

# Space News Update – May 2014

*By Pat Williams*

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## COLIN PILLINGER “A Proper British Boffin” (Died 7 May 2014)



In 1830 a Martian meteorite fell on Launton, Colin Pillinger's ancestors' village. Was it this which inspired his vision of searching for life on Mars? He headed the team responsible for Beagle 2 reaching the Red Planet in 2003. That Beagle 2 did not “bark” did not dim his enthusiasm for the project, nor did it diminish his ability to inspire. Ironically the only known animal killed by a falling Martian meteorite was a dog in Egypt in 1911. Beagle 2 was a very British mission, partly privately funded by the medical charity the Wellcome Trust. For this mission Professor Pillinger built a mass spectrometer which has been further developed and has the potential for “same-day” diagnosis of tuberculosis. This is a test which previously took 6-8 weeks. The cost of space travel is often criticised but what if the spin-off is saving hundreds of thousands of lives here on Earth? Meanwhile back in space there is a main belt asteroid 15614 Pillinger and a Martian Ridge Pillinger Point - fitting tributes to a scientist who inspired a generation.

<http://www.bbc.co.uk/news/science-environment-27325339>

## VENUS EXPRESS GETS READY TO TAKE THE PLUNGE (16 May 2014)



Venus Express Credit: ESA

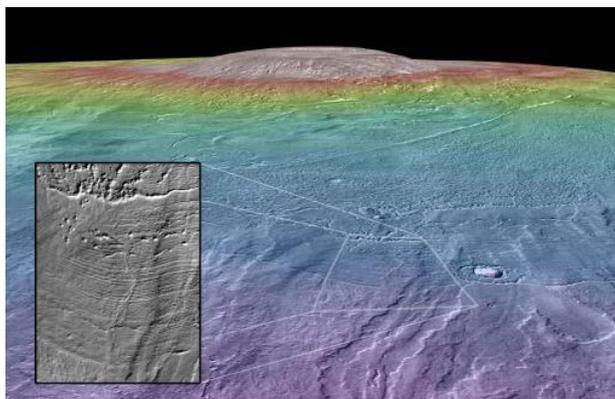
After eight years in orbit, ESA's Venus Express has completed routine science observations and is preparing for a daring plunge into the planet's hostile atmosphere.

Venus Express was launched on 9 November 2005, and arrived at Venus on 11 April 2006. It has been orbiting Venus in an elliptical 24-hour loop that takes it from a distant 66 000 km over the south pole – affording incredible global views – to an altitude of around 250 km above the surface at the north pole, close to the top of the planet’s atmosphere. With a suite of seven instruments, the spacecraft has provided a comprehensive study of the ionosphere, atmosphere and surface of Venus.

[http://www.esa.int/Our\\_Activities/Space\\_Science/Venus\\_Express/Venus\\_Express\\_gets\\_ready\\_to\\_take\\_the\\_plunge](http://www.esa.int/Our_Activities/Space_Science/Venus_Express/Venus_Express_gets_ready_to_take_the_plunge) Page | 2

This link summarises the mission and its discoveries to date: <http://sci.esa.int/venus-express/33010-summary/>

### **A HABITABLE ENVIRONMENT ON A MARTIAN VOLCANO. (27 May 2014)**

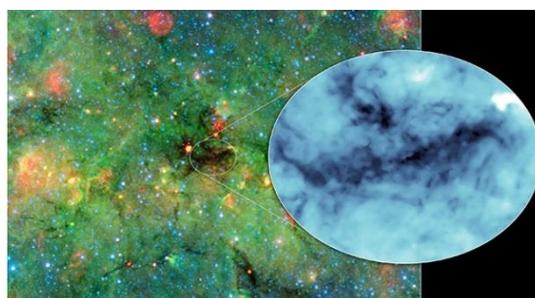


Possible habitable environs - braided fluvial channels (inset) emerge from the edge of glacial deposits roughly 210 million years old on the Martian volcano Arsia Mons, nearly twice as high as Mount Everest. (Colors indicate elevation.)  
Credit: NASA/Goddard Space Flight Center/Arizona State University/Brown University

The slopes of a giant Martian volcano, once covered in glacial ice, may have been home to one of the most recent habitable environments yet found on the Red Planet, according to new research led by Brown University geologists. Nearly twice as tall as Mount Everest, Arsia Mons is the third tallest volcano on Mars and one of the largest mountains in the solar system. This new analysis of the landforms surrounding Arsia Mons shows that eruptions along the volcano’s northwest flank happened at the same time that a glacier covered the region around 210 million years ago. The heat from those eruptions would have melted massive amounts of ice to form englacial lakes — bodies of water that form within glaciers like liquid bubbles in a half-frozen ice cube. The ice-covered lakes of Arsia Mons would have held hundreds of cubic kilometres of meltwater, according to calculations by Kat Scanlon, a graduate student at Brown who led the work. And where there’s water, there’s the possibility of a habitable environment.

