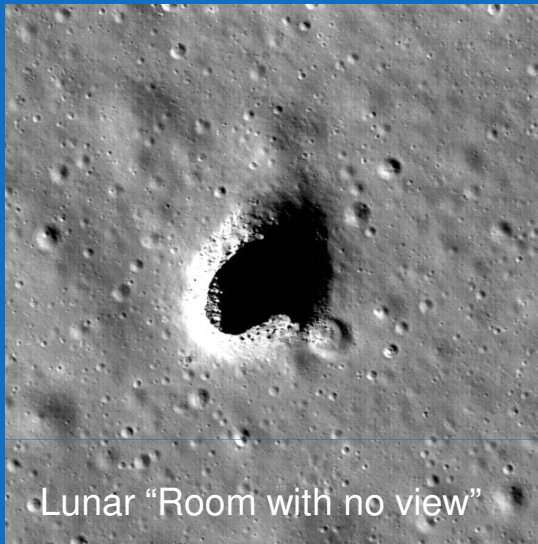


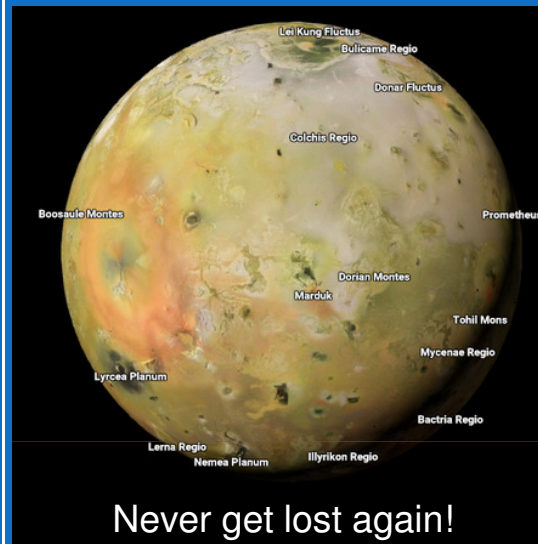
# Abergavenny Astronomy Society

*What's in the news this month?*

November - 2017



Lunar "Room with no view"



Never get lost again!



After decades of waiting our first visitor



More Neighbours?



Imaging very old galaxies



Particle Physics – Bigger Bangs  
but DON'T worry!

# Abergavenny Astronomy Society

## *What's in the news this month?*

### Living on the Moon

[www.sciencedaily.com/releases/2017/10/171018104335.htm](http://www.sciencedaily.com/releases/2017/10/171018104335.htm)



One of the problems of surviving away from the Earth's magnetic field are the dangers of radiation damage to the DNA of the astronauts. Because of this problem, along with extreme temperature variation and meteor strikes, no one has spent more than 3 days on the moon's surface.

One solution is to go underground.

JAXA (Japan) has been studying data from their SELENE spacecraft radar system the results of which have just been published in *Geophysical Research Letters* by Purdue University.

They report that evidence of a large lava tunnel system has been found near the Marius Hills, in the Oceanus Procellarum.

SELENE's radar was designed to study the geological evolution of the moon but they speculate that, if the radar results are correct, this one tube system could accommodate a large city









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# Abergavenny Astronomy Society

## *What's in the news this month?*

### Goggle Maps now include other moons & planets

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	Mercury
	Venus
	Earth
	International Space Station
	Moon
	Mars
	Ceres
	Io

Previously, you could have used Google maps to navigate the Earth, the Moon, Mars, Mercury and the International Space Station.

Now, you can also check out other solar bodies following work with NASA and astronomical artist Björn Jónsson.

It can be a bit tricky to navigate as Google hasn't implemented a search feature, but you can just scroll around and explore the areas on your own.

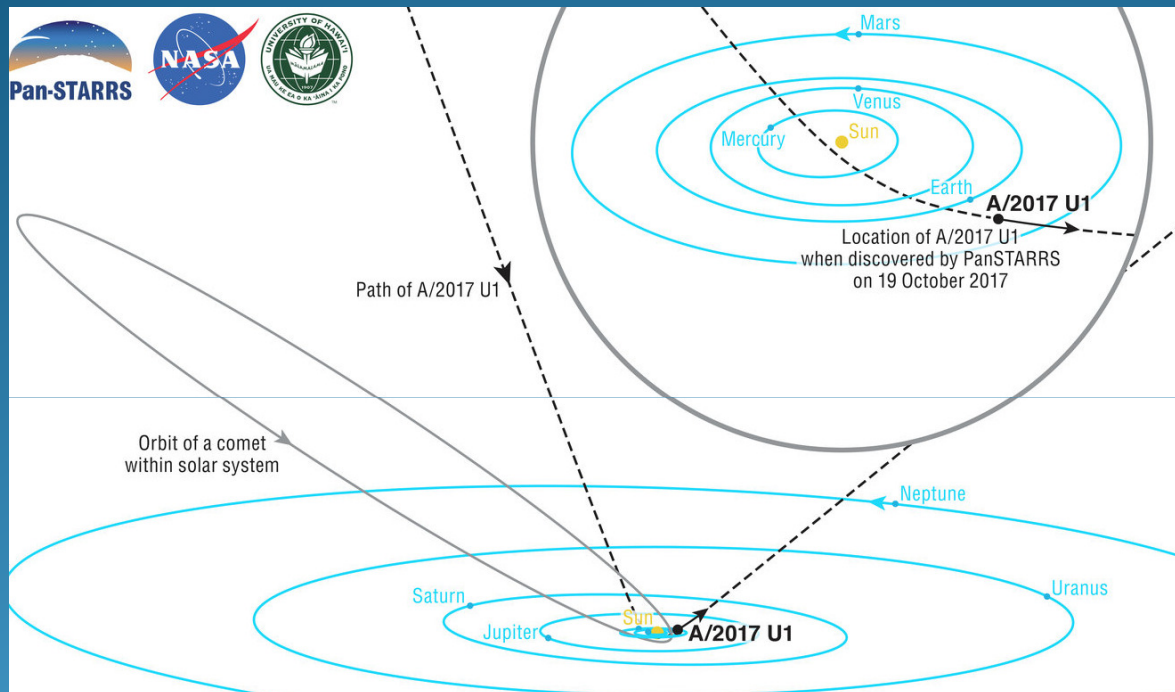
[www.google.com/maps/space/venus](http://www.google.com/maps/space/venus)

