



天文学文献摘要简报

内部资料

2017年7月

(第五期)

总第八期

中国科学院上海天文台信息中心图书馆



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天文学术文献摘要简报



星系与宇宙学

Scientists discovered one of the brightest galaxies known

ABSTRACT: Thanks to an amplified image produced by a gravitational lens, and the Gran Telescopio CANARIAS a team of scientists from the Polytechnic University of Cartagena and the Instituto de Astrofísica de Canarias have discovered one of the brightest galaxies known from the epoch when the universe had 20 percent of its present age.

PUBLISHED: Discovery of a Lensed Ultrabright Submillimeter Galaxy at $z = 2.0439$, The Astrophysical Journal Letters, Volume 843, Number 2

DOI: <https://doi.org/10.3847/2041-8213/aa79ef>

PUBLIC RELEASE: 4-Jan-2017

URL: <http://www.iac.es/divulgacion.php?op1=16&id=1230&lang=en>

Shedding light on galaxies' rotation secrets

ABSTRACT: Spiral galaxies are found to be strongly rotating, with an angular momentum higher by a factor of about 5 than ellipticals. In a study just published in the Astrophysical Journal, the researchers have traced back the dichotomy in the angular momentum of spiral and elliptical galaxies to their different formation history. In particular, the low angular momentum of ellipticals is mainly originated by nature in the central regions during the early galaxy formation process.

PUBLISHED: Angular Momentum of Early- and Late-type Galaxies: Nature or Nurture? The Astrophysical Journal, 2017; 843 (2): 105

DOI: [10.3847/1538-4357/aa7893](https://doi.org/10.3847/1538-4357/aa7893)

PUBLIC RELEASE: 13-Jul-2017

URL: https://www.sissa.it/sites/default/files/images/documents/communication_area/comunicati_stampa/GALAXIES%20130717%20ENG_0.pdf

'Little Cub' gives astronomers rare chance to see galaxy demise

ABSTRACT: A primitive galaxy that could provide clues about the early universe has been spotted by



astronomers as it begins to be consumed by a gigantic neighboring galaxy.

FUNDER: WM Keck Foundation, Google, Royal Society, NASA, Science and Technology Facilities Council, National Science Foundation

MEETING: National Astronomy Meeting 2017

PUBLISHED: Discovery of a Lensed Ultrabright Submillimeter Galaxy at $z = 2.0439$, The Astrophysical Journal Letters, Volume 843, Number 2

DOI: <https://doi.org/10.3847/2041-8213/aa79ef>

PUBLIC RELEASE: 3-Jul-2017

URL: <http://www.iac.es/divulgacion.php?op1=16&id=1230&lang=en>

Groundbreaking discovery confirms existence of orbiting supermassive black holes

ABSTRACT: For the first time ever, astronomers at The University of New Mexico say they've been able to observe and measure the orbital motion between two supermassive black holes hundreds of millions of light years from Earth -- a discovery more than a decade in the making.

PUBLISHED: the Orbit of the Supermassive Black Hole Binary 0402+379', The Astrophysical Journal, Volume 843, Number 1

DOI: <https://doi.org/10.3847/1538-4357/aa74e1>

PUBLIC RELEASE: 27-Jun-2017

URL: <http://dx.doi.org/10.3847/1538-4357/aa74e1>

A unique data center for cosmological simulations

ABSTRACT: Scientists from the Excellence Cluster Universe at the Ludwig-Maximilians-Universität Munich have established 'Cosmowebportal', a unique data center for cosmological simulations located at the Leibniz Supercomputing Centre (LRZ) of the Bavarian Academy of Sciences. The complete results of a series of large hydrodynamical cosmological simulations are available, with data volumes typically exceeding several hundred terabytes. Scientists worldwide can interactively explore these complex simulations via a web interface and directly access the results.

