In particular, they explore the question of what happens if the two-dimensional high-temperature superconductor iron selenide (FeSe) on a substrate of SrTiO3 is located in the gap between two metallic plates where virtual photons fly back and forth.

The outcome of their theories and simulations: the force of the vacuum makes it possible to couple ....Read More...

Galileo satellites prove Einstein's Relativity Theory to highest accuracy yet



Galileo satellites 5 and 6 were delivered into faulty elongated orbits by a faulty Soyuz upper stage during their launch in 2014. This left them unable to view the entire Earth disc during the low point or perigee of their orbits, rendering their navigation payloads unusuable, because they use an Earth sensor to centre their signal beams. Subsequent orbital manoeuvres succeeded in making their orbits more circular and their navigation payloads usbale because they retained views of the entire Earth disc through each orbit. However their orbits remain elliptical compared to the rest of the Galileo constell. Credit: European Space Agency

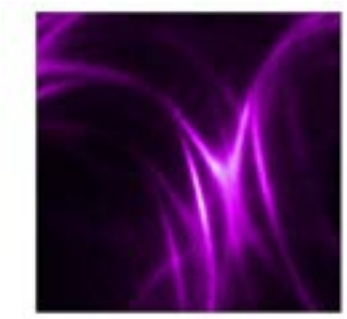
Europe's Galileo satellite navigation system – already serving users globally – has now provided a historic service to the physics community worldwide, enabling the most accurate measurement ever made of how shifts in gravity alter the passing of time, a key element of Einstein's Theory of General Relativity. Two European fundamental physics teams working in parallel have independently achieved about a fivefold improvement in measuring accuracy of the gravity-driven time dilation effect known as 'gravitational redshift.'

The prestigious Physical Review Letters journal has just published the independent results obtained from both consortiums, gathered from more than a thousand days of data obtained from the pair of Galileo satellites in elongated orbits. "It is hugely satisfying for ESA to see that our original expectation that such results might be theoretically possible have now been borne out in practical terms, providing the first reported improvement of the gravitational redshift test for more than 40 years," comments Javier Ventura-Traveset, Head of ESA's Galileo Navigation Science Office.

"These extraordinary results have been made possible thanks to the unique features of the Galileo satellites, notably the very high stabilities of their onboard atomic clocks, the accuracies attainable in their orbit determination and the presence of laser-retroreflectors, which allow for the performance of independent and very precise orbit measurements from the ground, key to disentangle clock and orbit errors."

These parallel research activities, known as GREAT (Galileo gravitational Redshift Experiment with eccentric sATellites), were led respectively by the ..Read More...

Scientists enter unexplored territory in superconductivity search



The Fermi surface, or the highest occupied state in the electronic structure, allows direct determination of the doping level. This picture shows the Fermi surface of the highly overdoped, non-superconducting BSCCO where the holes were added into the material by exposure to ozone. Credit: Brookhaven National Laboratory

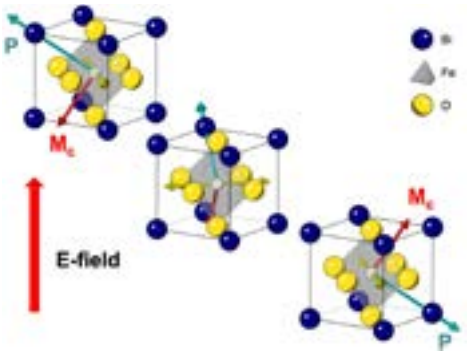
Scientists mapping out the quantum characteristics of superconductors—materials that conduct electricity with no energy loss—have entered a new regime. Using newly connected tools named OASIS at the U.S. Department of Energy's Brookhaven National Laboratory, they've uncovered previously inaccessible details of the "phase diagram" of one of the most commonly studied "high-temperature" superconductors. The newly mapped data includes signals of what happens when superconductivity vanishes.

"In terms of superconductivity, this may sound bad, but if you study some phenomenon, it is always good to be able to approach it from its origin," said Brookhaven physicist Tonica Valla, who led the study just published in the journal Nature Communications. "If you have a chance to see how superconductivity disappears, that in turn might give insight into what causes superconductivity in the first place."

Unlocking the secrets of superconductivity holds great promise in addressing energy challenges. Materials able to carry current over long distances with no loss would revolutionize power transmission, eliminate the need for cooling computer-packed data centers, and lead to new forms of energy storage, for example. The hitch is that, at present, most known superconductors, even the "high-temperature" varieties, must themselves be kept super cold to perform their current-carrying magic. So, scientists have been trying to understand the key characteristics that cause superconductivity in these materials with the goal of discovering or creating new materials that can operate at temperatures more practical for these everyday applications.

