天文学文献摘要简报

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（第二期）

中国科学院上海天文台信息中心图书馆

中国科学院文献情报中心学科咨询部

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星系宇宙学

环银河系轨道发现新矮星系

New dwarf galaxies discovered in orbit around the Milky Way

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoc-wtt030915.php
摘要: (University of Cambridge) Astronomers have discovered a treasure trove of rare dwarf satellite galaxies orbiting our own Milky Way. The discoveries could hold the key to understanding dark matter, the mysterious substance which holds our galaxy together.
日期: 2015-03-11

揭示巨大星系团碰撞细节

Mysterious phenomena in a gigantic galaxy-cluster collision

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nrao-irm030915.php
摘要: (National Radio Astronomy Observatory) Using new capabilities of the Very Large Array, astronomers have made a fascinating image revealing details of the interactions between a pair of galaxy clusters.
日期: 2015-03-11

旋转尘埃气体盘中间发现巨大炽热恒星

Cosmic dust discs withstand hellfire

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uob-cdd031015.php
摘要: (University of Bonn) Scientists led by astronomers at the University of Bonn discovered an unusual phenomenon in the center of the Milky Way: They detected rotating dust and gas discs hosting exceptionally large and hot stars. The existence in the presence of the destructive UV radiation field of their massive neighbors came as a surprise. How these rotating discs are able to withstand evaporation under these extreme conditions? The results are published in Astronomy & Astrophysics.
日期: 2015-03-11

科学家发现矮卫星星系

Scientists find rare dwarf satellite galaxy candidates in Dark Energy Survey data

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/dnal-sfr031015.php
摘要: (DOE/Fermi National Accelerator Laboratory) Scientists on two continents have independently discovered a set of celestial objects that seem to belong to the rare category of dwarf satellite galaxies orbiting our home galaxy, the Milky Way.
日期: 2015-03-11

ESO VLT 巡天望远镜拍摄大量新恒星

A grand extravaganza of new stars

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/e-age030915.php
摘要: (ESO) This dramatic landscape in the southern constellation of Ara (The Altar) is a treasure trove of celestial objects. Star clusters, emission nebulae and active star-forming regions are just some of the riches observed in this region lying some 4000 light-years from Earth. This beautiful new image is the most detailed view of this part of the sky so far, and was taken using the VLT Survey Telescope at ESOs Paranal Observatory in Chile.
日期: 2015-03-12

科学家对经典超新星爆发扩张拍摄了详细的时差 X 射线图片

Time-lapse snapshots of a novas fading light

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/r-tls031615.php
摘要: (RIKEN) Scientists in a collaboration led by Dai Takei of the RIKEN SPring-8 Center in Japan have, for the first time, examined a detailed time lapse X-ray image of the expansion of a classical nova explosion using the GK Persei nova -- a binary star system which underwent a nova explosion in 1901.
日期: 2015-03-18

临近星系尘埃气体云中大量恒星正在形成

More than a million stars are forming in a mysterious dusty gas cloud in a nearby galaxy

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoc--mta031815.php
摘要: (University of California - Los Angeles) An extremely hot, dusty cloud of molecular gases is forming more than a million young stars in a tiny nearby galaxy, an international team of astronomers reports March 19 in the journal Nature.
日期: 2015-03-19

高海拔水切伦科夫（HAWC）伽马射线天文台是观测宇宙中高能现象的最新工具

Observatory to study universes most energetic phenomena

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uom-hot031915.php
摘要: (University of Maryland) The High Altitude Water Cherenkov (HAWC) Gamma-Ray Observatory is the newest tool available to visualize the universes most explosive events and learn more about the nature of high-energy radiation. Construction is now complete on HAWCs 300th and final detector tank, and the observatory will soon begin collecting data at full capacity. This milestone will be marked with an inaugural event at the observatory on March 19-20, 2015.
日期: 2015-03-21

超大质量黑洞清理了星系中心的恒星形成气

Supermassive black hole clears star-making gas from galaxy's core

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uom-sbh032315.php
摘要: (University of Maryland) A new study in the journal Nature, published March 26, 2015, provides the first observational evidence that a supermassive black hole at the center of a large galaxy can power huge, wide-angled outpourings of material from deep inside the galaxys core. These outflows remove massive quantities of star-making gas, thus influencing the size, shape and overall fate of the host galaxy.
日期: 2015-03-26

科学家发现超大质量黑洞影响宿主星系演化的机制

Suzaku, Herschel link a black-hole wind to a galactic gush of star-forming gas

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-shl032515.php
摘要: (NASA/Goddard Space Flight Center) By combining observations from the Japan-led Suzaku X-ray satellite and the European Space Agencys infrared Herschel Space Observatory, scientists have connected a fierce wind produced near a galaxys monster black hole to an outward torrent of cold gas a thousand light-years across. The finding validates a long-suspected feedback mechanism enabling a supermassive black hole to influence the evolution of its host galaxy.
日期: 2015-03-26

尘埃云 G2 接近（passing）星系中心黑洞

Best view yet of dusty cloud passing galactic center black hole

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/e-bvy032415.php
摘要: (ESO) The best observations so far of the dusty gas cloud G2 confirm that it made its closest approach to the supermassive black hole at the centre of the Milky Way in May 2014 and has survived the experience. The new result from ESOs Very Large Telescope shows that the object appears not to have been significantly stretched. It is most likely to be a young star with a massive core that is still accreting material.
日期: 2015-03-27

