



# 天文学文献摘要简报

---

内部资料

2018年3月

(第二期)

总第十三期

中国科学院上海天文台信息中心图书馆

---



## 本期目录

<b>星系与宇宙学</b> .....	4
Double or nothing: Astronomers rethink quasar environment .....	4
Black holes from small galaxies might emit gamma rays .....	4
New research reveals clearest infrared image yet of the center of our galaxy .....	4
Magnetic field traces gas and dust swirling around supermassive black hole.....	5
Some black holes erase your past.....	5
No relation between a supermassive black hole and its host galaxy!?.....	6
The search for dark matter: Axions have ever fewer places to hide .....	6
Rotating dusty gaseous donut around an active supermassive black hole.....	7
<b>恒星与银河系</b> .....	7
Search for first stars uncovers 'dark matter'.....	7
Study reveals Milky Way stars being evicted by invading galaxies.....	8
Powerful flare from star Proxima Centauri detected with ALMA.....	8
Astronomers reveal secrets of most distant supernova ever detected.....	8
New models give insight into the heart of the Rosette Nebula.....	9
Baby, it's cold outside: understanding conditions for star formation.....	9
15 new planets confirmed around cool dwarf stars.....	10
<b>太阳物理</b> .....	10
Hinode captures record breaking solar magnetic field.....	10
<b>太阳系和系外行星系统</b> .....	11
New 3-D measurements improve understanding of geomagnetic storm hazards.....	11
The occurrence of magnetism in the universe.....	11
Model based on hydrothermal sources evaluate possibility of life Jupiter's icy moon .....	12
TRAPPIST-1 planets probably rich in water .....	12
<b>天文技术方法和仪器</b> .....	12
Can strongly lensed type 1a supernovae resolve cosmology's biggest controversy?.....	12
<b>文章推荐</b> .....	13
<b>Nature</b> .....	13
Beaming with the light of millions of suns .....	13



---

Stars around the Milky Way: Cosmic space invaders or victims of galactic eviction?.....	13
Amateur astronomer captures rare first light of massive exploding star .....	14
Dance of auroras.....	14
UChicago astrophysicists settle cosmic debate on magnetism of planets and stars .....	15
Research reveals more about TRAPPIST-1 planets, and the possibility of life .....	15
Arrested development: Hubble finds relic galaxy close to home .....	16
<b>Science</b> .....	16
Mystery of purple lights in sky solved with help from citizen scientists .....	16
<b>说明</b> .....	16

天文學文獻摘要簡報



## 星系与宇宙学

### Double or nothing: Astronomers rethink quasar environment

ABSTRACT: Using Hyper Suprime-Cam (HSC) mounted on the Subaru Telescope, astronomers have identified nearly 200 'protoclusters,' the progenitors of galaxy clusters, in the early Universe, about 12 billion years ago, about ten times more than previously known. They also found that quasars don't tend to reside in protoclusters; but if there is one quasar in a protocluster, there is likely a second nearby. This result raises doubts about the relation between protoclusters and quasars.

TITLE: GOLDRUSH. III. A systematic search for protoclusters at  $z \sim 4$  based on the  $>100 \text{ deg}^2$  area

AUTHOR: Jun Toshikawa, et al.

PUBLISHED: *Publications of the Astronomical Society of Japan*, Volume 70, Issue SP1, 1 January 2018, S12,

DOI: <https://doi.org/10.1093/pasj/psx102>

### Black holes from small galaxies might emit gamma rays

ABSTRACT: Researchers from Clemson University have discovered seven galaxies that could shake up what astrophysicists thought they knew about how the size of a galaxy -- and the black hole at its center -- can affect its behavior.