<http://news.brown.edu/pressreleases/2014/05/mars>

### **COSMIC CLUMPS CAST THE DARKEST SHADOWS (21 May 2014)**



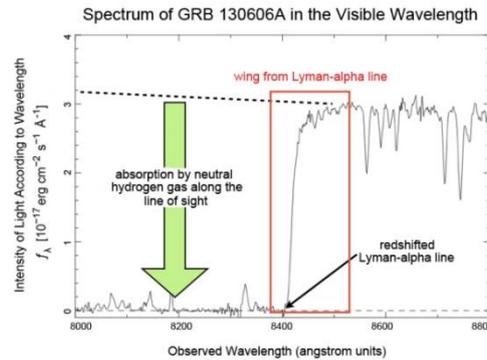
Astronomers have found cosmic clumps so dark, dense and dusty that they throw the deepest shadows ever recorded.

Image credit: NASA/JPL-Caltech/University of Zurich

Infrared observations from NASA's Spitzer Space Telescope of these blackest-of-black regions paradoxically light the way to understanding how the brightest stars form. The clumps represent the darkest portions of a huge, cosmic cloud of gas and dust located about 16,000 light-years away. A new study takes advantage of the shadows cast by these clumps to measure the cloud's structure and mass. The dusty cloud, results suggest, will likely evolve into one of the most massive young clusters of stars in our galaxy. The densest clumps will blossom into the cluster's biggest, most powerful stars, called O-type stars, the formation of which has long puzzled scientists. These hulking stars have major impacts on their local stellar environments while also helping to create the heavy elements needed for life.

<http://www.jpl.nasa.gov/news/news.php?release=2014-158>

## SPECTRUM OF GAMMA-RAY BURSTS AFTERGLOW INDICATES BEGINNING OF RE-IONISATION PROCESS (29 April 2014)



Visible wavelength spectrum of the afterglow of GRB 130606A at redshift of  $z=5.913$ , when the Universe was a mere one billion years old. Due to its redshift, the Lyman-alpha line (originally 1215 Å) is at 8400 Å. The analysis of a distinctive feature (i.e., the wing feature) between 8000-8400 Å (in the vicinity of this Lyman-alpha line near GRB) contributed to the estimate of the ratio of neutral hydrogen relative to the entire amount of hydrogen. (Credit: Subaru Telescope, NAOJ)

A research team, led by Professor Tomonori Totani (School of Science, the University of Tokyo) and composed of scientists from the National Astronomical Observatory of Japan, the Tokyo Institute of Technology and others, has discovered an indicator of when re-ionization of the primordial Universe began. The team used the Faint Object Camera and Spectrograph (FOCAS) mounted on the Subaru Telescope to thoroughly study the visible wavelength spectrum of the afterglow of a gamma-ray burst (GRB), which is a violent explosion of a massive star. Direct measurement of the absorption features in the spectrum of the afterglow toward GRB 130606A, located at a great distance, revealed the proportion of neutral hydrogen gas absorbing the light in its vicinity. This finding provides the best estimate of the amount of such neutral gas in the early Universe. The team's research means that scientists can now narrow down the time when the Universe was beginning to re-ionize after its dark age.

