

Space News Update – April 2014

By Pat Williams

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EXOPLANETS SOON TO BE A GLEAM IN THE EYE OF NESSI

(17 April 2014)



The New Mexico Institute of Mining and Technology's 2.4-meter (7.9-foot) Magdalena Ridge Observatory in Socorro County, N.M. Image credit: New Mexico Tech

The New Mexico Exoplanet Spectroscopic Survey Instrument (NESSI) will soon get its first "taste" of exoplanets, helping astronomers decipher their chemical composition. NESSI is one the first ground-based instruments specifically crafted to study the atmospheres of exoplanets that transit, or eclipse, their stars, from our point of view on Earth. It uses a technique called transit spectroscopy, in which a planet is observed as it crosses in front of, then behind, its parent star. The instrument, called a spectrometer, breaks apart the light of the star and planet, ultimately exposing chemicals that make up the planet's atmosphere. The technique is challenging because a planet's atmospheric signal accounts for only one part in 1,000 of the star's light.

"It's like looking for a firefly in a searchlight."

<http://www.jpl.nasa.gov/news/news.php?release=2014-117>



Remind you of anyone?

Surgeon's Photo.

[Loch Ness Monster - Wikipedia, the free encyclopedia](http://en.wikipedia.org/wiki/Loch_Ness_Monster)

MONSTER “EL GORDO” GALAXY CLUSTER IS BIGGER THAN THOUGHT

(3 April 2014)



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This is a Hubble image of the most massive cluster of galaxies ever seen to exist when the universe was just half its current age of 13.8 billion years. The cluster contains several hundred galaxies.

Image Credit: NASA, ESA, and J. Jee (University of California, Davis)

NASA's Hubble Space Telescope has weighed the largest known galaxy cluster in the distant universe and found that it definitely lives up to its nickname: El Gordo (Spanish for "the fat one"). By measuring how much the cluster's gravity warps images of galaxies in the distant background, a team of astronomers has calculated the cluster's mass to be as much as 3 million billion times the mass of our sun. Hubble data show the galaxy cluster, which is 9.7 billion light-years away from Earth, is roughly 43 percent more massive than earlier estimates.

<http://www.nasa.gov/press/2014/april/nasa-hubble-team-finds-monster-el-gordo-galaxy-cluster-bigger-than-thought/>

FERMI DATA TANTALIZE WITH NEW CLUES TO DARK MATTER

(3 April 2014)

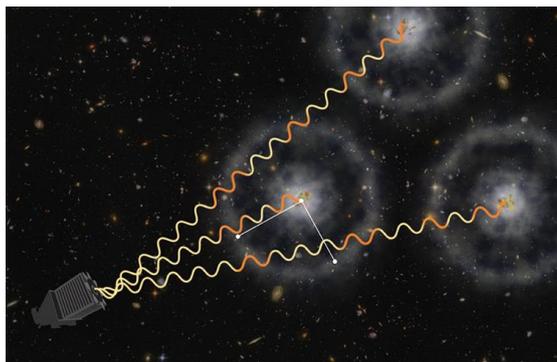
A new study of gamma-ray light from the centre of our galaxy makes the strongest case to date that some of this emission may arise from dark matter. Independent Scientists have developed new maps showing that the galactic centre produces more high-energy gamma rays than can be explained by known sources and that this excess emission is consistent with some forms of dark matter, an unknown substance making up most of the material universe.

<http://www.nasa.gov/content/goddard/fermi-data-tantalize-with-new-clues-to-dark-matter/>

https://www.youtube.com/watch?feature=player_embedded&v=WQZ0EILgZ1c

ASTRONOMERS FROM THE SLOAN DIGITAL SKY SURVEY MAKE THE MOST PRECISE MEASUREMENT YET OF THE EXPANDING UNIVERSE

(7 April 2014)



An artist's conception of how BOSS uses quasars to measure the distant universe. Credit: Zosia Rostomian (Lawrence Berkeley National Laboratory) and Andreu Font-Ribera (BOSS Lyman-alpha team, Berkeley Lab.)