星系团碰撞显示互相的暗物质几乎没有反应

Galaxy clusters collide; dark matter still a mystery

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/epfd-gcc032515.php
摘要: (Ecole Polytechnique Fédérale de Lausanne) When galaxy clusters collide, their dark matters pass through each other, with very little interaction. Deepening the mystery, a study by scientists at EPFL and the University of Edinburgh challenges the idea that dark matter is composed of particles.
日期: 2015-03-27

天文学家通过观测星系团碰撞研究暗物质

Dark matter even darker than once thought

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/eic-dme032615.php
摘要: (ESA/Hubble Information Centre) Astronomers using observations from the NASA/ESA Hubble Space Telescope and NASAs Chandra X-ray Observatory have studied how dark matter in clusters of galaxies behaves when the clusters collide. The results, published in the journal Science on March 27, 2015, show that dark matter interacts with itself even less than previously thought, and narrows down the options for what this mysterious substance might be.
日期: 2015-03-27

普朗克卫星有助于揭开宇宙大尺度结构之谜

Planck: An unfocused eye that sees the big picture

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/isoa-pa033115.php
摘要: (International School of Advanced Studies (SISSA)) Planck satellite helps to unveil the large-scale structure of the Universe.
日期: 2015-04-01

哈勃发现神秘类星体幽灵

Hubble finds ghosts of quasars past

来源 URL: http://www.eurekalert.org/pub_releases/2015-04/eic-hfg040215.php
摘要: (ESA/Hubble Information Centre) The NASA/ESA Hubble Space Telescope has imaged a set of enigmatic quasar ghosts -- ethereal green objects which mark the graves of these objects that flickered to life and then faded. The eight unusual looped structures orbit their host galaxies and glow in a bright and eerie goblin-green hue. They offer new insights into the turbulent pasts of these galaxies.
日期: 2015-04-03

黑洞不能擦除信息只是保存

Black holes don’t erase information, scientists say

来源 URL: http://www.eurekalert.org/pub_releases/2015-04/uab-bhd040215.php
摘要: (University at Buffalo) Some physicists have argued that black holes are the ultimate vault, sucking in information and then evaporating without leaving behind any clue as to what they once contained. A new University at Buffalo study shows this perspective may be wrong. The

research finds that information is not lost once it has entered a black hole, and presents explicit calculations showing how information is, in fact, preserved.
日期: 2015-04-03

哈勃发现死亡类星体附近幽灵

Hubble finds phantom objects near dead quasars

来源 URL: http://www.eurekalert.org/pub_releases/2015-04/nsfc-hfp040215.php
摘要: (NASA/Goddard Space Flight Center) NASAs Hubble Space Telescope has photographed a set of wispy, goblin-green objects that are the ephemeral ghosts of quasars that flickered to life and then faded.
日期: 2015-04-03

恒星与银河系

船底座星云研究发现恒星形成细节

Carina Nebula survey reveals details of star formation

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/ru-cns030915.php
摘要: (Rice University) A new Rice University-led survey of one of the most active, star-forming regions in the galactic neighborhood is helping astronomers better understand the processes that may have contributed to the formation of the sun 4.5 billion years ago.
日期: 2015-03-10

约翰霍普金斯大学天文学家发现超新星分割图像

Rare split images of supernova put Johns Hopkins astronomer in the spotlight

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/jhu-rsi031015.php
摘要: (Johns Hopkins University) A Johns Hopkins astronomer played a key role in the recent discovery of a distant exploding star whose light split into four distinct images in a display seen for the first time by scientists using the Hubble Space Telescope.
日期: 2015-03-11

银河系比预估的大至少 50%

The corrugated galaxy -- Milky Way may be much larger than previously estimated

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/rpi-tcg031115.php
摘要: (Rensselaer Polytechnic Institute) The Milky Way galaxy is at least 50 percent larger than is commonly estimated, according to new findings that reveal that the galactic disk is contoured into several concentric ripples.
日期: 2015-03-12

银河系中心的尘埃来源于古老的超新星爆发

Milky Ways center unveils supernova dust factory

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/cu-mwc031915.php
摘要: (Cornell University) Sifting through the center of the Milky Way galaxy, astronomers have made the first direct observations -- using an infrared telescope aboard a modified Boeing 747 -- of cosmic building-block dust resulting from an ancient supernova.
日期: 2015-03-20

17 世纪神秘爆炸是恒星碰撞

Colliding stars explain enigmatic 17th century explosion

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/e-cse031915.php
摘要: (ESO) New observations made with APEX and other telescopes reveal that the star that European astronomers saw appear in the sky in 1670 was not a nova, but a much rarer, violent breed of stellar collision. The results appear online in the journal Nature on March 23, 2015.
日期: 2015-03-24

恒星可能产生声音

Have researchers discovered the sound of the stars?

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoy-hrd032315.php
摘要: (University of York) A chance discovery by a team of researchers, including a University of York scientist, has provided experimental evidence that stars may generate sound.The study of fluids in motion -- now known as hydrodynamics -- goes back to the Egyptians, so it is not often that new discoveries are made. However when examining the interaction of an ultra-intense laser

with a plasma target, the team observed something unexpected.
日期: 2015-03-24

发现古老超新星的化学指纹

Chemical fingerprints of ancient supernovae found

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/ci-cfo032315.php
摘要: (Carnegie Institution) A search of nearby galaxies for their oldest stars has uncovered two stars in the Sculptor dwarf galaxy that were born shortly after the galaxy formed, approximately 13 billion years ago. The unusual chemical content of the stars may have originated in a single supernova explosion from the first generation of Sculptor stars.
日期: 2015-03-24