<http://www.nao.ac.jp/en/news/science/2014/20140501-subaru.html>

<http://www.sciencedaily.com/releases/2014/04/140430132906.htm>

## TECHNOLOGY TRANSFER – SPACE BRINGS FRESH WATER TO MOROCCO (6 May 2014)



A self-sustaining water filtration system at the University of Kenitra in Morocco. Solar panels and a wind generator power the system that is visible under the right-most solar panels. From there, fresh drinking water is delivered to the taps in the foreground. (Credit: Firmus)

Recycling waste water and urine into drinking water is not only for astronauts – the same method is now treating groundwater for a school in Morocco. ESA has been working for over 20 years on the best recipe for a closed life-support system that processes waste and delivers fresh oxygen, food and water to astronauts. One of the discoveries is how to build and control organic and ceramic membranes with holes just one ten-thousandth of a millimetre across – 700 times thinner than a strand of human hair. These tiny pores can filter out unwanted compounds in water, in particular nitrate. With help from a UNESCO partnership, the University of Kenitra looked to apply this new approach to tackle their drinking-water problem. Building on ESA's experience with membranes, French company Firmus teamed up with Germany's Belectric to build a self-sustaining unit powered by solar panels and wind energy.

[http://www.esa.int/Our\\_Activities/Human\\_Spaceflight/Research/Space\\_brings\\_fresh\\_water\\_to\\_Morocco](http://www.esa.int/Our_Activities/Human_Spaceflight/Research/Space_brings_fresh_water_to_Morocco)

## LINKS TO OTHER SPACE NEWS PUBLISHED IN MAY 2014

### BLACK HOLES

#### **Stellar explosion provides clues about black hole formation** (7 May 2014)

On 24 October 2012 observatories across the world were alerted about a huge stellar explosion, the GRB121024A, which had been located just hours before in the Eridanus constellation by NASA's Swift satellite. [http://www.basqueresearch.com/berria\\_irakurri.asp?Berri\\_Kod=5039&hizk=#.U3DDDe41OV1s](http://www.basqueresearch.com/berria_irakurri.asp?Berri_Kod=5039&hizk=#.U3DDDe41OV1s)

#### **Wise pokes hole in black hole doughnut theory** (22 May 2014)

A survey of more than 170,000 supermassive black holes, using NASA's Wide-field Infrared Survey Explorer (WISE), has astronomers re-examining a decades-old theory about the varying appearances of these interstellar objects. <http://www.nasa.gov/press/2014/may/nasas-wise-findings-poke-hole-in-black-hole-doughnut-theory/>

### COMET

#### **Rosetta's target comet is becoming active** (15 May 2014)

The target of ESA's Rosetta mission has started to reveal its true personality as a comet, its dusty veil clearly developing over the last six weeks.

[http://www.esa.int/Our\\_Activities/Space\\_Science/Rosetta/Rosetta\\_s\\_target\\_comet\\_is\\_becoming\\_active](http://www.esa.int/Our_Activities/Space_Science/Rosetta/Rosetta_s_target_comet_is_becoming_active)

### DARK MATTER

#### **HADES searches for Dark Matter** (12 May 2014)

Although Dark Energy and Dark Matter appear to constitute over 95 percent of the universe, nobody knows of which particles they are made up. <https://www.hzdr.de/db/Cms?pOid=41693&pNid=0>

### EARTH

#### **Cluster helps to model Earth's mysterious magnetosphere** (7 May 2014)

For many years, scientists have been striving to understand the constantly changing structure and behaviour of the huge magnetic bubble that surrounds our planet.

<http://sci.esa.int/cluster/54022-cluster-helps-to-model-earths-mysterious-magnetosphere/>

#### **High-speed solar winds increase lightning strikes on Earth** (15 May 2014)

University of Reading researchers found a link between increased thunderstorm activity on Earth and streams of high-energy particles accelerated by the solar wind, offering compelling evidence that particles from space help trigger lightning bolts.

<http://www.reading.ac.uk/news-and-events/releases/PR580552.aspx>

[http://iopscience.iop.org/1748-9326/9/5/055004/pdf/1748-9326\\_9\\_5\\_055004.pdf](http://iopscience.iop.org/1748-9326/9/5/055004/pdf/1748-9326_9_5_055004.pdf)

## EXOPLANETS

### **Diamond planets may be more common than astronomers thought** (12 May 2014)

Carbon-rich planets may be more common than previously thought, according to new research by Yale University astronomers.

<http://news.yale.edu/2014/05/12/diamond-planets-may-be-more-common-astronomers-thought>

### **Odd planet, so far from its star** (13 May 2014)

A gas giant has been added to the short list of exoplanets discovered through direct imaging.

<http://www.gemini.edu/node/12209>

### **Giant telescope tackles orbit and size of exoplanet** (15 May 2014)

Using one of the world's largest telescopes, a Lawrence Livermore team and international collaborators have tracked the orbit of a planet at least four times the size of Jupiter.