FUNDER : DFG Cluster of Excellence, SFB-Transregio TR33



PUBLIC RELEASE: A web portal for hydrodynamical, cosmological simulations. Astronomy and Computing, Volume 20, July 2017, Pages 52-67

DOI: <https://doi.org/10.1016/j.ascom.2017.05.001>

URL: <http://www.universe-cluster.de/public-outreach/press-releases/mitteilung/article//A-unique-data-centre-for-cosmological-simulations/?L=0&cHash=c68d0f084b4239eb573df189a23a99d1>

恒星与银河系

Heart of an exploded star observed in 3-D

ABSTRACT: Deep inside the remains of an exploded star lies a twisted knot of newly minted molecules and dust. Using ALMA, astronomers mapped the location of these new molecules to create a high-resolution 3-D image of this 'dust factory,' providing new insights into the relationship between a young supernova remnant and its galaxy.

PUBLISHED: This research is presented in two papers. The first, "Very deep inside the SN 1987 A core ejecta: Molecular structures seen in 3D," F. J. Abellán, et al., is published in the Astrophysical Journal Letters [<https://doi.org/10.3847/2041-8213/aa784c>]. The other, "ALMA spectral survey of supernova 1987A — molecular inventory, chemistry, dynamics and explosive nucleosynthesis," M. Matsuura et al. is published in the Monthly Notices of the Royal Astronomical Society [<https://academic.oup.com/mnras/article/469/3/3347/3103046/ALMA-spectral-survey-of-Supernova-1987A-molecular?guestAccessKey=c44e79c6-1faf-440d-be8d-b85aa2317806>]

PUBLIC RELEASE: 10-Jul-2017

URL: https://www.eurekalert.org/pub_releases/2017-07/nrao-hoa071017.php

Hubble pushed beyond limits to spot clumps of new stars in distant galaxy

ABSTRACT: By applying a new computational analysis to a galaxy magnified by a gravitational lens, astronomers have obtained images 10 times sharper than what Hubble could achieve on its own.



PUBLISHED: * "Star Formation at $z=2.481$ in the Lensed Galaxy SDSS J1110+6459: Star Formation Down to 30 Parsec Scales," Traci L. Johnson et al., 2017, to appear in the Astrophysical Journal Letters

arxiv.org/abs/1707.00706

* "Star Formation at $z=2.481$ in the Lensed Galaxy SDSS J1110+6459, I: Lens Modeling and Source Reconstruction," Traci L. Johnson et al., 2017, to appear in the Astrophysical Journal

arxiv.org/abs/1707.00707

* "Star Formation at $z=2.481$ in the Lensed Galaxy SDSS J1110+6459, II: What Is Missed at the Normal Resolution of the Hubble Space Telescope?" J. R. Rigby et al., 2017, to appear in the Astrophysical Journal

arxiv.org/abs/1707.00704

PUBLIC RELEASE: 6-Jul-2017

URL: <https://www.nasa.gov/feature/goddard/2017/hubble-sees-clumps-of-new-stars-in-distant-galaxy>

Milky Way could have 100 billion brown dwarfs

ABSTRACT: Our galaxy could have 100 billion brown dwarfs or more, according to work by an international team of astronomers, led by Koraljka Muzic from the University of Lisbon and Aleks Scholz from the University of St Andrews. On Thursday, July 6, Scholz will present their survey of dense star clusters, where brown dwarfs are abundant, at the National Astronomy Meeting at the University of Hull.

PUBLISHED: The low-mass content of the massive young star cluster RCW 38, arXiv:1707.00277, Monthly Notices of the Royal Astronomical Society

MEETING: National Astronomy Meeting 2017

PUBLIC RELEASE: 5-Jul-2017

URL: <https://arxiv.org/abs/1707.00277>

Fastest stars in the Milky Way are 'runaways' from another galaxy

ABSTRACT: A group of astronomers have shown that the fastest-moving stars in our galaxy -- which are travelling so fast that they can escape the Milky Way -- are in fact runaways from a much smaller galaxy in orbit around our own.

MEETING: National Astronomy Meeting 2017



PUBLISHED: Hypervelocity runaways from the Large Magellanic Cloud, Mon Not R Astron Soc (2017) 469 (2): 2151-2162.

DOI: <https://doi.org/10.1093/mnras/stx848>

PUBLIC RELEASE: 4-Jul-2017

URL: <http://dx.doi.org/10.1093/mnras/stex848>.

Star's birth may have triggered another star birth, astronomers say

ABSTRACT: Radio images give new evidence that a jet of material from one young star may have triggered the gas collapse that started another young star.