NASA 卫星捕捉到新生原恒星 HOPS 383 的爆发

satellites catch growth spurt from newborn protostar

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-nsc032415.php
摘要: (NASA/Goddard Space Flight Center) Using data from orbiting observatories, including NASAs Spitzer Space Telescope, and ground-based facilities, an international team of astronomers has discovered an outburst from a star thought to be in the earliest phase of its development. The eruption, scientists say, reveals a sudden accumulation of gas and dust by an exceptionally young protostar known as HOPS 383.
日期: 2015-03-25

天文学家观测到大质量恒星的形成

Astronomers watch unfolding saga of massive star formation

来源 URL: http://www.eurekalert.org/pub_releases/2015-04/nrao-awu033015.php
摘要: (National Radio Astronomy Observatory) Astronomers are getting a unique, real-time look as a massive young star develops, with the promise of greatly improved understanding of the process.
日期: 2015-04-03

朱雀（Suzaku）X 射线卫星数据揭示白矮星预爆质量

studies supernova crime scene, shows a single white dwarf to blame

来源 URL: http://www.eurekalert.org/pub_releases/2015-04/nsfc-sss040215.php
摘要: (NASA/Goddard Space Flight Center) Using archival data from the Japan-led Suzaku X-ray satellite, astronomers have determined the pre-explosion mass of a white dwarf star that blew up thousands of years ago. The measurement strongly suggests the explosion involved only a single white dwarf, ruling out a well-established alternative scenario involving a pair of merging white dwarfs.
日期: 2015-04-03

太阳物理

NASA 拍摄到中型太阳耀斑图像

NASAs SDO captures images of a mid-level solar flare

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-nsc030915.php
摘要: (NASA/Goddard Space Flight Center) The sun emitted a mid-level solar flare, peaking at 5:22 pm EST on March 7, 2015. NASAs Solar Dynamics Observatory, which watches the sun constantly, captured an image of the event. Solar flares are powerful bursts of radiation.
日期: 2015-03-10

NASA 拍摄到中型太阳耀斑图像

SDO captures images of mid-level solar flares

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-sci031015.php
摘要: (NASA/Goddard Space Flight Center) The sun emitted two mid-level solar flares on March 9, 2015: The first peaked at 7:54 pm EDT and the second at 11:24 pm EDT.
日期: 2015-03-11

磁层多尺度任务飞船准备发射

Magnetospheric multiscale spacecraft poised for launch

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/sri-mms031015.php

摘要: (Southwest Research Institute) SwRI leads the science investigation for MMS, a NASA mission to study magnetic reconnection up close for the first time.
日期: 2015-03-11

太阳发出巨大太阳耀斑

Sun emits significant solar flare

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-ses031115.php
摘要: (NASA/Goddard Space Flight Center) The sun emitted a significant solar flare, peaking at 12:22 p.m. EDT on March 11, 2015. NASAs Solar Dynamics Observatory, which watches the sun constantly, captured an image of the event.
日期: 2015-03-12

NASA 地球轨道飞船将研究磁重联现象

NASA spacecraft in Earths orbit, preparing to study magnetic reconnection

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-nsi031315.php
摘要: (NASA/Goddard Space Flight Center) Following a successful launch at 10:44 p.m. EDT Thursday, NASAs four Magnetospheric Multiscale spacecraft are positioned in Earths orbit to begin the first space mission dedicated to the study of a phenomenon called magnetic reconnection. This process is thought to be the catalyst for some of the most powerful explosions in our solar system.
日期: 2015-03-14

NASA 观测到 2 个日冕洞

NASAs SDO sees suns 2 coronal holes

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-nss031715.php
摘要: (NASA/Goddard Space Flight Center) NASAs Solar Dynamics Observatory, or SDO, captured this solar image on March 16, 2015, which clearly shows two dark patches, known as coronal holes. The larger coronal hole of the two, near the southern pole, covers an estimated 6- to 8-percent of the total solar surface. While that may not sound significant, it is one of the largest polar holes scientists have observed in decades.
日期: 2015-03-19

NASA 资助在软 X 射线能量段研究太阳

NASA-funded mission studies the Sun in soft X-rays

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-nm032415.php
摘要: (NASA/Goddard Space Flight Center) At any given moment, our sun emits a range of light waves far more expansive than what our eyes alone can see: from visible light to extreme ultraviolet to soft and hard X-rays. In 2012 and 2013, a detector was launched on a sounding rocket for a 15 minute trip to look at a range of sunlight previously not well-observed: soft X-rays.
日期: 2015-03-25

太阳系和系外行星系统

绿岸望远镜（GBT）可观测金星表面详细情况

Venus, if you will, as seen in radar with the GBT

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nrao-irv030915.php
摘要: (National Radio Astronomy Observatory) Recently, by combining the highly sensitive receiving capabilities of the National Science Foundations Green Bank Telescope and the powerful radar transmitter at the NSFs Arecibo Observatory, astronomers were able to make remarkably detailed images of the surface of Venus without ever leaving Earth.
日期: 2015-03-10

土星附近岩石微粒证明土卫二内部有热液活动

CU-Boulder-led study shows Saturn moons ocean may have hydrothermal activity

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoca-css031015.php
摘要: (University of Colorado at Boulder) A new study by a team of Cassini mission scientists led by the University of Colorado Boulder have found that microscopic grains of rock detected near Saturn imply hydrothermal activity is taking place within the moon Enceladus.
日期: 2015-03-12

美国西南研究院研究土卫二富含甲烷的羽流

SwRI-led researchers study methane-rich plumes from Saturns icy moon Enceladus

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/sri-srs031215.php
摘要: (Southwest Research Institute) NASAs Cassini spacecraft has measured a curious abundance of methane spewing into the atmosphere of Saturns icy moon Enceladus. A team of American and French scientists published findings in Geophysical Research Letters suggesting two scenarios that could explain the methane abundance observed in the plumes.
日期: 2015-03-13