<https://www.llnl.gov/news/newsreleases/2014/May/NR-14-05-04.html#.U4t3y7VOWM8>

## GALAXIES

### **Measuring the power of a cosmic lens** (1 May 2014)

Two teams of astronomers using the NASA/ESA Hubble Space Telescope have discovered three distant exploding stars that have been magnified by the immense gravity of foreground galaxy clusters, which act like "cosmic lenses".

<http://hubblesite.org/newscenter/archive/releases/2014/21/full/>

### **Planck takes magnetic fingerprint of our galaxy** (6 May 2014)

Our Galaxy's magnetic field is revealed in a new image from ESA's Planck satellite. This image was compiled from the first all-sky observations of 'polarised' light emitted by interstellar dust in the Milky Way.

[http://www.icrar.org/news/news\\_items/media-releases/astronomers-harness-the-galaxys-biggest-telescope-to-make-most-precise-measurement-of-spinning-star](http://www.icrar.org/news/news_items/media-releases/astronomers-harness-the-galaxys-biggest-telescope-to-make-most-precise-measurement-of-spinning-star)

### **Turbulent birth for stars in merging galaxies** (13 May 2014)

Using state of the art computer simulations, a team of French astrophysicists have for the first time explained a long standing mystery: why surges of star formation (so called 'starbursts') take place when galaxies collide.

<http://www.ras.org.uk/news-and-press/news-archive/254-news-2014/2444-a-turbulent-birth-for-stars-in-merging-galaxies>

### **Very distant galaxy cluster confirmed** (21 May 2014)

The structures and star populations of massive galaxies appear to change as they age, but much about how these galaxies formed and evolved remains mysterious.

[http://carnegiescience.edu/news/very\\_distant\\_galaxy\\_cluster\\_confirmed](http://carnegiescience.edu/news/very_distant_galaxy_cluster_confirmed)

### **Radio galaxy discovery near Earth spurs more questions** (23 May 2014)

WA astronomers have discovered a radio galaxy near earth by accident.

[http://www.icrar.org/news/news\\_items/media-releases/astronomers-harness-the-galaxys-biggest-telescope-to-make-most-precise-measurement-of-spinning-star](http://www.icrar.org/news/news_items/media-releases/astronomers-harness-the-galaxys-biggest-telescope-to-make-most-precise-measurement-of-spinning-star)

### **Failed dwarf galaxy survives galactic collision thanks to full dark-matter jacket** (23 May 2014)

Like a bullet wrapped in a full metal jacket, a high-velocity hydrogen cloud hurtling toward the Milky Way appears to be encased in a shell of dark matter, according to a new analysis of data from the National Science Foundation's Robert C. Byrd Green Bank Telescope (GBT).

<https://public.nrao.edu/news/pressreleases/smith-cloud-dark-matter>

### **Chandra helps explain red and dead galaxies** (30 May 2014)

NASA's Chandra X-ray Observatory has shed new light on the mystery of why giant elliptical galaxies have few, if any, young stars. [http://www.nasa.gov/mission\\_pages/chandra/multimedia/red-and-dead-galaxies.html](http://www.nasa.gov/mission_pages/chandra/multimedia/red-and-dead-galaxies.html)

## GAMMA-RAY BURST

### **Astronomers observe corkscrew nature of light from a distant black hole** (1 May 2014)

For the first time an international team of astronomers has measured circular polarisation in the bright flash of

light from a dying star collapsing to a black hole, giving insight into an event that happened almost 11 billion years ago.

<http://www.icrar.org/home/astronomers-observe-corkscrew-nature-of-light-from-a-distant-black-hole>

## INTERNATIONAL SPACE STATION

### **In space, headaches are an occupational hazard** (1 May 2014)

Headaches in astronauts on the International Space Station (ISS) are attributed to elevated levels of carbon dioxide (CO<sub>2</sub>), reports a study in the May Journal of Occupational and Environmental Medicine, official publication of the American College of Occupational and Environmental Medicine (ACOEM).

[http://www.newswise.com/articles/view/617204/?sc=rsmn&utm\\_source=feedburner&utm\\_medium=feed&utm\\_campaign=Feed%3A+NewswiseMednews+%28Newswise%3A+MedNews%29](http://www.newswise.com/articles/view/617204/?sc=rsmn&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+NewswiseMednews+%28Newswise%3A+MedNews%29)

### **Ham video premiers on space station** (5 May 2014)

Astronauts on the International Space Station can now talk with people on Earth with video using simple transmitters. 'Ham TV' has been set up in ESA's Columbus laboratory and already used for talking with ground control.