They have used 140,000 distant quasars to determine the expansion rate of the Universe when it was only one-quarter of its present age. Measuring the expansion rate of the Universe over its entire history is key to determining the nature of the dark energy which is responsible for causing the expansion rate to increase during the past six billion years.

<https://www.sdss3.org/press/precise.php>

NASA – THE FUTURE OF HUMAN SPACEFLIGHT

(15 April 2014)

Over recent weeks, officials from NASA have been petitioning the United States Congress in an attempt to ensure continued funding for the agency. Over the next few decades NASA hope to lead the way in the evolution of human space flight. Here are the top five manned missions NASA are currently working on.

1. Asteroid retrieval

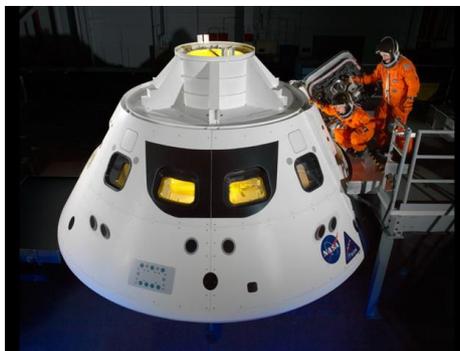
The next major mission in NASA's human spaceflight programme will be an expedition to an asteroid. The plan is to robotically capture a small near-Earth asteroid and redirect it safely to a stable orbit in the Earth-Moon system where astronauts can visit and explore its surface. The mission will help NASA test technology for future deep space missions, including the Orion spacecraft.



Credit: NASA

2. Orion

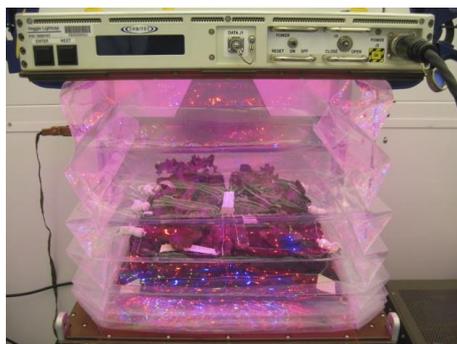
The Orion Multi-Purpose Crew Vehicle will carry crew and cargo into low-Earth orbit and beyond. On 8 April 2014 the system was put through ground tests, ahead of a trial unmanned flight later in the year. When Orion is fully functional, NASA will once again be capable of transporting people and cargo to the International Space Station (ISS), something it hasn't been able to do since the Space Shuttle retired in 2011.



Credit: NASA/Bill Stafford

3. Extended ISS mission

In January 2014 it was announced that NASA would extend its funding for the ISS until at least 2024. The ISS is an important proving ground for the technology needed for long distance space travel, testing everything from medical equipment to robotic astronauts. The next supply launch will include a new expandable greenhouse, called Veggie, that will allow astronauts to grow their own fresh food, helping to keep a crew healthy during long haul missions which may last for months, or even years.



Credit: NASA/Gioia Massa

4. Yearlong space flight

In 2015, veteran astronaut Scott Kelly and cosmonaut Mikhail Kornienko will launch to the ISS, ready for a yearlong stay. It will be the longest time anyone has spent on-board the ISS in one go, and the pair will help to test the physiological and psychological effects of such an ordeal on the human body. ISS astronauts usually stay for six months and have suffered problems with vision as well as muscle and bone loss. At present, it's uncertain how these issues worsen over time. If NASA is ever going to mount long scale missions, such as to Mars, then it's important that these issues are well understood.



Credit: NASA

5. Path to Mars

One of NASA's long-term plans is to put people on the surface of Mars. The ISS experiments are the first stage of this plan, examining how the human body and technology copes with the demands of space. The asteroid missions will be the second stage. Lasting anywhere from weeks to years, these missions will have to be completely self-sufficient, as they will be too far out to rely on Earth for supplies. As they will be outside Earth's magnetic field, it will also show the effects of long-term exposure to solar radiation. The third and final stage is to send people to Mars. To get there and back will take at least two years, with no hope of back up from Earth. Before mounting such a mission NASA has to be sure it can keep its crew alive and healthy. But if everything goes according to plan, the first astronauts should get to the Red Planet by the 2030s.