NASA 的观测表明木星最大卫星有地下海洋

NASAs Hubble observations suggest underground ocean on Jupiters largest moon

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsfc-nho031215.php
摘要: (NASA/Goddard Space Flight Center) NASAs Hubble Space Telescope has the best evidence yet for an underground saltwater ocean on Ganymede, Jupiters largest moon. The subterranean ocean is thought to have more water than all the water on Earths surface.
日期: 2015-03-13

新的水星表面成分地图揭示了行星历史

New Mercury surface composition maps illuminate the planets history

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/ci-nms031315.php
摘要: (Carnegie Institution) Two new papers from members of the MESSENGER Science Team provide global-scale maps of Mercurys surface chemistry that reveal previously unrecognized geochemical terranes -- large regions that have compositions distinct from their surroundings. The presence of these large terranes has important implications for the history of the planet
日期: 2015-03-14

利用谷歌地球的特征解释一些火星现象

Scientists fly kites on Earth to study Mars

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoa-sfk031415.php
摘要: (University of Arizona) An unconventional research method allows UA planetary scientists to develop digital terrain models -- think Google Earth on steroids -- of geologic features on Earth, revealing that some of the things we see on Mars and other planets may not be what they seem.
日期: 2015-03-17

硫化物球粒的发现为太阳系形成提供了新启示

New clues from the dawn of the solar system

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoa-ncf031415.php
摘要: (University of Arizona) Sulfide chondrules, a new type of building blocks discovered in meteorites left over from the solar systems infancy, provide evidence for a previously unknown region in the protoplanetary disk that gave rise to the planets including Earth.
日期: 2015-03-17

为寻找地外生命科学家创建反映地球生命特征的目录

Colorful life-form catalog will help discern if were alone

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/cu-clc031315.php
摘要: (Cornell University) While looking for life on planets beyond our own solar system, a group of international scientists has created a colorful catalog containing reflection signatures of Earth life forms that might be found on planet surfaces throughout the cosmic hinterlands. The new database and research, published in the March 16 Proceedings of the National Academy of Sciences, gives humans a better chance to learn if we are not alone.
日期: 2015-03-17

克戎（Chiron）小行星可能拥有尘埃环

A second minor planet may possess Saturn-like rings

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/miot-asm031615.php
摘要: (Massachusetts Institute of Technology) Researchers detect features around Chiron that may signal rings, jets, or a shell of dust.
日期: 2015-03-17

银河系中有 1 到 3 个可居住行星

Planets in the habitable zone around most stars, calculate researchers

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoc--pit031615.php
摘要: (University of Copenhagen - Niels Bohr Institute) Astronomers have discovered thousands of exoplanets using the Kepler satellite. By analysing these planetary systems, researchers from Australian National University and Niels Bohr Institute in Copenhagen have calculated the probability for the number of stars that might have planets in the habitable zone. The calculations show that billions of stars in the Milky Way will have one to three planets in the habitable zone, where there is the potential for liquid water and where life could exist.
日期: 2015-03-19

科学家制作月球火山爆发后的新地图

Extent of moons giant volcanic eruption is revealed

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/du-eom031815.php
摘要: (Durham University) Scientists have produced a new map of the moons most unusual volcano showing that its explosive eruption spread debris over an area much greater than previously thought.
日期: 2015-03-19

Nature Geoscience：铁蒸气揭示地球和月亮形成线索

来源 URL: Richard G. Kraus, Seth Root, Raymond W. Lemke, et al. Impact vaporization of planetesimal cores in the late stages of planet formation. Nature Geoscience, 2015; DOI: 10.1038/ngeo2369
摘要: 2015 年 3 月 2 日，Nature Geoscience 载文《行星形成晚期行星核气化的影响》（Impact vaporization of planetesimal cores in the late stages of planet formation），文章指出较以往的传统观念，地球的形成过程中有更多的铁被蒸发。 来自美国劳伦斯利弗莫尔国家实验室（Lawrence Livermore National Laboratory）、桑迪亚国家实验室（Sandia National Laboratory）、哈佛大学和加州大学戴维斯分校的科学家们，利用桑迪亚国家实验室的 Z 装置（Z machine）再造了地球的形成环境。他们让铁样品在该装置中受到极高的冲击压力，并且以极快的速度撞击铝板。他们开发了一种新的冲击波技术来确定铁蒸发所需要达到的临界压力。研究人员发现，铁气化时的临界冲击力比预期的要低很多，这就意味着较以往的传统观念，地球的形成过程中有更多的铁被蒸发。 研究人员表示，该结果可能会让科学家们重新思考地核形成的时间和过程。因为铁并非撞击后直接沉降至增长的地核，而是蒸发了，并且散落整个表面。这就意味着铁更容易与地幔混合。而当铁蒸气冷凝后，则会凝结成铁雨之后与融化的地幔混合。这个过程同样可以解释尽管同样遭受强烈的碰撞，但月球却缺少富铁材料。因为月球的

低引力致使它难以保留大部分的气化铁。
日期: 2015-03-22

木星早期可能摧毁了太阳系第一代内行星

Wandering Jupiter accounts for our unusual solar system

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uoc--wja031815.php
摘要: (University of California - Santa Cruz) Jupiter may have swept through the early solar system like a wrecking ball, destroying a first generation of inner planets before retreating into its current orbit, according to a new study. The findings help explain why our solar system is so different from the hundreds of other planetary systems that astronomers have discovered in recent years.
日期: 2015-03-24

