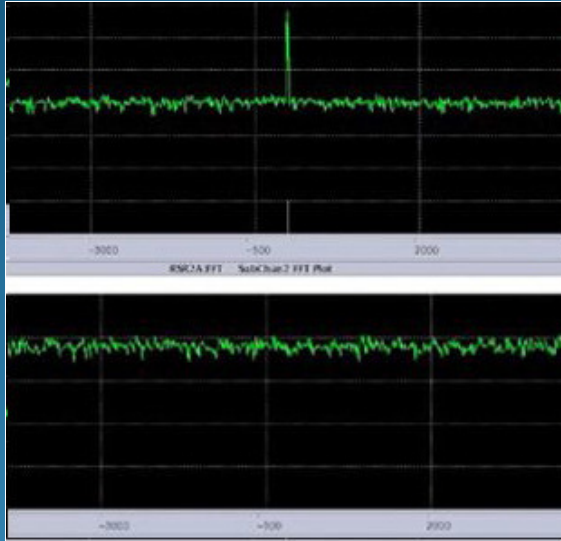


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What's in the news this month?

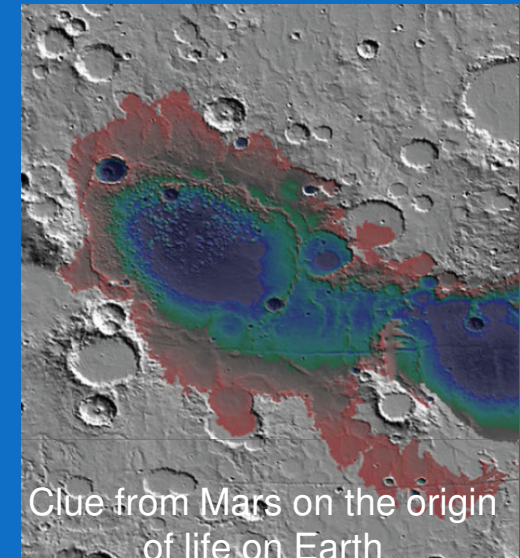
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Cassini's last signal



Solar probe will fly into to the Sun's corona



Clue from Mars on the origin of life on Earth



Life from meteorites?



Do stars fall quietly into black holes, or crash into something utterly unknown?



Planet 9 – but NOT Pluto

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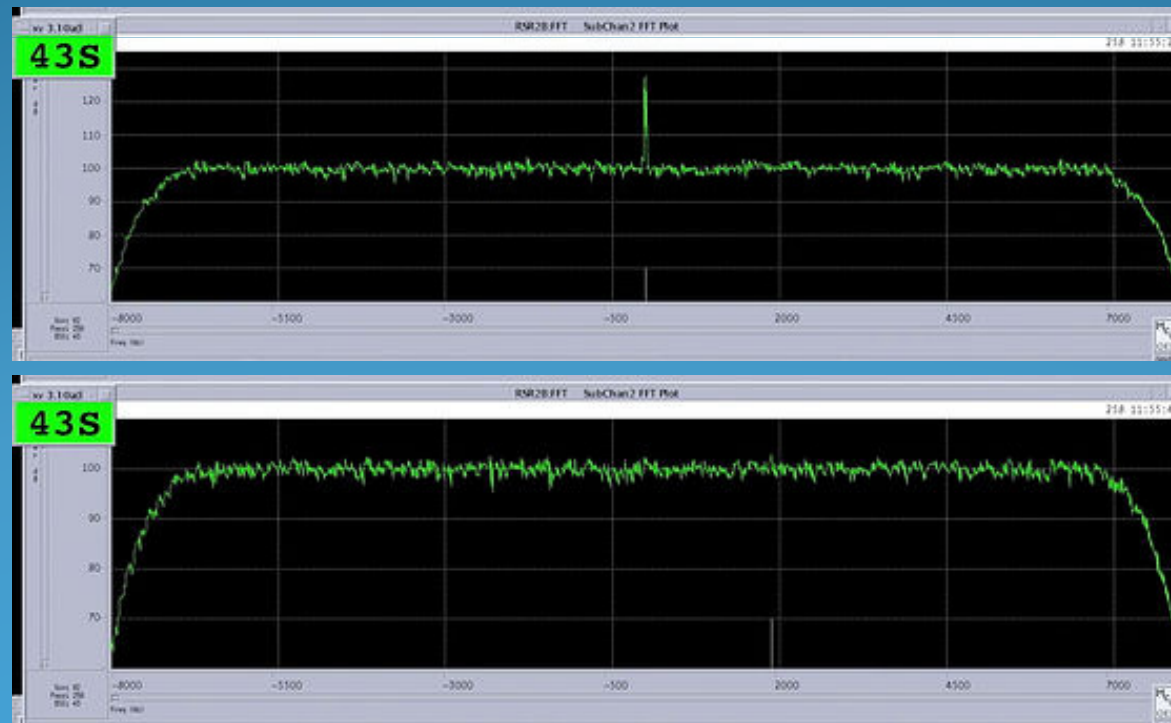
What's in the news this month?