PUBLISHED: Star Formation Under the Outflow: The Discovery of a Non-thermal Jet from OMC-2 FIR 3 and Its Relationship to the Deeply Embedded FIR 4 Protostar, The Astrophysical Journal, Volume 840, Number 1

FUNDER: National Science Foundation

DOI: <https://doi.org/10.3847/1538-4357/aa6975>

PUBLIC RELEASE: 20-Jun-2017

URL: <https://public.nrao.edu/news/triggered-star-birth/>

Radio astronomers peer deep into the stellar nursery of the Orion Nebula

ABSTRACT: Astronomers have released an image of a 50-light-year-long filament of star-forming gas, 1200 light-years away, in the stellar nursery of the Orion Nebula. The image combines ammonia molecule observations made with the Robert C. Byrd Green Bank Telescope and an infrared image of the Orion Nebula.

PUBLISHED: The Green Bank Ammonia Survey (GAS): First Results of NH₃ mapping the Gould Belt, The Astrophysical Journal, 2017

DOI: [arXiv:1704.06318](https://arxiv.org/abs/1704.06318)

PUBLIC RELEASE: 15-Jun-2017

URL: <http://www.dunlap.utoronto.ca/radio-astronomers-peer-deep-into-the-stellar-nursery-of-the-orion-nebula/>



Chaotically magnetized cloud is no place to build a star, or is it?

ABSTRACT: Astronomers using ALMA have discovered a surprisingly weak and wildly disorganized magnetic field very near a newly emerging protostar. These observations suggest that the impact of magnetic fields on star formation is more complex than previously thought.

PUBLISHED: Unveiling the Role of the Magnetic Field at the Smallest Scales of Star Formation, The Astrophysical Journal Letters, Volume 842, Number 2

DOI: 10.3847/2041-8213/aa71b7

PUBLIC RELEASE: 14-Jun-2017

URL: <https://public.nrao.edu/news/2017-alma-serp/>

太阳物理

Musical sun reduces range of magnetic activity

ABSTRACT: A study of the sun using sound waves suggests that the layer in which the significant magnetic activity is located has grown thinner in recent years. Professor Yvonne Elsworth will present results at the National Astronomy Meeting at the University of Hull on Tuesday, July 4.

MEETING: National Astronomy Meeting 2017

PUBLISHED: The Sun in transition? Persistence of near-surface structural changes through Cycle 24, Mon Not R Astron Soc (2017) 470 (2): 1935-1942.

DOI: <https://doi.org/10.1093/mnras/stx1318>

PUBLIC RELEASE: 3-Jul-2017

URL: <http://dx.doi.org/10.1093/mnras/stx1318>



太阳系和系外行星系统

New evidence in support of the Planet Nine hypothesis

ABSTRACT: Last year, the existence of an unknown planet in our solar system was announced. However, this hypothesis was subsequently called into question as biases in the observational data were detected. Now Spanish astronomers have used a novel technique to analyze the orbits of the so-called extreme trans-Neptunian objects and, once again, they point out that there is something perturbing them: a planet located at a distance between 300 to 400 times the Earth-sun separation.

PUBLISHED: Evidence for a possible bimodal distribution of the nodal distances of the extreme trans-Neptunian objects: avoiding a trans-Plutonian planet or just plain bias?, Mon Not R Astron Soc Lett slx106

DOI: 10.1093/mnrasl/slx106

PUBLIC RELEASE: 12-Jul-2017

URL: <http://www.agenciasinc.es/en/News/New-evidence-in-support-of-the-Planet-Nine-hypothesis>

UA astronomers track the birth of a 'super-earth'

ABSTRACT: 'Synthetic observations' simulating nascent planetary systems could help explain a puzzle -- how planets form -- that has vexed astronomers for a long time.

FUNDER: National Science Foundation, NASA, DOE/Los Alamos National Lab

PUBLISHED: Multiple Disk Gaps and Rings Generated by a Single Super-Earth, arXiv:1705.04687, The Astrophysical Journal

PUBLIC RELEASE: 10-Jul-2017

URL: <https://phys.org/news/2017-07-astronomers-track-birth-super-earth.amp>

A cosmic barbecue: Researchers spot 60 new 'hot Jupiter' candidates

ABSTRACT: Yale researchers have identified 60 potential new 'hot Jupiters' -- highly irradiated worlds that glow like coals on a barbecue grill and are found orbiting only 1% of Sun-like stars.