太阳系可能曾经拥有超级地球

Our solar system may have once harbored super-earths

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/ciot-oss032315.php
摘要: (California Institute of Technology) New calculations and simulations by Caltechs Konstantin Batygin and UC Santa Cruzs Gregory Laughlin suggest that a number of super-Earths might have once existed in the inner solar system. Where are they now? Their demise cleared the way for the formation of planets like home sweet Earth.
日期: 2015-03-24

木星极光的爆发与行星-卫星相互作用有关

Explosions of Jupiters aurora linked to extraordinary planet-moon interaction

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/agu-eoj032515.php
摘要: (American Geophysical Union) New observations of the planets extreme ultraviolet emissions show that bright explosions of Jupiters aurora likely also get kicked off by the planet-moon interaction, not by solar activity.
日期: 2015-03-26

金星大气发现原因不明的暖层

Unexplained warm layer discovered in Venus atmosphere

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/miop-uwl032515.php
摘要: (Moscow Institute of Physics and Technology) A group of Russian, European and American scientists have found a warm layer in Venus atmosphere, the nature of which is still unknown. The researchers made the discovery when compiling a temperature map of the upper atmosphere on the planets night side based on the data collected by the Venus Express probe.
日期: 2015-03-26

以色列研究人员提出新的土星自转测量方法

A new spin on Saturns peculiar rotation

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/afot-ans032515.php
摘要: (American Friends of Tel Aviv University) The precise measurement of Saturns rotation has presented a great challenge to scientists, as different parts of this sweltering ball of hydrogen and helium rotate at different speeds whereas its rotation axis and magnetic pole are aligned. A new method devised by a Tel Aviv University researcher proposes a new determination of Saturns rotation period and offers insight into the internal structure of the planet, its weather patterns, and the way it formed.
日期: 2015-03-26

火星 Jezero 火山口发现水冲击痕迹

Ancient Martian lake system records 2 water-related events

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/bu-aml032515.php
摘要: (Brown University) Researchers from Brown University have completed a new analysis of an ancient Martian lake system in Jezero Crater, near the planets equator. The study finds that the onslaught of water that filled the crater was one of at least two separate periods of water activity in the region surrounding Jezero.
日期: 2015-03-26

火星地下水波动是 Firsoff 火山口赤道层沉积的主要因素

More evidence for groundwater on Mars

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/gsoa-mef032715.php
摘要: (Geological Society of America) Monica Pondrelli and colleagues investigated the

Equatorial Layered Deposits (ELDs) of Arabia Terra in Firsoff crater area, Mars, to understand their formation and potential habitability. On the plateau, ELDs consist of rare mounds, flat-lying deposits, and cross-bedded dune fields. Pondrelli and colleagues interpret the mounds as smaller spring deposits, the flat-lying deposits as playa, and the cross-bedded dune fields as aeolian. They write that groundwater fluctuations appear to be the major factor controlling ELD deposition.
日期: 2015-03-28

天文技术方法和仪器

物理学家利用下一代 X-射线望远镜探测超大质量黑洞 Physicist seeks answers on supermassive black holes with the next-gen X-ray telescope

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uow-psa032015.php
摘要: (University of Waterloo) University of Waterloo Professor Brian McNamara along with two Canadian astronomers will be part of the science working group directing ASTRO-H, the Japan Aerospace Exploration Agencys newest flagship X-ray astronomy observatory.
日期: 2015-03-21

美国威斯康星大学麦迪逊分校开发出新的分析天文大数据的方法 Automation offers big solution to big data in astronomy

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/uow-aob032415.php
摘要: (University of Wisconsin-Madison) The Square Kilometer Array, a radio telescope planned for Africa and Australia, will have an unprecedented ability to deliver data -- lots of data points, with lots of details -- on the location and properties of stars, galaxies and giant clouds of hydrogen gas. In a study published in The Astronomical Journal, a team of scientists at the University of Wisconsin-Madison has developed a new, faster approach to analyzing all that data.
日期: 2015-03-25

文章推荐

Nature

NASA 应该探索太阳系五个方面

Five Solar System sights NASA should visit

类型： NEWS

摘要：It's show time for NASA's planetary programme. This autumn, the agency will winnow 28 proposals for exploring the Solar System to perhaps three or five. Eventually, there will be just one lucky winner: NASA's newest Discovery-class mission, to launch at some point in the early 2020s.

作者：Alexandra Witze

发表日期： Nature 519, 274–275 (19 March 2015)

doi: 10.1038/519274a

网址：http://www.nature.com/news/five-solar-system-sights-nasa-should-visit-1.17119

NGC 5253 中高效率的恒星形成可能源于流馈吸积

Highly efficient star formation in NGC 5253 possibly from stream-fed accretion

类型：LETTER

摘要：Gas clouds in present-day galaxies are inefficient at forming stars. Low star-formation efficiency is a critical parameter in galaxy evolution: it is why stars are still forming nearly 14 billion years after the Big Bang1 and why star clusters generally do not survive their births, instead dispersing to form galactic disks or bulges2. Yet the existence of ancient massive bound star clusters (globular clusters) in the Milky Way suggests that efficiencies were higher when they formed ten billion years ago. A local dwarf galaxy, NGC 5253, has a young star cluster that provides an example of highly efficient star formation3. Here we report the detection of the J = 3right arrow2 rotational transition of CO at the location of the massive cluster. The gas cloud is hot, dense, quiescent and extremely dusty. Its gas-to-dust ratio is lower than the Galactic value, which we attribute to dust enrichment by the embedded star cluster. Its star-formation efficiency exceeds 50 per cent, tenfold that of clouds in the Milky Way. We suggest that high efficiency results from the force-feeding of star formation by a streamer of gas falling into the galaxy.