[http://www.esa.int/Our\\_Activities/Human\\_Spaceflight/Education/Ham\\_video\\_premiers\\_on\\_Space\\_Station](http://www.esa.int/Our_Activities/Human_Spaceflight/Education/Ham_video_premiers_on_Space_Station)

### **Europe's final Automated Transfer Vehicle assembled for launch** (9 May 2014)

The Automated Transfer Vehicle (ATV) for Arianespace's next resupply mission to the International Space Station is standing tall at the Spaceport as preparations continue for its heavy-lift Ariane 5 launch on Flight VA219. <http://www.arianespace.com/news-mission-update/2014/1169.asp>

### **Space Station crew returns to Earth** (13 May 2014)

Three crew members from the International Space Station (ISS) returned to Earth Tuesday after 188 days in space, during which they orbited Earth more than 3,000 times and travelled almost 79.8 million miles.

<http://www.nasa.gov/press/2014/may/space-station-crew-returns-to-earth-lands-safely-in-kazakhstan/>

### **Dragon spacecraft returns critical NASA science from Space Station** (18 May 2014)

SpaceX's Dragon cargo spacecraft splashed down at 3:05 p.m. EDT Sunday, in the Pacific Ocean, approximately 300 miles west of Baja California, returning more than 3,500 pounds of NASA cargo and science samples from the International Space Station. <http://www.nasa.gov/press/2014/may/spacex-dragon-spacecraft-returns-critical-nasa-science-from-space-station/>

## INTERPLANETARY MEDIUM

### **NASA sounding rocket to study interplanetary medium** (1 May 2014)

NASA will conduct a sounding rocket mission in May 2014, carrying a payload designed to measure the nature of the interplanetary medium, characterizing the particles that fill our solar system.

<http://www.nasa.gov/content/goddard/nasa-sounding-rocket-to-study-interplanetary-medium/>

## JUPITER AND MOONS

### **Ganymede may harbour 'club sandwich' of oceans and ice** (1 May 2014)

The largest moon in our solar system, a companion to Jupiter named Ganymede, might have ice and oceans stacked up in several layers like a club sandwich, according to new NASA-funded research that models the moon's makeup.

<http://www.jpl.nasa.gov/news/news.php?release=2014-138>

### **Shrinking of Jupiter's Great Red Spot** (15 May 2014)

Jupiter's trademark Great Red Spot – a swirling storm feature larger than Earth – is shrinking.

[http://science.nasa.gov/science-news/science-at-nasa/2014/15may\\_grs/](http://science.nasa.gov/science-news/science-at-nasa/2014/15may_grs/)

## MARS

### **Hardy microbes could colonize Mars** (2 May 2014)

Three recent scientific papers examined the risks of interplanetary exchange of organisms using research from the International Space Station. [http://www.nasa.gov/mission\\_pages/station/research/news/eu\\_tef/](http://www.nasa.gov/mission_pages/station/research/news/eu_tef/)

**Curiosity rover drills sandstone slab on Mars** (6 May 2014)

Portions of rock powder collected by the hammering drill on NASA's Curiosity Mars rover from a slab of Martian sandstone will be delivered to the rover's internal instruments.

<http://www.jpl.nasa.gov/news/news.php?release=2014-142>

**Against the current with lava flows** (12 May 2014)

Primeval lava flows formed the massive canyons and gorge systems on Mars.

<http://redplanet.asu.edu/?p=6917>

**MAVEN Solar Wind Ion Analyzer will look at key player in Mars atmosphere loss** (14 May 2014)

This past November, NASA launched the Mars Atmosphere and Volatile Evolution (MAVEN) mission in the hope of understanding how and why the planet has been losing its atmosphere over billions of years.