1 - After 13 years of orbiting Saturn Cassini's last signal

After 20 years from launch and 13 years orbiting Saturn and its moons the Cassini/Huygens mission comes to an end.

Our knowledge of the Saturn system has been revolutionised by this spectacularly successful mission.

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What's in the news this month?

1 - After 13 years of orbiting Saturn Cassini's last signal

A NASA video was played showing a simulation of the end of the mission was shown. You can watch at:-

<https://saturn.jpl.nasa.gov/resources/7728/>

Text from the video page:-

"On the final orbit, Cassini will plunge into Saturn fighting to keep its antenna pointed at Earth as it transmits its farewell. In the skies of Saturn, the journey ends, as Cassini becomes part of the planet itself."

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What's in the news this month?

2 - Solar Probe

A mission to the Sun first recommended in 1958 is set to launch in 2018.

NASA's Parker Solar Probe (<http://parkersolarprobe.jhuapl.edu/>),
Is planned to launch next summer for a nearly 7-year journey, and will fly within 4 million miles of the Sun's surface.

This is more than 7 times closer than any other satellite.

There, it will help scientists seek answers to fundamental questions about our star such as why its outer atmosphere, or corona, at around 2M deg, is several hundreds of times hotter than the photosphere, or the Sun's surface.

Whilst probing the corona the mission also aims to explore "why in this region the solar wind suddenly gets so energized that it can actually break away from the pull of the Sun and move out at millions of mph to bathe all of the planets," Project Scientist Nicola Fox said.

Entering the envelope of hot plasma surrounding the star may also help researchers understand more about high energy solar particles.

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What's in the news this month?

3 - Mars study yields clues to possible cradle of life

October 6, 2017 : NASA/Jet Propulsion Laboratory

The discovery of evidence for ancient sea-floor hydrothermal deposits on Mars identifies an area on the planet that may offer clues about the origin of life on Earth.

The research offers evidence that these deposits were formed by heated water from a volcanically active part of the planet's crust entering the bottom of a large sea long ago.

"Even if we never find evidence that there's been life on Mars, this site can tell us about the type of environment where life may have begun on Earth," said Paul Niles of NASA's Johnson Space Center, Houston. "Volcanic activity combined with standing water provided conditions that were likely similar to conditions that existed on Earth at about the same time -- when early life was evolving here."

"This site gives us a compelling story for a deep, long-lived sea and a deep-sea hydrothermal environment," Niles said. "It is evocative of the deep-sea hydrothermal environments on Earth, similar to environments where life might be found on other worlds -- life that doesn't need a nice atmosphere or temperate surface, but just rocks, heat and water."

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What's in the news this month?