Credit: NASA/Pat Rawlings/SAIC

SOME ASTRONAUTS AT RISK OF COGNITIVE IMPAIRMENT

(23 April 2014)

- Rats exposed to high-energy particles, simulating conditions astronauts would face on a long-term deep space mission, show lapses in attention and slower reaction times, even with extremely low doses of radiation.

- The cognitive impairments appear to be linked to protein changes in the brain.
- When astronauts are outside the Earth's magnetic field, spaceships provide only limited shielding from radiation exposure.
- Findings suggest it may be possible to develop a biological marker to predict sensitivity to radiation's effects on the human brain before deployment to deep space.

http://www.hopkinsmedicine.org/news/media/releases/some_astronauts_at_risk_for_cognitive_impairment_animal_studies_suggest

LINKS TO OTHER SPACE NEWS PUBLISHED IN April 2014

ASTEROIDS

The tell-tale radiation from metallic asteroids (2 April 2014)

In the process of evaluating thousands of datasets from the NASA Wide-field Infrared Survey Explorer (WISE) space telescope, planetary researchers at the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) have been tracking metallic asteroids.

http://www.dlr.de/dlr/presse/en/desktopdefault.aspx/tabid-10172/213_read-9917/#gallery/14223

Asteroids made easy (23 April 2014)

A dozen astronauts have walked on the moon, and several rovers have been piloted on Mars, giving us a good understanding of these off-world environments.

<https://asunews.asu.edu/20140422-asteroid-origins-satellite>

Regolith of small asteroids formed by thermal fatigue (2 April 2014)

The centimetre-sized fragments and smaller particles that make up the regolith — the layer of loose, unconsolidated rock and dust — of small asteroids is formed by temperature cycling that breaks down rock in a process called thermal fatigue, according to a paper published today in the Nature Advance Online Publication.

<http://www.swri.org/9what/releases/2014/thermal-fatigue.htm#.U1wDM7VOWM8>

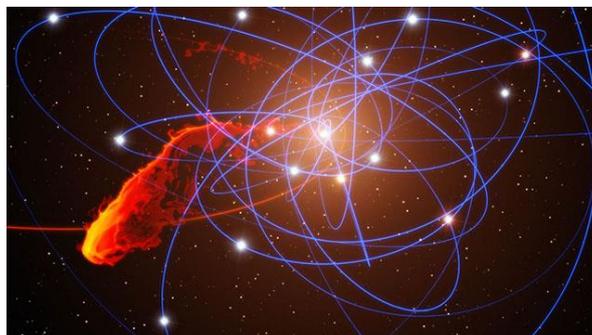
Researchers discover origin of soil on small asteroids (3 April 2014)

An international team of researchers from academic and government institutions, including NASA's Solar System Exploration Research Virtual Institute (SSERVI) at NASA's Ames Research Center in Moffett Field, Calif., has determined the likely origin for the loose material that covers small asteroids.

<http://www.nasa.gov/ames/researchers-discover-origin-of-soil-on-small-asteroids/>

BLACK HOLES

Watching for a black hole to gobble up a gas cloud (3 April 2014)



A simulation of the gas cloud G2's encounter with the supermassive black hole Sgr A*. The blue lines mark the orbits of the so-called "S" stars that are in close orbits around the black hole. (Image by ESO/MPE/Marc Schartmann)

Right now a doomed gas cloud is edging ever closer to the supermassive black hole at the centre of our Milky Way galaxy.

"Sgr A* and the newly discovered magnetic neutron star, SGR J1745-29, which appears to be in orbit around the black hole, are dishing out lots of interesting science," Haggard said. "We've detected the brightest X-ray flare yet observed from Sgr A* and gathered data that are causing us to overhaul of our understanding of the neutron star population in the galactic center."

<http://www.northwestern.edu/newscenter/stories/2014/04/watching-for-a-black-hole-to-gobble-up-a-gas-cloud.html>

Using supercomputers to understand and predict signs of black holes swallowing stars (14 April 2014)

Somewhere out in the cosmos an ordinary galaxy spins, seemingly at slumber. Then all of a sudden, WHAM! A flash of light explodes from the galaxy's centre.