TITLE: Gamma-Ray-emitting Narrow-line Seyfert 1 Galaxies in the Sloan Digital Sky Survey

AUTHOR: Vaidehi S. Paliya<sup>1</sup>, M. Ajello<sup>1</sup>, S. Rakshit<sup>2,3</sup>, Amit Kumar Mandal<sup>2</sup>, C. S. Stalin<sup>2</sup>, A. Kaur<sup>1</sup>, and D. Hartmann<sup>1</sup>

PUBLISHED: *The Astrophysical Journal Letters*, Volume 853, Number 1

DOI: <https://doi.org/10.3847/2041-8213/aaa5ab>

### New research reveals clearest infrared image yet of the center of our galaxy



ABSTRACT: A research team has published a new study lead by Pat Roche, professor of astrophysics at The University of Oxford, and Chris Packham, associate professor of physics and astronomy at The University of Texas at San Antonio. It reveals a new high resolution map of the magnetic field lines in gas and dust swirling around the supermassive black hole at the center of our galaxy.

TITLE: The Magnetic Field in the central parsec of the Galaxy

**AUTHOR:** P F Roche, E Lopez-Rodriguez, C M Telesco, R Schödel, C Packham

**PUBLISHED:** Monthly Notices of the Royal Astronomical Society, sty129

**DOI:** <https://doi.org/10.1093/mnras/sty129>

## Magnetic field traces gas and dust swirling around supermassive black hole

ABSTRACT: Astronomers reveal a new high resolution map of the magnetic field lines in gas and dust swirling around the supermassive black hole at the centre of our Galaxy, published in a new paper in Monthly Notices of the Royal Astronomical Society. The team, led by Professor Pat Roche of the University of Oxford, created the map, which is the first of its kind, using the CanariCam infrared camera attached to the Gran Telescopio Canarias sited on the island of La Palma.

TITLE: The magnetic field in the central parsec of the Galaxy

**AUTHOR:** P F Roche, E Lopez-Rodriguez, C M Telesco, R Schödel, C Packham

**PUBLISHED:** Monthly Notices of the Royal Astronomical Society, Volume 476, Issue 1, 1 May 2018, Pages 235–245

**DOI:** <https://doi.org/10.1093/mnras/sty129>

## Some black holes erase your past

ABSTRACT: Physicists insist on determinism: your past and present determine your future uniquely, per Einstein's equations of general relativity. They call this strong cosmic censorship. A UC Berkeley mathematician found some types of black holes -- charged, non-rotating objects in an expanding universe -- that allow an observer inside the black hole to travel across a horizon into a place where the past is obliterated and there are an infinite number of possible futures for every initial state.

TITLE: Quasinormal Modes and Strong Cosmic Censorship



**AUTHOR:** Vitor Cardoso, João L. Costa, Kyriakos Destounis, Peter Hintz, and Aron Jansen

**PUBLISHED:** Phys. Rev. Lett. 120, 031103 – Published 17 January 2018

**DOI:** <https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.120.031103>

## No relation between a supermassive black hole and its host galaxy!?

**ABSTRACT:** Using ALMA to observe an active galaxy with a strong ionized gas outflow from the galactic center, a team led by Dr. Toba of ASIAA (Taiwan) has obtained a result making astronomers even more puzzled -- the team clearly detected CO gas associated with the galactic disk, yet they have also found that the CO gas which settles in the galaxy is not affected by the strong ionized gas outflow launched from the galactic center.

**TITLE:** No Sign of Strong Molecular Gas Outflow in an Infrared-bright Dust-obscured Galaxy with Strong Ionized-gas Outflow

**AUTHOR:** Yoshiki Toba<sup>1,2</sup>, Shinya Komugi<sup>3</sup>, Tohru Nagao<sup>2</sup>, Takuji Yamashita<sup>2</sup>, Wei-Hao Wang<sup>1</sup>, Masatoshi Imanishi<sup>4,5</sup>, and Ai-Lei Sun<sup>1,6</sup>

**PUBLISHED:** The Astrophysical Journal, Volume 851, Number 2

**DOI:** <https://doi.org/10.3847/1538-4357/aa9d17>

## The search for dark matter: Axions have ever fewer places to hide

**ABSTRACT:** If they existed, axions -- one of the candidates for particles of the mysterious dark matter -- could interact with the matter forming our world, but they would have to do this to a much, much weaker extent than it has seemed up to now. New, rigorous constraints on the properties of axions have been imposed by an international team of scientists responsible for the nEDM experiment.