The Brookhaven team was studying a well-known high-temperature superconductor made of layers that include bismuth-oxide, strontium-oxide, calcium, and copper-oxide (abbreviated as BSCCO). Cleaving crystals of this material creates pristine bismuth-oxide surfaces. When they analyzed the electronic structure of the pristine cleaved surface, they saw telltale signs of superconductivity at a transition temperature (Tc) of 94 Kelvin (-179 degrees Celsius)—the highest temperature ...Read More...

New quantum materials could take computing devices beyond the semiconductor era



MESO devices, based on magneto-electric and spin-orbit materials, could someday replace the ubiquitous semiconductor transistor, today represented by CMOS. MESO uses up-and-down magnetic spin states in a multiferroic material to store binary information and conduct logic operations. Credit: Intel graphic

Researchers from Intel Corp. and the University of California, Berkeley, are looking beyond current transistor technology and preparing the way for a new type of memory and logic circuit that could someday be in every computer on the planet.

In a paper appearing online Dec. 3 in advance of publication in the journal Nature, the researchers propose a way to turn relatively new types of materials, multiferroics and topological materials, into logic and memory devices that will be 10 to 100 times more energy-efficient than foreseeable improvements to current microprocessors, which are based on CMOS (complementary metal-oxide-semiconductor).

The magneto-electric spin-orbit or MESO devices will also pack five times more logic operations into the same space than CMOS, continuing the trend toward more computations per unit area, a central tenet of Moore's Law.

The new devices will boost technologies that require intense computing power with low energy use, specifically highly automated, self-driving cars and drones, both of which require ever increasing numbers of computer operations per second.

"As CMOS develops into its maturity, we will basically have very powerful technology options that see us through. In some ways, this could continue computing improvements for another whole generation of people," said lead author Sasikanth Manipatruni, who leads hardware development for the MESO project at Intel's Components Research group in Hillsboro, Oregon. MESO was invented by Intel scientists, and Manipatruni designed the first MESO device.

Transistor technology, invented 70 years ago, is used today in everything from cellphones and appliances to cars and supercomputers. Transistors shuffle electrons around inside a semiconductor and store them as binary bits 0 and 1.

In the new MESO devices, the binary bits are the up-and-down magnetic spin states in a multiferroic ...Read More...

A radio search for artificial emissions from 'Oumuamua

An artist's depiction of interstellar object 'Oumuamua. Credit: ESA/Hubble; NASA; ESO; M. Kornmesser

It's the first time a visitor from another star system has been seen nearby. But what is it? An asteroid, a comet ... or an alien artifact?

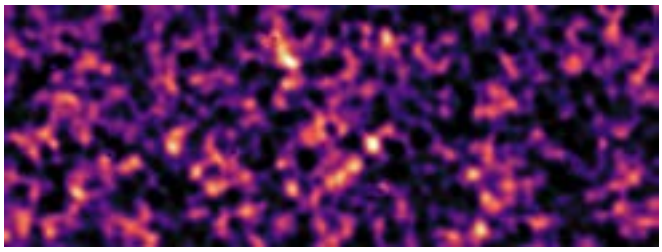
Scientists at the SETI Institute have attempted to address this question by using the Allen Telescope Array (ATA) to observe 'Oumuamua when it was about 170 million miles away, or slightly less than the diameter of Earth's orbit. The intention was to measure artificial radio transmissions which, if found, would be strong evidence that this object is not simply a rock tossed into space by a random gravitational slingshot interaction that occurred in its home star system.

"We were looking for a signal that would prove that this object incorporates some technology – that it was of artificial origin," says Gerry Harp, lead author of a paper to be published in the February 2019 issue of Acta Astronautica. "We didn't find any such emissions, despite a quite sensitive search. While our observations don't conclusively rule out a non-natural origin for 'Oumuamua, they constitute important data in accessing its likely makeup."

Following its discovery in October 2017, 'Oumuamua was the subject of popular speculation about a possible non-natural origin largely because it brought to mind the interstellar spaceship in Arthur C. Clarke's novel Rendezvous with Rama. Its highly elongated shape and the fact that no coma was observed strengthened this hypothesis for some, as these are uncharacteristic of asteroids and comets.