<http://www.nasa.gov/content/goddard/maven-solar-wind-ion-analyzer-will-look-at-key-player-in-mars-atmosphere-loss/>

**Earth organisms survive under Martian conditions** (19 May 2014)

New research suggests that methanogens — among the simplest and oldest organisms on Earth — could survive on Mars. <http://www.sciencedaily.com/releases/2014/05/140519114248.htm>

[http://google.uark.edu/search?q=cache:81TPOEQ-eNAJ:spacecenter.uark.edu/REU03absJS.pdf+Earth+organisms+survive+under+Martian+conditions&proxystylesheet=uark\\_v\\_2&client=uark\\_v\\_2&ie=UTF-8&output=xml\\_no\\_dtd&access=p&oe=UTF-8](http://google.uark.edu/search?q=cache:81TPOEQ-eNAJ:spacecenter.uark.edu/REU03absJS.pdf+Earth+organisms+survive+under+Martian+conditions&proxystylesheet=uark_v_2&client=uark_v_2&ie=UTF-8&output=xml_no_dtd&access=p&oe=UTF-8)

**Martian mineral could be linked to microbes** (20 May 2014)

Scientists have discovered that the earliest living organisms on Earth were capable of making a mineral that may be found on Mars. [http://carnegiescience.edu/news/very\\_distant\\_galaxy\\_cluster\\_confirmed](http://carnegiescience.edu/news/very_distant_galaxy_cluster_confirmed)

**Mars weather camera helps find new crater** (22 May 2014)

Researchers have discovered on the Red Planet the largest fresh meteor-impact crater ever firmly documented with before-and-after images.

<http://www.nasa.gov/press/2014/may/nasa-mars-weather-camera-helps-find-new-crater-on-red-planet/>

**METEORITES****Ancient crater points to massive meteorite strike** (7 May 2014)

The discovery of an ancient ring-like structure in southern Alberta suggests the area was struck by a meteorite large enough to leave an eight-kilometre-wide crater, producing an explosion strong enough to destroy present-day Calgary, say researchers from the Alberta Geological Survey and University of Alberta.

<http://news.ualberta.ca/newsarticles/2014/may/ancient-crater-points-to-massive-meteorite-strike>

**MISCELLANEOUS****University of Maryland establishes orbital debris research centre** (21 May 2014)

The University of Maryland (UMD) has announced the establishment of the Center for Orbital Debris Education and Research (CODER) to address critical issues in orbiting space debris and serve as a hub for academic, industry, and government research collaboration.

[http://www.research.umd.edu/news/news\\_story.php?id=8251](http://www.research.umd.edu/news/news_story.php?id=8251)

**Bringing a spacecraft back from the dead** (22 May 2014)

More than 25 years ago, an abandoned NASA spacecraft fulfilled its mission, fell silent and has since been hurtling around the sun, somewhere between the orbits of Earth and Mars.

<http://news.engr.arizona.edu/news/bringing-spacecraft-back-dead>

**Astronomers are steering Hawaii's Keck telescopes from Swinburne's Hawthorn campus** (26 May 2014)

From a remote control room in the middle of Swinburne University of Technology's Hawthorn campus, astronomers have successfully steered the world's largest optical telescopes more than 9000 kilometres away at the W M Keck Observatory in Hawaii.

<http://www.swinburne.edu.au/media-centre/news/2014/05/astronomers-are-steering-hawaiis-keck-telescopes-from-swinburnes-hawthorn-campus.html>

## MOON

### **Radar images uncover remarkable features below Moon's surface** (14 May 2014)

New images of Earth's Moon reveal more than can be seen with the naked eye, thanks to the combined efforts of the two largest radio telescopes of their kind -- the National Radio Astronomy Observatory's Green Bank Telescope (GBT) in West Virginia and the Arecibo Observatory in Puerto Rico.

<https://public.nrao.edu/news/pressreleases/moon-gbt-arecibo>

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### **Water in moon rocks provides clues and questions about lunar history** (27 May 2014)

A recent review of hundreds of chemical analyses of Moon rocks indicates that the amount of water in the Moon's interior varies regionally -- revealing clues about how water originated and was redistributed in the Moon. <http://manoa.hawaii.edu/news/article.php?ald=6545>

## SATURN AND ITS MOONS

### **Evidence for theory that Saturn's collapsing magnetic tail causes auroras** (19 May 2014)

University of Leicester researchers have captured stunning images of Saturn's auroras as the planet's magnetic field is battered by charged particles from the Sun. <http://www2.le.ac.uk/offices/press/press-releases/2014/may/2014csmoking-gun2014d-evidence-for-theory-that-saturn2019s-collapsing-magnetic-tail-causes-auroras>

### **Sunsets on Titan reveal the complexity of hazy exoplanets** (27 May 2014)

Scientists working with data from NASA's Cassini mission have developed a new way to understand the atmospheres of exoplanets by using Saturn's smog-enshrouded moon Titan as a stand-in.