FUNDER: National Science Foundation Graduate Research Fellowship Program

PUBLISHED: Supervised Learning Detection of Sixty Non-Transiting Hot Jupiter Candidates. arXiv:1706.06602,



Astronomical Journal

DOI: arXiv:1706.06602

PUBLIC RELEASE: 6-Jul-2017

URL: <https://arxiv.org/abs/1706.06602>

First discovery of an exoplanet with SPHERE/VLT

ABSTRACT: An international team of astronomers, including members of the University of Geneva (UNIGE), Switzerland, discovered an exoplanet by direct imaging using SPHERE, an instrument designed and developed by a consortium of 12 European institutes on the Very Large Telescope ESO, based in Chile. The instrument, which corrects in real time the terrestrial atmospheric turbulences and occults the light of the star, allows to take a real «photography» of the exoplanet.

PUBLISHED: Discovery of a warm, dusty giant planet around HIP 65426. Astronomy and Astrophysics. arxiv.org/abs/1707.01413

PUBLIC RELEASE: 6-Jul-2017

URL: <https://phys.org/news/2017-07-discovery-exoplanet-spherevlt.html>

Re-making planets after star-death

ABSTRACT: Astronomers Dr. Jane Greaves, of the University of Cardiff, and Dr. Wayne Holland, of the UK Astronomy Technology Centre in Edinburgh, may have found an answer to the 25-year-old mystery of how planets form in the aftermath of a supernova explosion. The two researchers will present their work on Thursday, July 6, at the National Astronomy Meeting at the University of Hull, and in a paper in Monthly Notices of the Royal Astronomical Society.

PUBLISHED: The Geminga pulsar wind nebula in the mid-infrared and submillimeter, Mon Not R Astron Soc Lett (2017) 471 (1): L26-L30.

DOI: <https://doi.org/10.1093/mnrasl/slx098>

PUBLIC RELEASE: 5-Jul-2017

URL: https://www.eurekalert.org/pub_releases/2017-07/ras-rpa063017.php



Bizarro comet challenging researchers

ABSTRACT: Scientists pursue research through observation, experimentation and modeling. They strive for all of these pieces to fit together, but sometimes finding the unexpected is even more exciting. That's what happened to University of Central Florida's astrophysicist Gal Sarid, who studies comets, asteroids and planetary formation and earlier this year was part of a team that published a study focused on the comet 174P/Echeclus. It didn't behave the way the team was expecting.

PUBLISHED: Carbon Monoxide in the Distantly Active Centaur (60558) 174P/Echeclus at 6 au, The Astronomical Journal, Volume 153, Number 5

DOI: <https://doi.org/10.3847/1538-3881/aa689c>

PUBLIC RELEASE: 30-Jun-2017

URL: <http://iopscience.iop.org/article/10.3847/1538-3881/aa689c/pdf>

Researchers find out how bromine fits into Venusian chemistry

ABSTRACT: Venus and Earth are almost twins as planets, but they have evolved very differently so studying atmosphere of Venus might help us understand why Earth evolved as it has. In 2012, Vladimir Krasnopolsky from MIPT created a photochemical model incorporating numerous components of the atmosphere of Venus - at that time he supposed that hydrogen bromide could be one of them. Last year he and his colleague Denis Belyaev from Space Research Institute went to Mauna Kea observatory to prove the theory.

PUBLISHED: Search for HBr and bromine photochemistry on Venus, Icarus, Volume 293, 1 September 2017, Pages 114-118

DOI: <https://doi.org/10.1016/j.icarus.2017.04.016>

PUBLIC RELEASE: 30-Jun-2017

URL: https://mipt.ru/english/news/researchers_find_out_how_bromine_fits_into_venusian_chemistry

The curious case of the warped Kuiper Belt

ABSTRACT: The plane of the solar system is warped in the belt's outer reaches, signaling the presence of an unknown Mars-to-Earth-mass planetary object far beyond Pluto, according to UA research.