<https://www.tacc.utexas.edu/news/feature-stories/2014/cosmic-slurp>

Unique pair of hidden black holes discovered by XMM-Newton (22 April 2014)

A pair of supermassive black holes in orbit around one another have been spotted by XMM-Newton.

<http://sci.esa.int/xmm-newton/53980-unique-pair-of-hidden-black-holes-discovered-by-xmm-newton/>

Red stars and big bulges: how black holes shape galaxies (22 April 2014)

The universe we can see is made up of billions of galaxies, each containing anywhere from hundreds of thousands to hundreds of billions of stars.

<http://www.ras.org.uk/news-and-press/news-archive/254-news-2014/2436-red-stars-and-big-bulges-how-black-holes-shape-galaxies>

CARBON CYCLE

OCO-2 brings sharp focus on global carbon (2 April 2014)

Simply by breathing, humans have played a small part in the planet-wide balancing act called the carbon cycle throughout our existence.

<http://www.jpl.nasa.gov/news/news.php?release=2014-100>



The Orbiting Carbon Observatory-2, the first NASA spacecraft dedicated to studying carbon dioxide in Earth's atmosphere. Image credit: NASA/JPL-Caltech

In July 2014, NASA will launch the Orbiting Carbon Observatory-2 (OCO-2) to study the fate of carbon dioxide worldwide. "Right now, the land and the ocean are taking up almost half of the carbon dioxide we add to the atmosphere by burning fossil fuels, but the future is fundamentally unknown," said Paul Wennberg, a

professor of atmospheric chemistry at the California Institute of Technology in Pasadena. "OCO-2 is a key to getting answers." The mission has been developed and is managed by NASA's Jet Propulsion Laboratory in Pasadena, Calif.

EXOPLANETS AND EXOMOON

Kepler discovers first Earth-size planet in habitable zone (17 April 2014)

Using NASA's Kepler Space Telescope, astronomers have discovered the first Earth-size planet orbiting a star in the "habitable zone" -- the range of distance from a star where liquid water might pool on the surface of an orbiting planet.

<http://www.nasa.gov/ames/kepler/nasas-kepler-discovers-first-earth-size-planet-in-the-habitable-zone-of-another-star/>

Solved: mysteries of a nearby planetary system (22 April 2014)

Mysteries of one of the most fascinating nearby planetary systems now have been solved, report authors of a scientific paper published in the journal Monthly Notices of the Royal Astronomical Society.

<http://www.ras.org.uk/news-and-press/news-archive/254-news-2014/2434-solved-mysteries-of-a-nearby-planetary-system>

Odd tilts could make more worlds habitable (15 April 2014)

Pivoting planets that lean one way and then change orientation within a short geological time period might be surprisingly habitable, according to new modelling by NASA and university scientists affiliated with the NASA Astrobiology Institute.

<http://www.nasa.gov/content/goddard/odd-tilts-could-make-more-worlds-habitable/>

Search for life on exoplanets more difficult than thought (29 April 2014)

A new study from the University of Toronto Scarborough suggests the search for life on planets outside our solar system may be more difficult than previously thought.

<http://ose.utoronto.ca/ose/story.php?id=6079>

Length of exoplanet day measured for first time (30 April 2014)

Observations from ESO's Very Large Telescope (VLT) have, for the first time, determined the rotation rate of an exoplanet. Beta Pictoris b has been found to have a day that lasts only eight hours.

<http://www.eso.org/public/news/eso1414/>

Possible exomoon found (10 April 2014)

Titan, Europa, Io and Phobos are just a few members of our solar system's pantheon of moons. Are there are other moons out there, orbiting planets beyond our sun?

<http://www.jpl.nasa.gov/news/news.php?release=2014-109>

FUTURE MISSIONS

Construction to begin on NASA spacecraft set to visit asteroid in 2018 (10 April 2014)

NASA's team that will conduct the first U.S. mission to collect samples from an asteroid has been given the go-ahead to begin building the spacecraft, flight instruments and ground system, and launch support facilities.