**TITLE:** Search for Axionlike Dark Matter through Nuclear Spin Precession in Electric and Magnetic Fields

**AUTHOR:** C. Abel et al.

**PUBLISHED:** Phys. Rev. X **7**, 041034 – Published 14 November 2017

**DOI:** <https://doi.org/10.1103/PhysRevX.7.041034>



## Rotating dusty gaseous donut around an active supermassive black hole

ABSTRACT: High resolution observations with the Atacama Large Millimeter/submillimeter Array (ALMA) imaged a rotating dusty gas torus around an active supermassive black hole. The existence of such rotating donuts-shape structures was first suggested decades ago, but this is the first time one has been confirmed so clearly. This is an important step in understanding the co-evolution of supermassive black holes and their host galaxies.

TITLE: ALMA Reveals an Inhomogeneous Compact Rotating Dense Molecular Torus at the NGC 1068 Nucleus

AUTHOR: Masatoshi Imanishi (今西昌俊)<sup>1,2</sup>, Kouichiro Nakanishi (中西康一郎)<sup>1,2</sup>, Takuma Izumi (泉拓磨)<sup>1</sup>, and Keiichi Wada (和田桂一)<sup>3</sup>

PUBLISHED: The Astrophysical Journal Letters, Volume 853, Number 2

DOI: <https://doi.org/10.3847/2041-8213/aaa8df>

## 恒星与银河系

## Search for first stars uncovers 'dark matter'

ABSTRACT: New research from a Tel Aviv University astrophysicist, published today in Nature, offers the first direct proof that dark matter exists and that it is composed of low-mass particles.

TITLE: Possible interaction between baryons and dark-matter particles revealed by the first stars

AUTHOR: Rennan Barkana

PUBLISHED: Nature volume 555, pages 71–74 (01 March 2018)

DOI: [10.1038/nature25791](https://doi.org/10.1038/nature25791)



## Study reveals Milky Way stars being evicted by invading galaxies

ABSTRACT: An international team of astronomers has discovered that some stars located in the Galactic halo surrounding the Milky Way -- previously thought to be remnants of invading galaxies from the past -- are instead former residents of the Galactic disk, kicked out by those invading dwarf galaxies.

TITLE: Two chemically similar stellar overdensities on opposite sides of the plane of the Galactic disk

**AUTHOR:** Maria Bergemann, Branimir Sesar, Judith G. Cohen, Aldo M. Serenelli, Allyson Sheffield, Ting S. Li, Luca Casagrande, Kathryn V. Johnston, Chervin F. P. Laporte, Adrian M. Price-Whelan, Ralph Schönrich & Andrew Gould

**PUBLISHED:** Nature, Published online: 26 February 2018

**DOI:** [10.1038/nature25490](https://doi.org/10.1038/nature25490)

## Powerful flare from star Proxima Centauri detected with ALMA

ABSTRACT: Using data from ALMA, a team of astronomers discovered that a powerful stellar flare erupted from Proxima Centauri last March.

TITLE: Detection of a Millimeter Flare from Proxima Centauri

**AUTHOR:** Meredith A. MacGregor<sup>1,5</sup>, Alycia J. Weinberger<sup>1</sup>, David J. Wilner<sup>2</sup>, Adam F. Kowalski<sup>3,4</sup>, and Steven R. Cranmer<sup>3</sup>

**PUBLISHED:** The Astrophysical Journal Letters, Volume 855, Number 1

**DOI:** <https://doi.org/10.3847/2041-8213/aaad6b>

## Astronomers reveal secrets of most distant supernova ever detected





**ABSTRACT:** An international team of astronomers, including researchers from the University of Pennsylvania, has confirmed the discovery of the most distant supernova ever detected, a huge cosmic explosion that took place 10.5 billion years ago when the universe was only a quarter of its current age.