作者：J. L. Turner, S. C. Beck, D. J. Benford, S. M. Consiglio, P. T. P. Ho, A. Kovács, D. S. Meier & J.-H. Zhao

发表日期： Nature 519, 331–333 (19 March 2015)

doi: 10.1038/nature14218

网址：**http://www.nature.com/nature/journal/v519/n7543/full/nature14218.html**

来自黑洞吸积盘的风驱动活动星系中的分子喷流

Wind from the black-hole accretion disk driving a molecular outflow in an active galaxy

类型：LETTER

摘要：Powerful winds driven by active galactic nuclei are often thought to affect the evolution of both supermassive black holes and their host galaxies, quenching star formation and explaining the close relationship between black holes and galaxies[1, 2]. Recent observations of large-scale molecular outflows[3, 4, 5, 6, 7, 8] in ultraluminous infrared galaxies support this quasar-feedback idea, because they directly trace the gas from which stars form. Theoretical models[9, 10, 11, 12] suggest that these outflows originate as energy-conserving flows driven by fast accretion-disk winds. Proposed connections between large-scale molecular outflows and accretion-disk activity in ultraluminous galaxies were incomplete[3, 4, 5, 6, 7, 8] because no accretion-disk wind had been detected. Conversely, studies of powerful accretion-disk winds have until now focused only on X-ray observations of local Seyfert galaxies[13, 14] and a few higher-redshift quasars[15, 16, 17, 18, 19]. Here we report observations of a powerful accretion-disk wind with a mildly relativistic velocity (a quarter that of light) in the X-ray spectrum of IRAS F11119+3257, a nearby (redshift 0.189) optically classified type 1 ultraluminous infrared galaxy hosting a powerful molecular outflow[6]. The active galactic nucleus is responsible for about 80 per cent of the emission, with a quasar-like luminosity[6] of 1.5×10^{46} ergs per second. The energetics of these two types of wide-angle outflows is consistent with the energy-conserving mechanism[9, 10, 11, 12] that is the basis of the quasar feedback[1] in active galactic nuclei that lack powerful radio jets (such jets are an alternative way to drive molecular outflows).

作者：F. Tombesi, M. Meléndez, S. Veilleux, J. N. Reeves, E. González-Alfonso & C. S. Reynolds

发表日期：Nature 519, 436–438 (26 March 2015)

doi: 10.1038/nature14261

网址：http://www.nature.com/nature/journal/v519/n7544/full/nature14261.html

行星科学：岩石中生命起源前的化学

Planetary science: Prebiotic chemistry on the rocks

类型： NEWS & VIEWS

摘要：Organic compounds called nitriles have been detected in material surrounding a young star. The finding hints at a vast reservoir of ice and volatile species that can seed the surfaces of young rocky planets or moons.

作者：Geoffrey A. Blake & Edwin A. Bergin

发表日期： Nature 520, 161–162 (09 April 2015)
doi: 10.1038/520161a
网址：http://www.nature.com/nature/journal/v520/n7546/full/520161a.html

行星加热阻止行星核的内部迁移

Planet heating prevents inward migration of planetary cores

类型：**LETTER**
摘要：
作者：**Pablo Benı´tez-Llambay1, Fre´de´ric Masset2, Gloria Koenigsberger2 & Judit Szula´gyi3**
发表日期： **nature14277**
doi:10.1038/nature14277
网址：http://www.nature.com/nature/journal/v520/n7545/full/nature14277.html

Astronomy: Hubble's legacy

类型： **COMMENT**
摘要：Twenty-five years after launch, the wild success of the space telescope argues for a new era of bold exploration in the face of tight budgets, says Mario Livio.
作者：**Mario Livio**
发表日期： Nature 520, 287–289 (16 April 2015)
doi: 10.1038/520287a
网址：http://www.nature.com/news/astronomy-hubble-s-legacy-1.17302

行星科学: A new recipe for Earth formation

类型： **NEWS & VIEWS**
摘要：Experimental results suggest that if Earth initially grew by the accumulation of highly chemically reduced material, its core could contain enough uranium to drive the planet's magnetic field throughout Earth's history
作者：**Richard W. Carlson**
发表日期： Nature 520, 299–300 (16 April 2015)
doi: 10.1038/520299a
网址：http://www.nature.com/nature/journal/v520/n7547/full/520299a.html

气候科学家加入搜索外星地球

Climate scientists join search for alien Earths

类型： **NEWS**

摘要：NASA initiative seeks to bolster interdisciplinary science in hunt for extraterrestrial life.

作者：Jeff Tollefson

发表日期： Nature 520, 420 (23 April 2015)

doi: 10.1038/520420a

网址：http://www.nature.com/news/climate-scientists-join-search-for-alien-earths-1.17356