A recent paper published in Astrophysical Journal Letters by researchers at Harvard has also suggested the possibility that 'Oumuamua is a deliberate construction. The Harvard researchers argue that the slight, unexpected acceleration observed for this object could be caused by pressure from sunlight as 'Oumuamua swung around the Sun. Their hypothesis is that the object might be a light sail, either deliberately or accidentally sent our way. A deliberate origin is considered somewhat more likely because our solar system is a very small target for any object that is not being aimed. ...Read More...

Bringing balance to the universe: New theory could explain missing 95 percent of the cosmos



Dark matter map of KiDS survey region (region G12). Credit: KiDS survey

Scientists at the University of Oxford may have solved one of the biggest questions in modern physics, with a new paper unifying dark matter and dark energy into a single phenomenon: a fluid which possesses 'negative mass." If you were to push a negative mass, it would accelerate towards you. This astonishing new theory may also prove right a prediction that Einstein made 100 years ago.

Our current, widely recognised model of the Universe, called LambdaCDM, tells us nothing about what dark matter and dark energy are like physically. We only know about them because of the gravitational effects they have on other, observable matter.

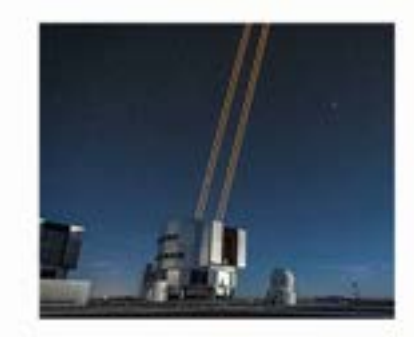
This new model, published today in Astronomy and Astrophysics, by Dr. Jamie Farnes from the Oxford e-Research Centre, Department of Engineering Science, offers a new explanation. Dr. Farnes says: "We now think that both dark matter and dark energy can be unified into a fluid which possesses a type of 'negative gravity," repelling all other material around them. Although this matter is peculiar to us, it suggests that our cosmos is symmetrical in both positive and negative qualities."

The existence of negative matter had previously been ruled out as it was thought this material would become less dense as the Universe expands, which runs contrary to our observations that show dark energy does not thin out over time. However, Dr. Farnes' research applies a 'creation tensor," which allows for negative masses to be continuously created. It demonstrates that when more and more negative masses are continually bursting into existence, this negative mass fluid does not dilute during the expansion of the cosmos. In fact, the fluid appears to be identical to dark energy.

Dr. Farnes's theory also provides the first correct predictions of the behaviour of dark matter halos. Most galaxies are rotating so rapidly they should be tearing themselves apart, which suggests that an invisible 'halo' of dark matter must be holding them together. The new research published today features a computer simulation of the properties of negative mass, which predicts the formation of dark matter halos just like ..Read More...

Special Read:

Australia Leads Project to Revolutionize Astronomy



Paranal Observatory - Four laser adaptive optics systems (VLT)

Australian scientists will lead the design phase of a multimillion-dollar project for a new system on one of the world's most powerful ground-based optical telescopes that will produce images up to three times sharper than the Hubble Space Telescope.

Two partners in the Australian Astronomical Optics (AAO) consortium - The Australian National University (ANU, AAO-Stromlo) and Macquarie University (AAO-MQ) - will design the new $AU32-million adaptive-optics system, called MAVIS, for one of the 8-metre Unit Telescopes at the European Southern Observatory's Very Large Telescope in Chile.

Associate Professor Francois Rigaut, the Adaptive Optics Principal Scientist at ANU who is leading the international consortium, said the upgraded telescope would revolutionise ground-based optical astronomy and provide a wider, sharper and more sensitive view of the universe than ever before.

"Atmospheric turbulence really limits what we can see through a ground-based telescope - it's a bit like the phenomenon of objects appearing blurry on the horizon during a hot day. MAVIS will remove this blurring and deliver images essentially as crisp as if the telescope were in space, helping us to peer back into the universe in its infancy," he said.

The 15-month design study - which will involve the Italian National Institute for Astrophysics and the Laboratoire d'Astrophysique de Marseille in France, with ONERA (France) as an associated partner - will start in February next year. The upgraded telescope is expected to be completed by 2025.

ANU Professor Anna Moore, director of AAO-Stromlo, said the Australian government had made a major investment in astronomy through a strategic partnership with ESO, providing Australian astronomers with guaranteed access to the premier observatory.

"The success of the MAVIS bid shows the ability of the AAO consortium to bring advanced technology instrumentation contracts back to Australia," she said.