<http://www.jpl.nasa.gov/news/news.php?release=2014-164>

## SPACE ECONOMY - GLOBAL

### **Space Foundation's 2014 report reveals continued growth in the global space economy in 2013**

(19 May 2014) The global space economy grew to \$314.17 billion in commercial revenue and government budgets in 2013, reflecting growth of 4 percent from the 2012 total of \$302.22 billion.

<http://www.spacefoundation.org/media/press-releases/space-foundations-2014-report-reveals-continued-growth-global-space-economy>

## SPACE MISSIONS

### **MOST astronomy mission comes to an end** (30 April 2014)

After more than ten years of studying the Universe, the Canadian Microvariability and Oscillation of STars (MOST) mission will come to an end on September 9, 2014, having exceeded its objectives.

[http://www.asc-csa.gc.ca/eng/media/news\\_releases/2014/0430.asp](http://www.asc-csa.gc.ca/eng/media/news_releases/2014/0430.asp)

## STARS AND STAR CLUSTERS

### **Entire star cluster thrown out of its galaxy** (30 April 2014)

The galaxy known as M87 has thrown an entire star cluster toward us at more than two million miles per hour.

<http://www.cfa.harvard.edu/news/2014-09>

### **3-D model of stellar core collapse** (1 May 2014)

What happens when massive stars collapse? One potential result is a core-collapse supernova.

<http://www.caltech.edu/content/supernova-or-not-supernova-3-d-model-stellar-core-collapse>

### **Neutron star magnetic fields: not so turbulent?** (6 May 2014)

Neutron stars, the extraordinarily dense stellar bodies created when massive stars collapse, are known to host the strongest magnetic fields in the universe -- as much as a billion times more powerful than any man-made electromagnet.

<http://www.mcgill.ca/newsroom/channels/news/neutron-star-magnetic-fields-not-so-turbulent-236547>

### **Most precise measurement of spinning star** (6 May 2014)

An international team of astronomers has made a measurement of a distant neutron star that is one million

times more precise than the previous world's best.

[http://www.icrar.org/news/news\\_items/media-releases/astromers-harness-the-galaxys-biggest-telescope-to-make-most-precise-measurement-of-spinning-star](http://www.icrar.org/news/news_items/media-releases/astromers-harness-the-galaxys-biggest-telescope-to-make-most-precise-measurement-of-spinning-star)

#### **Nearest bright 'hypervelocity star' found** (7 May 2014)

A University of Utah-led team discovered a "hypervelocity star" that is the closest, second-brightest and among the largest of 20 found so far.

[http://unews.utah.edu/news\\_releases/nearest-bright-hypervelocity-star-found/](http://unews.utah.edu/news_releases/nearest-bright-hypervelocity-star-found/)

#### **NASA simulator successfully recreates space dust** (7 May 2014)

A team of scientists at NASA's Ames Research Center in Moffett Field, Calif., has successfully reproduced, right here on Earth, the processes that occur in the atmosphere of a red giant star and lead to the formation of planet-forming interstellar dust.

<http://www.nasa.gov/press/2014/may/nasa-simulator-successfully-recreates-space-dust/>

#### **Chandra observatory delivers new insight into formation of star clusters** (7 May 2014)

Using data from NASA's Chandra X-ray Observatory and infrared telescopes, astronomers have made an important advance in the understanding of how clusters of stars come into being.

<http://www.nasa.gov/press/2014/may/nasas-chandra-observatory-delivers-new-insight-into-formation-of-star-clusters/>

#### **Sun's long-lost brother found** (8 May 2014)

A team of researchers led by astronomer Ivan Ramirez of The University of Texas at Austin has identified the first "sibling" of the sun — a star almost certainly born from the same cloud of gas and dust as our star.

[http://www.as.utexas.edu/~ivan/sun\\_siblings.pdf](http://www.as.utexas.edu/~ivan/sun_siblings.pdf)

#### **Tracing the birth of stars in the Orion Nebula with FIFI-LS** (12 May 2014)

During its first scientific flight, the new infrared spectrometer FIFI-LS (Field-Imaging Far-Infrared Line Spectrometer) investigated the birth of young stars in the Orion Nebula and nine other celestial regions.