月球钨同位素为月球起源提供新证据

Lunar tungsten isotopic evidence for the late veneer

类型：LETTER

摘要：According to the most widely accepted theory of lunar origin, a giant impact on the Earth led to the formation of the Moon, and also initiated the final stage of the formation of the Earth's core[1]. Core formation should have removed the highly siderophile elements (HSE) from Earth's primitive mantle (that is, the bulk silicate Earth), yet HSE abundances are higher than expected[2]. One explanation for this overabundance is that a 'late veneer' of primitive material was added to the bulk silicate Earth after the core formed[2]. To test this hypothesis, tungsten isotopes are useful for two reasons: first, because the late veneer material had a different $^{182}W/^{184}W$ ratio to that of the bulk silicate Earth, and second, proportionally more material was added to the Earth than to the Moon[3]. Thus, if a late veneer did occur, the bulk silicate Earth and the Moon must have different $^{182}W/^{184}W$ ratios. Moreover, the Moon-forming impact would also have created ^{182}W differences because the mantle and core material of the impactor with distinct $^{182}W/^{184}W$ would have mixed with the proto-Earth during the giant impact. However the $^{182}W/^{184}W$ of the Moon has not been determined precisely enough to identify signatures of a late veneer or the giant impact. Here, using more-precise measurement techniques, we show that the Moon exhibits a ^{182}W excess of 27 ±4 parts per million over the present-day bulk silicate Earth. This excess is consistent with the expected ^{182}W difference resulting from a late veneer with a total mass and composition inferred from HSE systematics[2]. Thus, our data independently show that HSE abundances in the bulk silicate Earth were established after the giant impact and core formation, as predicted by the late veneer hypothesis. But, unexpectedly, we find that before the late veneer, no ^{182}W anomaly existed between the bulk silicate Earth and the Moon, even though one should have arisen through the giant impact. The origin of the homogeneous ^{182}W of the pre-late-veneer bulk silicate Earth and the Moon is enigmatic and constitutes a challenge to current models of lunar origin.

作者：Thomas S. Kruijer, Thorsten Kleine, Mario Fischer-Gödde & Peter Sprung

发表日期：Nature 520, 534–537 (23 April 2015)

doi: 10.1038/nature14360

网址：http://www.nature.com/nature/journal/v520/n7548/full/nature14360.html

Nature physics

Science

年轻恒星的生长

How young stars grow and become focused

类型：PERSPECTIVE

摘要： Massive stars are the enigmatic big beasts of the stellar jungle. Although rare, they make up for this through their prodigious output of hard radiation and kinetic energy from winds, and their explosive demise as supernovae. The latter disperse heavy elements such as iron throughout interstellar space ready for incorporation in the next generations of stars and planets, and of course, ourselves. When present in large numbers in a galaxy, their combined effect can disrupt the interstellar material to such an extent as to change the very nature of the galaxy itself. These energetic outflows are present even during the birth of massive stars. Indeed, this is one of the main reasons why understanding their formation from the gravitational collapse of interstellar clouds is so challenging. However, new sensitive, high-resolution facilities are being brought to bear on the problem. On page 114 of this issue Carrasco-Gonz âlez *et al.* (*1*) present radio observations using the upgraded Jansky Very Large Array (JVLA). Rapid changes in the distribution of the ionized gas flowing out at high speed from a massive young star could provide new insights into the birth pangs of these astrophysical objects.

作者：M. G. Hoare

发表日期： Science 3 April 2015: Vol. 348 no. 6230 pp. 44-45

doi: 10.1126/science.aaa8915

网址：http://www.sciencemag.org/content/348/6230/44.summary

月球形成的影响在远处小行星上留下痕迹

Moon-forming impact left scars in distant asteroids

类型：IN DEPTH

摘要： Not too long after the planets began forming, a Mars-sized object slammed into Earth, creating the debris that would coalesce into the moon. But some of the debris escaped all the way out to the asteroid belt. Collisions there left shock-heating signatures that can still be detected billions of years later in meteorites that have fallen to Earth. Planetary scientists have found that a significant number of these altered meteorites have ages clustering at 105 million years after the solar system's birth—the true age of the moon-forming impact, they say. The result is an independent check on different estimates for the moon's age, and it suggests that the asteroid belt could be witness to other ancient disruptions in the inner solar system.

作者：Eric Hand

发表日期： Science 17 April 2015: Vol. 348 no. 6232 p. 271

doi: 10.1126/science.348.6232.271
网址：http://www.sciencemag.org/content/348/6232/271.summary

超大质量黑洞基部有强磁场

A strong magnetic field in the jet base of a supermassive black hole

类型：**REPORT**
摘要： Powerful twin jets of plasma often reach more than tens of thousands of light-years from their base in an active galactic nucleus (AGN). Astronomers are still at work investigating what can corral the jets so tightly and propel them so far. Martí-Vidal *et al.* may have found the answer hiding in polarized light signals that show evidence of a phenomenon called Faraday rotation. This measure can indicate the strength of the magnetic field present, which for the AGN PKS 1830-211 is as strong as a few Gauss. The knowledge that magnetic fields have a driving role brings us closer to understanding this phenomenon.
作者：**Ivan Martí-Vidal*, Sébastien Muller, Wouter Vlemmings, Cathy Horellou, Susanne Aalto**
发表日期： Science 17 April 2015: Vol. 348 no. 6232 pp. 311-314
doi: 10.1126/science.aaa1784
网址：http://www.sciencemag.org/content/348/6232/311.abstract

大爆炸之后 30 亿年宇宙经历充分膨胀和由内而外冷却阶段的证据

Evidence for mature bulges and an inside-out quenching phase 3 billion years after the Big Bang

类型：**REPORT**
摘要： Most present-day galaxies with stellar masses ≥1011 solar masses show no ongoing star formation and are dense spheroids. Ten billion years ago, similarly massive galaxies were typically forming stars at rates of hundreds solar masses per year. It is debated how star formation ceased, on which time scales, and how this “quenching” relates to the emergence of dense spheroids. We measured stellar mass and star-formation rate surface density distributions in star-forming galaxies at redshift 2.2 with ~1-kiloparsec resolution. We find that, in the most massive galaxies, star formation is quenched from the inside out, on time scales less than 1 billion years in the inner regions, up to a few billion years in the outer disks. These galaxies sustain high star-formation activity at large radii, while hosting fully grown and already quenched bulges in their cores.
作者：**S. Tacchella1,*, C. M. Carollo1,*, A. Renzini2, N. M. Förster Schreiber3, P. Lang3, S. Wuyts3, G. Cresci4, A. Dekel5, R. Genzel3,6,7, S. J. Lilly1, C. Mancini2, S. Newman6, M.**