**TITLE:** Studying the Ultraviolet Spectrum of the First Spectroscopically Confirmed Supernova at Redshift Two

**AUTHOR:** M. Smith<sup>1</sup>, M. Sullivan<sup>1</sup>, R. C. Nichol<sup>2</sup>, L. Galbany<sup>3</sup>, C. B. D'Andrea<sup>4</sup>, C. Inserra<sup>1</sup>, C. Lidman<sup>5,6</sup>, A. Rest<sup>7,8</sup>, M. Schirmer<sup>9</sup>, A. V. Filippenko<sup>10,11</sup>

**PUBLISHED:** The Astrophysical Journal, Volume 854, Number 1

**DOI:** <http://iopscience.iop.org/article/10.3847/1538-4357/aaa126#top>

## [New models give insight into the heart of the Rosette Nebula](#)

**ABSTRACT:** New research, led by the University of Leeds, offers an explanation for the discrepancy between the size and age of the Rosette Nebula's central cavity and that of its central stars.

**TITLE:** A new mechanical stellar wind feedback model for the Rosette Nebula

**AUTHOR:** C J Wareing , J M Pittard, N J Wright, S A E G Falle

**PUBLISHED:** Monthly Notices of the Royal Astronomical Society, Volume 475, Issue 3, 11 April 2018, Pages 3598–3612,

**DOI:** <https://doi.org/10.1093/mnras/sty148>

## [Baby, it's cold outside: understanding conditions for star formation](#)

**ABSTRACT:** Researchers demonstrate how a gas escapes ice at an extremely cold temperature, providing insight about how stars form in interstellar clouds.

**TITLE:** An infrared measurement of chemical desorption from interstellar ice analogues

**AUTHOR:** Y. Oba, T. Tomaru, T. Lamberts, A. Kouchi & N. Watanabe

**PUBLISHED:** Nature Astronomy volume 2, pages 228 – 232 (2018)

**DOI:** [10.1038/s41550-018-0380-9](https://doi.org/10.1038/s41550-018-0380-9)



## [15 new planets confirmed around cool dwarf stars](#)

ABSTRACT: Scientists report the existence of 15 new planets -- including one 'super-Earth' that could harbor liquid water -- orbiting small, cool stars near our solar system. These stars, known as red dwarfs, are of enormous interest for studies of planetary formation and evolution.

TITLE: Exoplanets around Low-mass Stars Unveiled by *K2*

**AUTHOR:** Teruyuki Hirano<sup>1</sup>, Fei Dai<sup>2,3</sup>, Davide Gandolfi<sup>4</sup>, Akihiko Fukui<sup>5</sup>, John H. Livingston<sup>6</sup>

**PUBLISHED:** The Astronomical Journal, Volume 155, Number 3

**DOI:** <https://doi.org/10.3847/1538-3881/aaa9c1>

## 太阳物理

## [Hinode captures record breaking solar magnetic field](#)

ABSTRACT: Astronomers at the National Astronomical Observatory of Japan (NAOJ) using the Hinode spacecraft observed the strongest magnetic field ever directly measured on the surface of the sun.

Analyzing data for five days around the appearance of this record breaking magnetic field, the astronomers determined that it was generated as a result of gas outflow from one sunspot pushing against another sunspot.

TITLE: Super-strong Magnetic Field in Sunspots

**AUTHOR:** Takenori J. Okamoto<sup>1</sup> and Takashi Sakurai

**PUBLISHED:** The Astrophysical Journal Letters, Volume 852, Number 1

**DOI:** <https://doi.org/10.3847/2041-8213/aaa3d8>



## 太阳系和系外行星系统

### [New 3-D measurements improve understanding of geomagnetic storm hazards](#)

ABSTRACT: Measurements of the three-dimensional structure of the earth, as opposed to the one-dimensional models typically used, can help scientists more accurately determine which areas of the United States are most vulnerable to blackouts during hazardous geomagnetic storms.