[http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10212/332\\_read-10227/year-all/#gallery/14633](http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10212/332_read-10227/year-all/#gallery/14633)

#### **Identifying the signature of Earth-eating stars** (16 May 2014)

Some Sun-like stars are 'Earth-eaters.' During their development they ingest large amounts of the rocky material from which 'terrestrial' planets like Earth, Mars and Venus are made.

<http://news.vanderbilt.edu/2014/05/earth-eating-stars/>

#### **NASA-funded rocket to study birthplace of stars** (23 May 2014)

In deep space, floating between the stars, lies an abundance of atoms -- carbon, oxygen, hydrogen -- that over millions of years will grow into new stars and new planets.

<http://www.nasa.gov/content/goddard/nasa-funded-rocket-to-study-birthplace-of-stars/>

### **SUPERNOVA**

#### **3-D model of stellar core collapse** (1 May 2014)

What happens when massive stars collapse? One potential result is a core-collapse supernova. Astronomers can make observations of such events that tell us what is happening on the surface of a star when it explodes in a supernova, but it is considerably more difficult to know what is driving the process inside the star at its hot, dense core.

<http://www.caltech.edu/content/supernova-or-not-supernova-3-d-model-stellar-core-collapse>

#### **Magnetar formation mystery solved?** (14 May 2014)

Magnetars are the bizarre super-dense remnants of supernova explosions. They are the strongest magnets known in the Universe — millions of times more powerful than the strongest magnets on Earth.

<http://www.eso.org/public/unitedkingdom/news/eso1415/>

#### **New technique reveals supernova progenitor** (21 May 2014)

Wolf-Rayet stars are very large and very hot. Astronomers have long wondered whether Wolf-Rayet stars are the progenitors of certain types of supernovae.

[https://carnegiescience.edu/news/new\\_technique\\_reveals\\_supernova\\_progenitor](https://carnegiescience.edu/news/new_technique_reveals_supernova_progenitor)

## UNIVERSE

### **Nearby Galaxy is a “fossil” from the early universe** (1 May 2014)

New work from a team of scientists including Carnegie’s Josh Simon analysed the chemical elements in the faintest known galaxy, called Segue 1, and determined that it is effectively a fossil galaxy left over from the early universe.

[http://carnegiescience.edu/news/nearby\\_galaxy\\_%E2%80%9Cfossil%E2%80%9D\\_early\\_universe](http://carnegiescience.edu/news/nearby_galaxy_%E2%80%9Cfossil%E2%80%9D_early_universe)

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### **Astronomers create first realistic virtual universe** (7 May 2014)

Astronomers have created the first realistic virtual universe using a computer simulation called "Illustris."

<http://www.cfa.harvard.edu/news/2014-10>

### **Radiation from early universe found key to answer major questions in physics** (13 May 2014)

Astrophysicists at UC San Diego have measured the minute gravitational distortions in polarized radiation from the early universe and discovered that these ancient microwaves can provide an important cosmological test of Einstein’s theory of general relativity.

[http://ucsdnews.ucsd.edu/pressrelease/radiation\\_from\\_early\\_universe\\_found\\_key\\_to\\_answer\\_major\\_questions\\_in\\_physics](http://ucsdnews.ucsd.edu/pressrelease/radiation_from_early_universe_found_key_to_answer_major_questions_in_physics)

### **ESA's new X-ray optics for observing the hot universe** (16 May 2014)

A new idea to use super-polished silicon wafers as the heart of a telescope is set to reveal more of the hot, high-energy Universe, peering back into its turbulent history.

[http://www.esa.int/Our\\_Activities/Space\\_Science/Venus\\_Express/Venus\\_Express\\_gets\\_ready\\_to\\_take\\_the\\_plunge](http://www.esa.int/Our_Activities/Space_Science/Venus_Express/Venus_Express_gets_ready_to_take_the plunge)

### **Universe broke its rising 'fever' about 11 billion years ago** (19 May 2014)

An international team, led by researchers from Swinburne University of Technology, has found evidence that the Universe broke its rising ‘fever’ about 11 billion years ago. <http://www.swinburne.edu.au/media-centre/news/2014/05/the-universe-broke-its-rising-fever-about-11-billion-years-ago.html>

*Pat Williams. May 2014*