<http://www.nasa.gov/press/2014/april/construction-to-begin-on-nasa-spacecraft-set-to-visit-asteroid-in-2018/>

OSIRIS-REx asteroid mission passes important design review (10 April 2014)

NASA's OSIRIS-REx program has successfully completed a comprehensive technical review of the mission and has been given approval to begin building the spacecraft, flight instruments and ground system. Lockheed Martin is responsible for development of the spacecraft, which will be the first U.S. mission sent to a near-Earth asteroid to collect and return samples.

<http://www.lockheedmartin.com/us/news/press-releases/2014/april/0410-ss-orex.html>

MDA to further concept for Canadian Hyperspectral Mission (23 April 2014)

MacDonald, Dettwiler and Associates (MDA) has signed a contract with the Canadian Space Agency to develop the mission concept for an operational Canadian Hyperspectral Mission.

<http://www.newswire.ca/en/story/1343371/mda-to-further-concept-for-canadian-hyperspectral-mission>

Government of Canada awards contract for Canada's contribution to Japan's next generation space observatory (24 April 2014)

The Canadian Space Agency (CSA) has awarded a contract worth \$1.35 million to Neptec Design Group to continue work on Canada's contribution to ASTRO-H, the Japan Aerospace Exploration Agency's (JAXA's) next-generation space observatory, scheduled to be launched in late 2015.

http://www.asc-csa.gc.ca/eng/media/news_releases/2014/0424.asp

Eu: CROPIS – growing tomatoes in space (24 April 2014)

A symbiotic community of bacteria, tomatoes and single-celled algae, synthetic urine and a satellite that simulates the gravity of the Moon or Mars by rotating around its axis – these elements make up the German Aerospace Center (Deutsches Zentrum für Luft und- Raumfahrt; DLR) Eu: CROPIS (Euglena and Combined Regenerative Organic-Food Production in Space) mission.

http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10081/151_read-10095/#gallery/14438

GALAXIES**Herschel discovers mature galaxies in the young universe** (29 April 2014)

New Herschel results have given us a remarkable insight into the internal dynamics of two young galaxies.

<http://sci.esa.int/herschel/53992-herschel-discovers-mature-galaxies-in-the-young-universe/>

New tool for galactic archaeology (7 April 2014)

Reconstructing the history of our Galaxy has just become a whole lot easier, thanks to a team of international astronomers led by Dr Luca Casagrande from the Research School of Astronomy and Astrophysics.

<http://news.anu.edu.au/2014/04/07/new-tool-for-galactic-archaeology/>

INTERGALACTIC**BOSS quasars track the expanding universe – the most precise measurement yet** (7 April 2014)

The Baryon Oscillation Spectroscopic Survey (BOSS), the largest component of the third Sloan Digital Sky Survey (SDSS-III), pioneered the use of quasars to map density variations in intergalactic gas at high redshifts, tracing the structure of the young universe.

<http://newscenter.lbl.gov/news-releases/2014/04/07/boss-quasars-measure-expansion/>

The intergalactic medium unveiled: Caltech's Cosmic Web Imager directly observes "dim matter"

(29 April 2014)

Caltech astronomers have taken unprecedented images of the intergalactic medium (IGM)—the diffuse gas that connects galaxies throughout the universe—with the Cosmic Web Imager, an instrument designed and built at Caltech.

<http://www.caltech.edu/content/intergalactic-medium-unveiled-caltechs-cosmic-web-imager-directly-observes-dim-matter>

ISS**UrtheCast's first release of Earth imagery from space** (3 April 2014)

UrtheCast has announced its first release of Earth imagery, captured by UrtheCast's medium-resolution camera (MRC) onboard the International Space Station (ISS).

<http://blog.urthecast.com/updates/urthecasts-first-release-of-earth-imagery-from-space/>

SpaceX's Dragon headed to Space Station to create astronaut farmers (11 April 2014)

This month SpaceX's Dragon capsule heads to the International Space Station for its third commercial resupply mission on April 14.

http://www.nasa.gov/mission_pages/station/research/news/spacex_third_mission/

Protein crystal experiment set to fly to ISS (11 April 2014)

A University of Alabama in Huntsville (UAH) biology professor's experiment that is set to fly to the International Space Station (ISS) could shed new light on the roles enzymes play in biological processes.