4 - Could interstellar ice provide the answer to birth of DNA?

September 14, 2017 : University of York

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers from York's Department of Chemistry have shown.

They found that organic compounds (amino nitriles) the molecular precursors to amino acids, were able to use molecules present in interstellar ice to trigger the formation of the backbone molecule of DNA.

It has long been assumed that amino acids were present on earth before DNA, and may have been responsible for the formation of one of the building blocks of DNA, but this new research throws fresh doubt on this theory.

Dr Paul Clarke said: "The molecules that form the building blocks of DNA had to come from somewhere; either they were present on Earth when it formed or they came from space."

"Scientists had already shown that there were particular molecules present in space that came to Earth in an ice comet; this made our team think about investigating whether they could be used to make one of the building blocks of DNA. If this was possible, then it could mean that a building block of DNA was present before amino acids."

Dr Clarke said: "We have demonstrated that the interstellar building blocks formaldehyde, acetaldehyde and glycolaldehyde can be converted in 'one-pot' to biologically relevant carbohydrates -- the ingredients for life."

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What's in the news this month?

5 - Do stars fall quietly into black holes, or crash into something utterly unknown?

The theory says that if you get close enough to a black hole, if you pass what is called the event horizon, there's no turning back. Nothing, not even light can escape back from the event horizon. Even though the existence of such event horizons is all but certain, and they fit greatly into Einstein's Theory of Relativity, they haven't been proven yet — until now.

When a black hole forms, the event horizon also takes shape. Technically, the event horizon is a boundary in space-time after which events cannot affect an observer, and vice versa. Basically, it's the point of no return: nothing can go past the event horizon and go back.

While a singularity has no surface area, the non-collapsed object would have a hard surface. So material being pulled closer a star, for instance would not actually fall into a black hole, but hit this hard surface and be destroyed.

Kumar, his graduate student Wenbin Lu, and Ramesh Narayan, a theorist from the Harvard Smithsonian Center for Astrophysics, have come up with a test to determine which idea is correct.

The team figured out what a telescope would see when a star hit the hard surface of a supermassive object at the centre of a nearby galaxy: The star's gas would envelope the object, shining for months, perhaps even years.

The researchers, from the University of Texas and Harvard University, have put this principle to test, showing that when matter gets pulled past an event horizon, it simply vanishes.