Associate Professor Rigaut said a major part of the reward for the successful completion of the MAVIS project would be guaranteed nights of observation for the Australian astronomy community and project partners: 150 nights on the Very Large Telescope with MAVIS, which is equivalent in value to about $AU20 million.

"ESO will add a contribution of $AU12 million for the hardware, bringing the total value of the MAVIS adaptive-optics instrument to about $AU32 million," he said.

An adaptive-optics system is made of three parts: a deformable mirror, which corrects the deformed light wave going through the atmosphere; a wavefront sensor, which senses the distortion of the light wave; and a real-time computer, which calculates the corrections.

MAVIS will have three deformable mirrors, eight wavefront sensors and five laser guide stars, and will use a technique called Multi-Conjugate Adaptive Optics to deliver its sharp images over a field of view 20 times larger than regular adaptive-optics systems.

"The novelty of MAVIS is that it will deliver its corrected images in the optical range, combined with the extended field of view - this makes it a world first," Associate Professor Rigaut said. ..Read More...

This Week's Sky at a Glance - Dec. 08-14, 2018

Dec 09	Su	09:30	Moon-Saturn: 1.2° S
		15:12	Moon South Dec.: 21.5° S
Dec 10	Mo	21:57	Moon Descending Node
Dec 12	We	16:25	Moon Apogee: 405200 km
Dec 14	Fr	16:16	Geminid Shower: ZHR = 120

SCASS Receives the Visit of Ms. Mishaal Ashemimry (Aerospace Engineer and Founder of MISHAAL Aerospace) Dec. 07, 2018

On Dec. 07, the Sharjah Center for Astronomy and Space Sciences received the visit of Ms. Mishaal Ashemimry, a Saudi-American Aerospace Engineer, Aerospace Entrepreneur, speaker and influencer. Ms. Mishaal was received by Mr. Khalid Al-Raboy, the Deputy General for Admisntration, Finance and Public Affairs and Dr. Ilias Fernini, the Deputy General Driector for the Research Laboratories and Observatory. Ms. Mishaal was briefed about the center and its different components and was very pleased by all the accomplishements of the center.

As the First female aerospace engineer in the GCC, she realized that this title comes with an enormous responsibility to inspire others to join her field as well as other STEM programs. To reach the youth, she used social media platforms such as Instagram, Twitter, Snapchat and YouTube to educate her follower about her field, experiences, and to inspire them to have a dream and perseverance to pursue it. As a result, she became a public figure and speaker at many events in the GCC and globally.

Currently, Ashemimry is a consultant in her field. Moreover, she is living her passion everyday by educating and inspiring others through conferences, webinars and her social media channels. While based in Miami, Florida, she founded MISHAAL Aerospace at age 26, to pursue her ultimate dream of building rockets. Her company's objective was to design and build their own rockets to launch small satellites (500 kg) or less to Low Earth Orbit. Previously, she worked for Raytheon Missile Systems' Aerodynamics Department and contributed to twenty-two different rocket programs. Her professional experience and areas of expertise include: aerodynamics, wind tunnel testing, vehicle design, predictive simulation and analysis and rocket stage-separation analysis, with a strong focus on computational tool development.

She earned a Master of Science Degree in Aerospace Engineering from Florida Institute of Technology in Melbourne, Florida, and two Bachelor of Science Degrees in Aerospace Engineering and in Applied Mathematics, also from Florida Institute of Technology. Her academic focus included: experimental and analytical aerodynamics, rocket design and nuclear thermal propulsion. (Reference: https://www.mishaalashemimry.com/)


Invitation | دعـــوة
Sharjah Center for Astronomy & Space Sciences cordially invites you to a lecture
يتشرف مركز الشارقة لعلوم الفضاء والفلك بدعوتكم لحضور محاضرة عن
الكواكب خارج النظام الشمسي
Exoplanets
Saturday
08th Dec. 2018
Lecturer: Dr. Nikolaos Georgakarakos
New York University Abu Dhabi
Title: Planetary systems in the Universe: a brief journey in the exciting world of exoplanet discoveries
Language: English
Time: 18:00 to 19:00
Location: SCASS Planetarium
Sunday
09th Dec. 2018
Lecturer: Dr. Nikolaos Georgakarakos
New York University Abu Dhabi
Title: Life Zone and dynamics in planetary sys.
Language: English
Time: 12:00 to 13:00
Location: UoS, EMBA - M11
www.SCASS.ae