<http://www.uah.edu/news/research/7613-uah-professors-protein-crystal-experiment-set-to-fly-to-iss#.U2N3dLVOWM8>

For an immune cell, microgravity mimics ageing (21 April 2014)

Certain cells of the immune system tend to misbehave with age, leaving the elderly more vulnerable to illness.

http://www.nasa.gov/mission_pages/station/research/news/T_Cell/

Why do astronauts' immune systems become weakened? (16 April 2014)

DLR sends two biomedical experiments from the University of Magdeburg to the ISS. Also on board – NASA cameras for Columbus Eye, the DLR student experiment.

http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10212/332_read-9769/year-all/#gallery/14405

SpaceX-3 launches science cargo to Space Station (18 April 2014)

A SpaceX Dragon spacecraft full of NASA cargo, experiments and equipment blazed into orbit Friday, April 18, aboard the company's Falcon 9 rocket.

<http://www.nasa.gov/content/spacex-3-launches-science-cargo-to-station/>

NASA cargo launches to Space Station aboard SpaceX resupply mission (18 April 2014)

Nearly 2.5 tons of NASA science investigations and cargo are on the way to the International Space Station (ISS) aboard SpaceX's Dragon spacecraft.

<http://www.nasa.gov/press/2014/april/nasa-cargo-launches-to-space-station-aboard-spacex-resupply-mission/>

A step up for NASA's Robonaut: ready for climbing legs (23 April 2014)

Thanks to a successful launch of the SpaceX-3 flight of the Falcon 9/Dragon capsule on Friday, April 18, the lower limbs for Robonaut 2 (R2) are aboard the International Space Station (ISS).

<http://robonaut.jsc.nasa.gov/>

MARS

Gusev Crater once held a lake after all (9 April 2014)

If desert mirages occur on Mars, "Lake Gusev" belongs among them. This come-and-go body of ancient water has come and gone more than once, at least in the eyes of Mars scientists.

[Gusev Crater once held a lake after all, says ASU Mars scientist | ASU News](http://www.asu.edu/news/2014/04/09/gusev-crater-once-held-a-lake-after-all-says-asu-mars-scientist)

Meteorites yield clues to Red Planet's early atmosphere (16 April 2014)

Geologists who analysed 40 meteorites that fell to Earth from Mars unlocked secrets of the Martian atmosphere hidden in the chemical signatures of these ancient rocks.

<http://cmns.umd.edu/news-events/features/2088>

Astronauts will breathe easier with new oxygen recovery systems (15 April 2014)

For NASA's long-duration human spaceflight missions, travellers will need to recycle as much breathable oxygen in their spacecraft environments, as possible.

<http://www.nasa.gov/press/2014/april/nasa-astronauts-will-breathe-easier-with-new-oxygen-recovery-systems/>

Traces of recent water on Mars (25 April 2014)

New research has shown that there was liquid water on Mars as recently as 200,000 years ago.

http://www.science.gu.se/english/News/News_detail/?contentId=1213681

Mercury

Ancient volcanic explosions shed light on Mercury's origins (2 April 2014)

The surface of Mercury crackled with volcanic explosions for extended periods of the planet's history, according to a new analysis led by researchers at Brown University.

<http://news.brown.edu/pressreleases/2014/04/mercury>

METEORITES

Vitamin B3 might have been made in space (17 April 2014)

Ancient Earth might have had an extraterrestrial supply of vitamin B3 delivered by carbon-rich meteorites, according to a new analysis by NASA-funded researchers.

<http://www.nasa.gov/content/goddard/vitamin-b3-might-have-been-made-in-space-delivered-to-earth-by-meteorites/>

MICROGRAVITY RESEARCH

Microgravity research helping to understand the fungi within (9 April 2014)

You may not recognize it by name, but if you have ever had a child with a diaper rash, that child was likely a host to *Candida albicans* (*C. albicans*).

http://www.nasa.gov/mission_pages/station/research/news/c_albicans/

MOON

Misleading mineral may have resulted in overestimate of water in moon (1 April 2014)

The amount of water present in the moon may have been overestimated by scientists studying the mineral apatite, says a team of researchers led by Jeremy Boyce of the UCLA Department of Earth, Planetary and Space Sciences.