PUBLISHED: The curiously warped mean plane of the Kuiper belt, The Astronomical Journal, arXiv:1704.02444



DOI: <https://arxiv.org/abs/1704.02444>

PUBLIC RELEASE: 21-Jun-2017

URL: <https://arxiv.org/abs/1704.02444>

New branch in family tree of exoplanets discovered

ABSTRACT: In a new Caltech-led study, researchers have classified exoplanets in much the same way that biologists identify new animal species.

FUNDER: NASA, National Science Foundation

PUBLISHED: The California-Kepler Survey. III. A Gap in the Radius Distribution of Small Planets.
Astronomical Journal

DOI: [arXiv:1703.10375](https://arxiv.org/abs/1703.10375)

PUBLIC RELEASE: 19-Jun-2017

URL: <http://www.caltech.edu/news/new-branch-family-tree-exoplanets-discovered-78703>

Elon Musk's vision of a self-sustaining city on Mars published in New Space

ABSTRACT: The Commentary entitled 'Making Humans a Multi-Planetary Species' presents the vision of Elon Musk, CEO of SpaceX, for future manned trips to other planets and specifically what will be needed to create a self-sustaining city on Mars.

PUBLISHED: Making Humans a Multi-Planetary Species, New Space, June 2017, 5(2): 46-61.

DOI: [10.1089/space.2017.29009.emu](https://doi.org/10.1089/space.2017.29009.emu)

PUBLIC RELEASE: 14-Jun-2017

URL: <http://www.liebertpub.com/global/pressrelease/elon-musks-vision-of-a-self-sustaining-city-on-mars-published-in-new-space/2195/>



文章推荐

Nature

Unexpected rotation in a stone-dead galaxy

ABSTRACT: joint European-US study led by experts from Niels Bohr Institute (NBI) at University of Copenhagen, Denmark, reveals a rotating stellar disk à la the Milky Way in a stone-dead galaxy 10 billion light-years from Earth. This has never been shown before. The galaxy examined is an early version of elliptical-shaped galaxies.

PUBLISHED: A massive, dead disk galaxy in the early Universe. *Nature*, 2017; 546 (7659): 510-513 (22 June 2017)

DOI: 10.1038/nature22388

PUBLIC RELEASE: 22-Jun-2017

URL: <http://www.nbi.ku.dk/english/news/news17/unexpected-rotation-in-a-stone-dead-galaxy/>

Scientists make waves with black hole research

ABSTRACT: Scientists at the University of Nottingham have made a significant leap forward in understanding the workings of one of the mysteries of the universe. They have successfully simulated the conditions around black holes using a specially designed water bath.

PUBLISHED: Rotational superradiant scattering in a vortex flow, *Nature Physics* (2017)

DOI: 10.1038/nphys4151

PUBLIC RELEASE: 14-Jun-2017

URL: <http://www.nature.com/nphys/journal/vaop/ncurrent/full/nphys4151.html>



Science

Yes, the sun is an ordinary, solar-type star after all

ABSTRACT: The Sun is a solar-type star, a new study claims -- resolving an ongoing controversy about whether the star at the center of our Solar System exhibits the same cyclic behavior as other nearby, solar-type stars.

PUBLISHED: Reconciling solar and stellar magnetic cycles with nonlinear dynamo simulations. Science, July 2017

DOI: 10.1126/science.aal3999

PUBLIC RELEASE: 13-Jul-2017

URL: <http://dx.doi.org/10.1126/science.aal3999>

Recreating interstellar ions with lasers

ABSTRACT: Trihydrogen, or H_3^+ , has been called the molecule that made the universe, where it plays a greater role in astrochemistry than any other molecule. While H_3^+ is astronomically abundant, no scientist understood the mechanisms that form it from organic molecules.

PUBLISHED: Mechanisms and time-resolved dynamics for trihydrogen cation (H_3^+) formation from organic molecules in strong laser fields. Scientific Reports, 2017; 7 (1)

DOI: 10.1038/s41598-017-04666-w

PUBLIC RELEASE: 5-Jul-2017

URL: <http://go.msu.edu/vHz>

说明

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）

天文学文献摘要简报