TITLE: Calculation of Voltages in Electric Power Transmission Lines During Historic Geomagnetic Storms: An Investigation Using Realistic Earth Impedances

**AUTHOR:** Greg M. Lucas, Jeffrey J. Love, Anna Kelbert

**PUBLISHED:** Space Weather 26 February 2018

**DOI:** [10.1002/2017SW001779](https://doi.org/10.1002/2017SW001779)

### [The occurrence of magnetism in the universe](#)

ABSTRACT: Flows of molten metal can generate magnetic fields. This so-called dynamo effect creates cosmic magnetic fields, like those found on planets, moons and even asteroids. Over the coming years, a globally unique Experiment is intended to demonstrate this effect. It will be carried out in the new DRESDYN facility at the Helmholtz-Zentrum Dresden-Rossendorf (HZDR), an independent German research laboratory. A recently published study in the scientific journal Physical Review Letters confirms the experiment's chances of success.

TITLE: Nonlinear Large Scale Flow in a Precessing Cylinder and Its Ability To Drive Dynamo Action

**AUTHOR:** André Giesecke, Tobias Vogt, Thomas Gundrum, and Frank Stefani

**PUBLISHED:** Phys. Rev. Lett. **120**, 024502 – Published 12 January 2018

**DOI:** <https://doi.org/10.1103/PhysRevLett.120.024502>



## Model based on hydrothermal sources evaluate possibility of life Jupiter's icy moon

ABSTRACT: Brazilian scientists compare primitive Earth scenario with satellite Europa's conditions; the jupiterian moon could host microorganisms at the bottom of a huge warm ocean located underneath its frozen crust.

TITLE: Microbial habitability of Europa sustained by radioactive sources

**AUTHOR:** Thiago Altair, Marcio G. B. de Avellar, Fabio Rodrigues & Douglas Galante

**PUBLISHED:** Scientific Reports volume 8, Article number: 260 (2018)

**DOI:** [10.1038/s41598-017-18470-z](https://doi.org/10.1038/s41598-017-18470-z)

## TRAPPIST-1 planets probably rich in water

ABSTRACT: A new study has found that planets orbiting the star TRAPPIST-1 are made mostly of rock, and some could hold more water than Earth. The planets' densities suggest that some of them could have up to 5 percent of their mass in the form of water. The hotter planets closest to their parent star are likely to have dense steamy atmospheres and the more distant ones probably have icy surfaces.

TITLE: The nature of the TRAPPIST-1 exoplanets

**AUTHOR:** Simon L. Grimm<sup>1</sup>, Brice-Olivier Demory<sup>1</sup>, Michaël Gillon<sup>2</sup>, Caroline Dorn<sup>1,19</sup>, Eric

Agol<sup>3,4,17,18</sup>, Artem Burdanov<sup>2</sup>, Laetitia Delrez<sup>5,2</sup>, Marko Sestovic<sup>1</sup>, Amaury H.M.J. Triaud<sup>6,7</sup>, Martin

Turbet<sup>8</sup>, Émeline Bolmont<sup>9</sup>, Anthony Caldas<sup>10</sup>, Julien de Wit<sup>11</sup>, Emmanuël Jehin<sup>2</sup>, Jérémy Leconte<sup>10</sup>,

Sean N. Raymond<sup>10</sup>, Valérie Van Grootel<sup>2</sup>, Adam J. Burgasser<sup>12</sup>, Sean Carey<sup>13</sup>, Daniel Fabrycky<sup>14</sup>, Kevin

Heng<sup>1</sup>, David M. Hernandez<sup>15</sup>, James G. Ingalls<sup>13</sup>, Susan Lederer<sup>16</sup>, Franck Selsis<sup>10</sup>, Didier Queloz<sup>5</sup>

**PUBLISHED:** Astronomy & Astrophysics manuscript no. trappist1, January 31, 2018

## 天文技术方法和仪器

## Can strongly lensed type Ia supernovae resolve cosmology's biggest controversy?



ABSTRACT: Astrophysicists at Lawrence Berkeley National Laboratory (Berkeley Lab) and University of Portsmouth discovered how to control the 'microlensing' effects of strongly lensed Type 1a Supernovae with supercomputers at NERSC. Armed with this knowledge they believe they will be able to find 1,000 strongly lensed Type Ia supernovae in realtime from LSST data -- that's 20 times more than previous expectations.