Onodera1, A. Shapley8, L. Tacconi3, J. Woo1, G. Zamorani9

发表日期： Science 17 April 2015: Vol. 348 no. 6232 pp. 314-317

doi: 10.1126/science.1261094

网址：http://www.sciencemag.org/content/348/6232/314.abstract

追溯月球形成与小行星陨石的撞击事件

Dating the Moon-forming impact event with asteroidal meteorites

类型：REPORT

摘要：The inner solar system's biggest and most recent known collision was the Moon-forming giant impact between a large protoplanet and proto-Earth. Not only did it create a disk near Earth that formed the Moon, it also ejected several percent of an Earth mass out of the Earth-Moon system. Here, we argue that numerous kilometer-sized ejecta fragments from that event struck main-belt asteroids at velocities exceeding 10 kilometers per second, enough to heat and degas target rock. Such impacts produce ~1000 times more highly heated material by volume than do typical main belt collisions at ~5 kilometers per second. By modeling their temporal evolution, and fitting the results to ancient impact heating signatures in stony meteorites, we infer that the Moon formed ~4.47 billion years ago, which is in agreement with previous estimates.

作者：W. F. Bottke1,*, D. Vokrouhlický2, S. Marchi1, T. Swindle3,4, E. R. D. Scott5, J. R. Weirich6, H. Levison1

发表日期： Science 17 April 2015: Vol. 348 no. 6232 pp. 321-323

doi: 10.1126/science.aaa0602

网址：http://www.sciencemag.org/content/348/6232/321.abstract

其他（期刊会议奖项）

科学数据共享

标题: International organizations form partnership to benefit research data for society

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/rda-iof030915.php

摘要: (Research Data Alliance (RDA)) The Committee on Data for Science and Technology and the World Data System -- both Interdisciplinary Bodies of the International Council for Science --and the Research Data Alliance are pleased to announce the signing of Memoranda of Understanding outlining their collaboration. Coordination of their efforts is important since each organization focuses on different but complementary aspects of research data: CODATA on advocacy, policy, and process; WDS on data provision and stewardship; and RDA on bottom-up implementation of data sharing tools and practices.

日期: 2015-03-10

分子天体物理

标题: Elsevier announces the launch of a new journal: Molecular Astrophysics
来源 URL: http://www.eurekalert.org/pub_releases/2015-03/e-eat031615.php
摘要: (Elsevier) Elsevier, a world-leading provider of scientific, technical and medical information products and services, today announced the launch of the Molecular Astrophysics, a new journal focusing on the formation of molecules in space.
日期: 2015-03-17

开放获取期刊 Reviews in Physics

标题: Elsevier announces the launch of open-access journal: Reviews in Physics
来源 URL: http://www.eurekalert.org/pub_releases/2015-03/e-eat_1031615.php
摘要: (Elsevier) Elsevier, a world-leading provider of scientific, technical and medical information products and services, is pleased to announce the launch of a new open-access journal Reviews in Physics.
日期: 2015-03-17

Adrian Liu 获得首届起源项目博士后奖

Adrian Liu is named inaugural Origins Project Postdoctoral Prize Lectureship winner

标题: Adrian Liu is named inaugural Origins Project Postdoctoral Prize Lectureship winner
来源 URL: http://www.eurekalert.org/pub_releases/2015-03/asu-ali031615.php
摘要: (Arizona State University) The Origins Project at Arizona State University awarded its first Postdoctoral Prize Lectureship to Adrian Liu of the University of California, Berkeley. The award, the largest of its kind in the world, is in recognition of Lius groundbreaking early career work in exploring the astrophysics of the early universe.
日期: 2015-03-18

AGU 问答同 Rex Buchanan：太阳风暴卫星、蓄水层污染

This week from AGU: Q&A with Rex Buchanan, solar storm satellite, pollution from aquifers

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/agu-twf032515.php

摘要: (American Geophysical Union) This week from AGU: a Q&A with Rex Buchanan, solar storm satellite and pollution from aquifers.
日期: 2015-03-26

2015 联席会议

2015 Joint Assembly

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/agu-2ja032615.php
摘要: (American Geophysical Union) More than 2,000 researchers are expected to present their latest research findings in the Earth and space sciences at the 2015 Joint Assembly being held May 3-7 in Montreal. The meeting will bring together researchers from the American Geophysical Union, Canadian Geophysical Union, Geological Association of Canada, and Mineral Association of Canada.
日期: 2015-03-27

物理学前沿

Advancing physics frontiers

来源 URL: http://www.eurekalert.org/pub_releases/2015-03/nsf-apf033115.php
摘要: (National Science Foundation) Whether they are describing the physics of how multicellular groups form from individual living cells, assembling the building blocks for quantum computing and quantum engineering, or investigating how massive elements came into being after our universes beginning, the National Science Foundations newest Physics Frontiers Center awardees represent the leading edge of physics research.
日期: 2015-04-01

备注

根据天文学十三五规划，天文领域分类如下：

- 1. 恒星与银河系：包含 星系介质与恒星形成、恒星结构与演化、致密天体、银河系
- 2. 星系宇宙学；暗物质、暗能量、黑洞。。
- 3. 天文技术方法和仪器：包含 光学红外天文技术、射电天文技术、空间天文技术
- 4. 太阳系和系外行星系统；
- 5. 太阳物理；
- 6. 基本天文：包含 天体测量、天体力学、时间频率、相对论基本天文学、基本天文学应用（深空探测与导航、天文地球动力学）