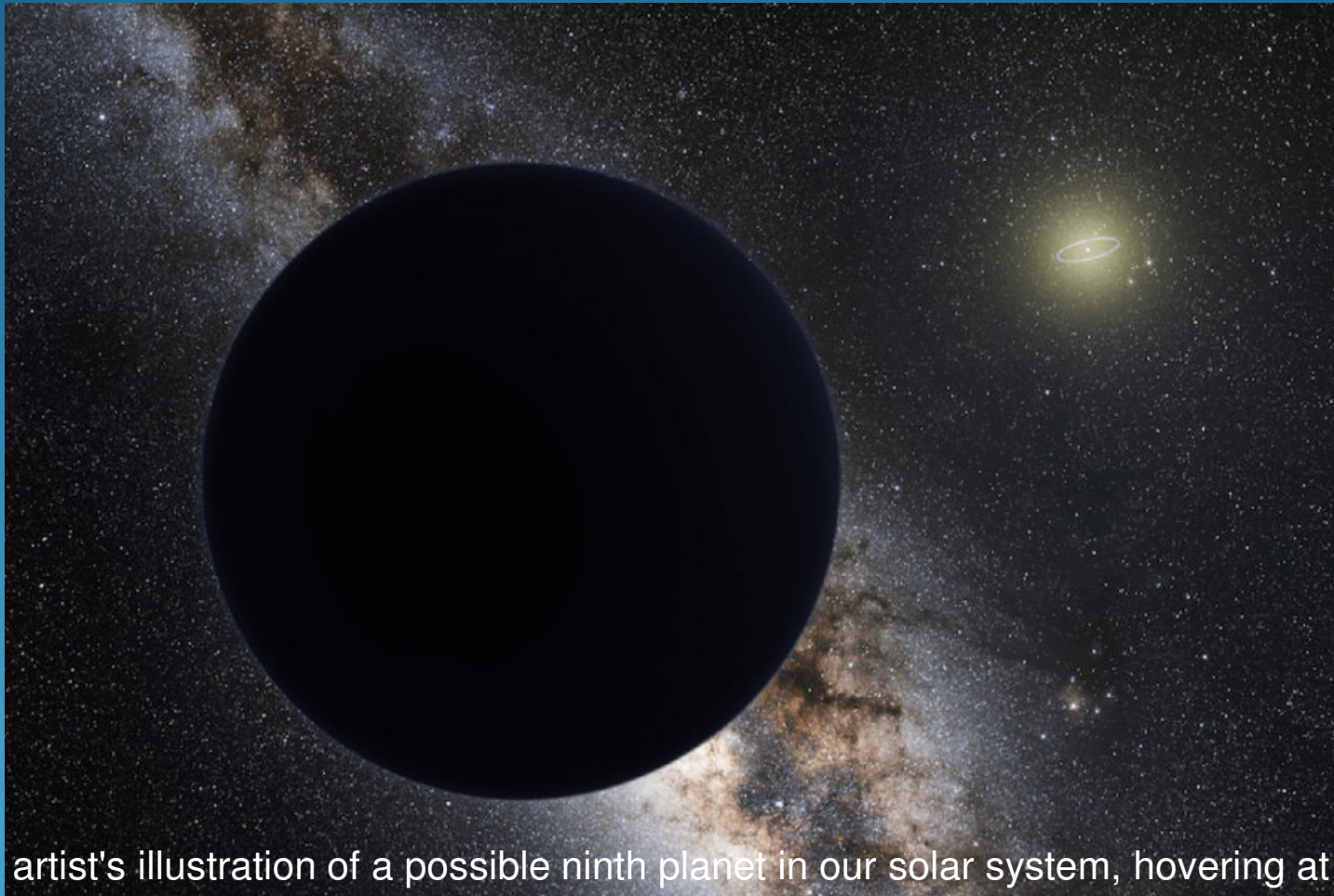
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What's in the news this month?

6 - NEW CLUES EMERGE FOR THE EXISTENCE OF PLANET 9

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An artist's illustration of a possible ninth planet in our solar system, hovering at the edge of our solar system. Neptune's orbit is shown as a bright ring around the Sun.

Credit: ESO/Tom Ruen/nagualdesign

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What's in the news this month?

6 - NEW CLUES EMERGE FOR THE EXISTENCE OF PLANET 9

October 4, 2017 : NASA/Jet Propulsion Laboratory

It might be lingering bashfully on the icy outer edges of our solar system, hiding in the dark, but subtly pulling strings behind the scenes: stretching out the orbits of distant bodies, perhaps even tilting the entire solar system to one side. It is a possible "Planet Nine" -- a world mass of Earth and 20 times farther from the sun than Neptune.

"There are now 5 different lines of observational evidence pointing to the existence of Planet 9," said Batygin, a planetary astrophysicist at Caltech, whose team may be closing in. "If you were to remove this explanation and imagine Planet Nine does not exist, then you generate more problems than you solve. All of a sudden, you have five different puzzles, and you must come up with five different theories to explain them."

- 1) 6 known objects in the Kuiper belt all have elliptical orbits pointing in the same direction.
- 2) These orbits are also tilted the same way, 30deg "downward".
- 3) 5 other objects fit the simulation of the solar plane inc Planet 9.
- 4) Investigations show that Planet 9 could explain why the solar plane is tilted at 6deg to the sun's equator.
- 5) Planet 9 explains why objects in the Kuiper belt orbit the "wrong" way.

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