TITLE: Precise Time Delays from Strongly Gravitationally Lensed Type Ia Supernovae with Chromatically Microlensed Images

**AUTHOR:** Daniel A. Goldstein<sup>1,2</sup>, Peter E. Nugent<sup>1,2</sup>, Daniel N. Kasen<sup>1,3,4</sup>, and Thomas E. Collett<sup>5</sup>

**PUBLISHED:** The Astrophysical Journal, Volume 855, Number 1

**DOI:** <https://doi.org/10.3847/1538-4357/aaa975>

## 文章推荐

Nature

### [Beaming with the light of millions of suns](#)

ABSTRACT: A Caltech-led astronomy team is homing in on the nature of extreme objects known as ULXs.

TITLE: Magnetic field strength of a neutron-star-powered ultraluminous X-ray source

**AUTHOR:** M. Brightman, F. A. Harrison, F. Fürst, M. J. Middleton, D. J. Walton, D. Stern, A. C. Fabian, M. Heida, D. Barret & M. Bachetti

**PUBLISHED:** Nature Astronomy (2018), published online:26 February 2018

**DOI:** [10.1038/s41550-018-0391-6](https://doi.org/10.1038/s41550-018-0391-6)

### [Stars around the Milky Way: Cosmic space invaders or victims of galactic eviction?](#)

ABSTRACT: Astronomers investigated a small population of stars in the Milky Way Galaxy's halo, finding its chemical composition closely matches the Galactic disk. This similarity provides compelling evidence that



these stars have originated from within the disc, rather than from merged dwarf galaxies. The reason for this stellar migration is thought to be theoretically proposed oscillations of the Milky Way disc, induced by the tidal interaction of the Milky Way with a passing massive satellite galaxy.

**TITLE:** Two chemically similar stellar overdensities on opposite sides of the plane of the Galactic disk

**AUTHOR:** Maria Bergemann, Branimir Sesar, Judith G. Cohen, Aldo M. Serenelli, Allyson Sheffield, Ting S. Li, Luca Casagrande, Kathryn V. Johnston, Chervin F. P. Laporte, Adrian M. Price-Whelan, Ralph Schönrich & Andrew Gould

**PUBLISHED:** Nature, Published online:26 February 2018

**DOI:** [10.1038/nature25490](https://doi.org/10.1038/nature25490)

## [Amateur astronomer captures rare first light of massive exploding star](#)

**ABSTRACT:** An amateur astronomer in Argentina captured images of a distant galaxy before and after the supernova's 'shock breakout' - when a supersonic pressure wave from the exploding core of the star hits and heats gas at the star's surface to a very high temperature, causing it to emit light and rapidly brighten. Victor Buso's chances of such a discovery, his first supernova, is estimated at one in 10 million or perhaps even as low as one in 100 million.

**TITLE:** A surge of light at the birth of a supernova

**AUTHOR:** M. C. Bersten, G. Folatelli, F. García, S. D. Van Dyk, O. G. Benvenuto, M. Orellana, V. Buso, J. L. Sánchez, M. Tanaka, K. Maeda, A. V. Filippenko, W. Zheng, T. G. Brink, S. B. Cenko, T. de Jaeger, S. Kumar, T. J. Moriya, K. Nomoto, D. A. Perley, I. Shivers & N. Smith

**PUBLISHED:** Nature volume 554, pages 497–499 (22 February 2018)

**DOI:** [10.1038/nature25151](https://doi.org/10.1038/nature25151)

## [Dance of auroras](#)

**ABSTRACT:** The shower of electrons bouncing across Earth's magnetosphere -- commonly known as the Northern Lights -- has been directly observed for the first time by an international team of scientists. While



the cause of these colorful auroras has long been hypothesized, researchers had never directly observed the underlying mechanism until now.