<http://newsroom.ucla.edu/releases/misleading-mineral-may-have-led-to-overestimate-of-water-in-moon>

New research finds “geologic clock” that helps determine Moon's age (2 April 2014)

An international team of planetary scientists determined that the Moon formed nearly 100 million years after the start of the solar system, according to a paper to be published April 3 in *Nature*.

<http://www.swri.org/9what/releases/2014/geo-clock.htm#.U2OAe7VOWM8>

NASA satellite to continue gathering data up to planned lunar impact (3 April 2014)

NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) spacecraft is gradually lowering its orbital altitude to continue making science observations prior to its planned impact on the moon's surface on or before April 21.

<http://www.nasa.gov/press/2014/april/nasa-satellite-to-continue-gathering-data-up-to-planned-lunar-impact/>

NASA completes LADEE mission with planned impact on Moon's surface (18 April 2014)

Ground controllers at NASA's Ames Research Center in Moffett Field, Calif., have confirmed that NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) spacecraft impacted the surface of the moon, as planned, between 9:30 and 10:22 p.m. PDT Thursday, April 17.

<http://www.nasa.gov/press/2014/april/nasa-completes-ladee-mission-with-planned-impact-on-moons-surface/>

Laser-powered farewell to moon mission (25 April 2014)

Just before NASA's latest Moon mission ended last week, an ESA telescope received laser signals from the spacecraft, achieving data speeds like those used by many to watch movies at home via fibre-optic Internet.

http://www.esa.int/Our_Activities/Operations/Laser-powered_farewell_to_Moon_mission

PLANETARY DISK

Astronomical forensics uncover planetary disks in Hubble archive (24 April 2014)

With the Hubble Space Telescope, if astronomers missed seeing something once in their data, they haven't missed it forever.

<http://www.nasa.gov/press/2014/april/astronomical-forensics-uncover-planetary-disks-in-nasas-hubble-archive/>

Solved: mysteries of a nearby planetary system (22 April 2014)

Mysteries of one of the most fascinating nearby planetary systems now have been solved, report authors of a scientific paper published in the journal Monthly Notices of the Royal Astronomical Society.

<http://www.ras.org.uk/news-and-press/news-archive/254-news-2014/2434-solved-mysteries-of-a-nearby-planetary-system>

SATURN AND ITS MOONS

Saturn's hexagon: an amazing phenomenon (8 April 2014)

An unusual structure with a hexagonal shape surrounding Saturn's north pole was spotted on the planet for the first time thirty years ago.

http://www.ehu.es/p200-hmencont/en/contenidos/noticia/20140408_saturno_lavega/en_saturno/20140408_saturno_lavega.html

Ocean inside Saturn's moon (3 April 2014)

NASA's Cassini spacecraft and Deep Space Network have uncovered evidence Saturn's moon Enceladus harbours a large underground ocean of liquid water, furthering scientific interest in the moon as a potential home to extraterrestrial microbes.

<http://www.jpl.nasa.gov/news/news.php?release=2014-103>

Cassini images may reveal birth of a Saturn moon (14 April 2014)

NASA's Cassini spacecraft has documented the formation of a small icy object within the rings of Saturn that may be a new moon, and may also provide clues to the formation of the planet's known moons.

<http://saturn.jpl.nasa.gov/news/newsreleases/newsrelease20140414/>

SPACE WEATHER

Lockheed Martin Solar Ultraviolet Imager installed on GOES-R weather satellite (17 April 2014)

Lockheed Martin has delivered a new solar analysis payload that will help scientists measure and forecast space weather, which can damage satellites, electrical grids and communications systems on Earth.

<http://www.lockheedmartin.com/us/news/press-releases/2014/april/0417-ss-suvi.html>

STARS

Sakurai's object: stellar evolution in real time (2 April 2014)

Stellar lifetimes are measured in billions of years, so changes in their appearance rarely take place on a human timescale.

http://www.nsf.gov/news/news_summ.jsp?cntn_id=131006

<http://www.noao.edu/news/2014/pr1402.php>

Laws that determine how dust affects the light that reaches us from the stars are being rewritten

(15 April 2014)

If the space traversed by light to reach our eyes were empty, knowing the properties of a star could be as simple as taking a picture of it and measuring its glow (something known as photometry).

[The laws that determine how dust affects the light that reaches us from the stars are being rewritten | Instituto de Astrofísica de Andalucía - CSIC](#)

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“Upside-down planet” reveals new method for studying binary star systems (21 April 2014)

What looked at first like a sort of upside-down planet has instead revealed a new method for studying binary star systems, discovered by a University of Washington student astronomer.

<http://www.washington.edu/news/2014/04/21/upside-down-planet-reveals-new-method-for-studying-binary-star-systems/>

Spitzer, WISE find Sun's close, cold neighbour (25 April 2014)

NASA's Wide-field Infrared Survey Explorer (WISE) and Spitzer Space Telescope have discovered what appears to be the coldest "brown dwarf" known -- a dim, star-like body that surprisingly is as frosty as Earth's North Pole.

<http://www.jpl.nasa.gov/news/news.php?release=2014-127>

SUN

Bright points in Sun's atmosphere mark patterns deep in its interior (17 April 2014)

Like a balloon bobbing along in the air while tied to a child's hand, a tracer has been found in the sun's atmosphere to help track the flow of material coursing underneath the sun's surface.

<http://www.nasa.gov/content/goddard/bright-points-mark-patterns-inside-sun/>

SUPERNOVA

Cosmic illusion revealed (24 April 2014)

A team of researchers led by Robert Quimby at the Kavli Institute for the Physics and Mathematics of the Universe (Kavli IPMU) has announced the discovery of a galaxy that magnified a background, Type Ia supernova thirtyfold through gravitational lensing.

http://www.eurekaalert.org/pub_releases/2014-04/uot-cir042314.php

UNIVERSE

Hubble stretches stellar tape measure 10 times farther into space (10 April 2014)

Even though NASA's Hubble Space Telescope is 24 years old, astronomers are still coming up with imaginative, novel, and ground-breaking new uses for it.

<http://hubblesite.org/newscenter/archive/releases/2014/23/>

Tracking the transition of early-universe quark soup to matter-as-we-know-it (4 April 2014)

Ever wonder how the hot soup of subatomic particles that filled the early universe transformed into the ordinary matter of today's world?

<http://www.bnl.gov/newsroom/news.php?a=24473>

'Cosmic barometer' could reveal violent events in universe's past (31 March 2014)

Exploding stars, random impacts involving comets and meteorites, and even near misses between two bodies can create regions of great heat and high pressure.

http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/newssummary/news_31-3-2014-10-45-12

MISCELLANEOUS

XCOR Aerospace announces Brian Binnie as newest test pilot (3 April 2014)

XCOR Aerospace announced today that celebrated aviator, test pilot, engineer and commercial astronaut Brian Binnie has joined the company as Senior Test Pilot.

http://www.xcor.com/press/2014/14-04-03_Brian_Binnie_joins_XCOR.html

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Site negotiations for Cherenkov Telescope Array started (10 April 2014)

12 country delegates mandated by their governments to decide about the start of site negotiations for the Cherenkov Telescope Array (CTA) met in Munich.

<http://www.appec.org/8-news/77-gamma-ray-astronomy.html>

High-voltage transmission lines to act as antenna in first-of-its-kind space-weather project

(23 April 2014)

A NASA scientist is launching a one-to-two-year pilot project this summer that takes advantage of U.S. high-voltage power transmission lines to measure a phenomenon that has caused widespread power outages in the past.

<http://www.nasa.gov/content/goddard/high-voltage-transmission-lines-are-antenna-for-space-weather/>

Propulsion conference charts future course of rockets and satellites (22 April 2014)

Without propulsion there could be no spaceflight. The ability to travel into and through space underpins the space industry.

http://science.nasa.gov/science-news/science-at-nasa/2014/16apr_teleconnections/

Experiment on Earth demonstrates effect observed in space (29 April 2014)

Streaming jets of high-speed matter produce some of the most stunning objects seen in space

<http://phys.org/news/2014-04-earth-effect-space.html>

Pat Williams. April 2014