**TITLE:** Pulsating aurora from electron scattering by chorus waves

**AUTHOR:** S. Kasahara, Y. Miyoshi, S. Yokota, T. Mitani, Y. Kasahara, S. Matsuda, A. Kumamoto, A. Matsuoka, Y. Kazama, H. U. Frey, V. Angelopoulos, S. Kurita, K. Keika, K. Seki & I. Shinohara

**PUBLISHED:** Nature volume 554, pages 337–340 (15 February 2018)

**DOI:** [10.1038/nature25505](https://doi.org/10.1038/nature25505)

## UChicago astrophysicists settle cosmic debate on magnetism of planets and stars

**ABSTRACT:** Using one of the world's most powerful laser facilities, a team led by University of Chicago scientists experimentally confirmed a long-held theory for cosmic magnetic field generation: the turbulent dynamo. By creating a hot turbulent plasma the size of a penny, that lasts a few billionths of a second, the researchers recorded how the turbulent motions can amplify a weak magnetic field to the strengths of those observed in our sun, distant stars, and galaxies.

**TITLE:** Laboratory evidence of dynamo amplification of magnetic fields in a turbulent plasma

**AUTHOR:** P. Tzeferacos, A. Rigby, [·]G. Gregori

**PUBLISHED:** Nature Communications volume 9, Article number: 591 (2018)

**DOI:** [10.1038/s41467-018-02953-2](https://doi.org/10.1038/s41467-018-02953-2)

## Research reveals more about TRAPPIST-1 planets, and the possibility of life

**ABSTRACT:** A series of four studies have shed new light on the properties of the TRAPPIST-1 planetary system, currently our most optimal hope for evidence of biological life beyond the solar system.

**TITLE:** Atmospheric reconnaissance of the habitable-zone Earth-sized planets orbiting TRAPPIST-1

**AUTHOR:** Julien de Wit, Hannah R. Wakeford, Nikole K. Lewis, Laetitia Delrez, Michaël Gillon, Frank Selsis, Jérémy Leconte, Brice-Olivier Demory, Emeline Bolmont, Vincent Bourrier, Adam J. Burgasser, Simon Grimm, Emmanuël Jehin, Susan M. Lederer, James E. Owen, Vlada Stamenković & Amaury H. M. J. Triaud

**PUBLISHED:** Nature Astronomy volume 2, pages 214–219 (2018)



DOI: [10.1038/s41550-017-0374-z](https://doi.org/10.1038/s41550-017-0374-z)

## Arrested development: Hubble finds relic galaxy close to home

ABSTRACT: Astronomers have put NASA's Hubble Space Telescope on an Indiana Jones-type quest to uncover an ancient 'relic galaxy' in our own cosmic backyard.

TITLE: A single population of red globular clusters around the massive compact galaxy NGC 1277

AUTHOR: Michael A. Beasley, Ignacio Trujillo, Ryan Leaman & Mireia Montes

PUBLISHED: Nature

DOI: [10.1038/nature25756](https://doi.org/10.1038/nature25756)

## Science

## Mystery of purple lights in sky solved with help from citizen scientists

ABSTRACT: When a thin purple ribbon of light appeared and started glowing in the midnight sky over Regina, Canada, in 2016, Notanee Bourassa knew that what he was seeing was not normal. Having watched the northern lights for almost 30 years, he knew this wasn't an aurora. It was something else.

TITLE: New science in plain sight: Citizen scientists lead to the discovery of optical structure in the upper atmosphere

AUTHOR: Elizabeth A. MacDonald, et al.

PUBLISHED: Science Advances 14 Mar 2018:Vol. 4, no. 3, eaaq0030

DOI: [10.1126/sciadv.aag0030](https://doi.org/10.1126/sciadv.aag0030)

## 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