	Europa
	Ganymede
	Mimas
	Enceladus
	Dione
	Rhea
	Titan
	Iapetus
	Pluto

# Abergavenny Astronomy Society

## *What's in the news this month?*

### First known visitor from outside the solar system



"We have been waiting for this day for decades," said CNEOS Manager Paul Chodas after an object, asteroid or comet possibly, was spotted coming through the solar system on the 19<sup>th</sup> October.

It was first discovered by Hawai'i's Pan-STARRS telescope looking for near earth objects.

It was moving faster than typical objects (15.8 miles/s) and from above the elliptic in the direction of Lyra. It passed the earth at a distance of  $15 \times 10^6$  miles.

It is hoped that more data analysis may identify it's composition and origin.

[www.sciencedaily.com/releases/2017/10/171027104523.htm](http://www.sciencedaily.com/releases/2017/10/171027104523.htm)

[www.zmescience.com/science/news-science/first-alien-visitor-27102017/](http://www.zmescience.com/science/news-science/first-alien-visitor-27102017/)

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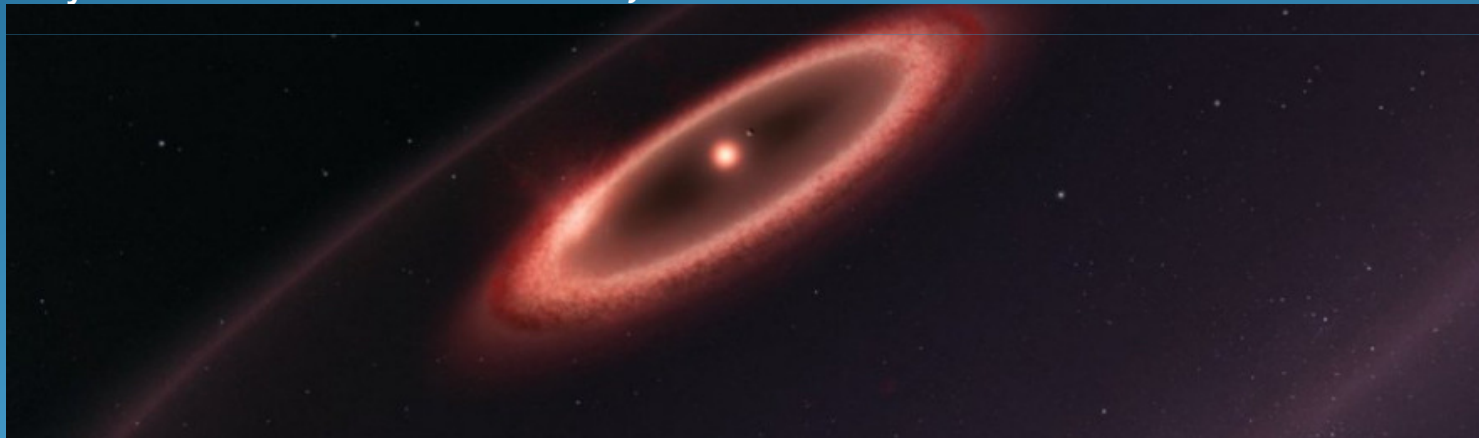
# Abergavenny Astronomy Society

## *What's in the news this month?*

### It looks like there is more than one planet around Proxima Centauri

The ALMA Observatory, Chile, has detected dust around the closest star to the Solar System. These new observations reveal the glow coming from cold dust in a region between one to four times as far from Proxima Centauri as the Earth is from the Sun. The data also hint at the presence of an even cooler outer dust belt and may indicate the presence of an elaborate planetary system.

[www.sciencedaily.com/releases/2017/11/171103081823.htm](http://www.sciencedaily.com/releases/2017/11/171103081823.htm)



This artist's impression shows how the newly discovered belts of dust around the closest star to the Solar System, Proxima Centauri, may look. ALMA observations revealed the glow coming from cold dust in a region between one to four times as far from Proxima Centauri as the Earth is from the Sun. The data also hint at the presence of an even cooler outer dust belt and indicate the presence of an elaborate planetary system. These structures are similar to the much larger belts in the Solar System and are also expected to be made from particles of rock and ice that failed to form planets. Note that this sketch is not to scale -- to make Proxima b clearly visible it has been shown further from the star and larger than it is in reality.

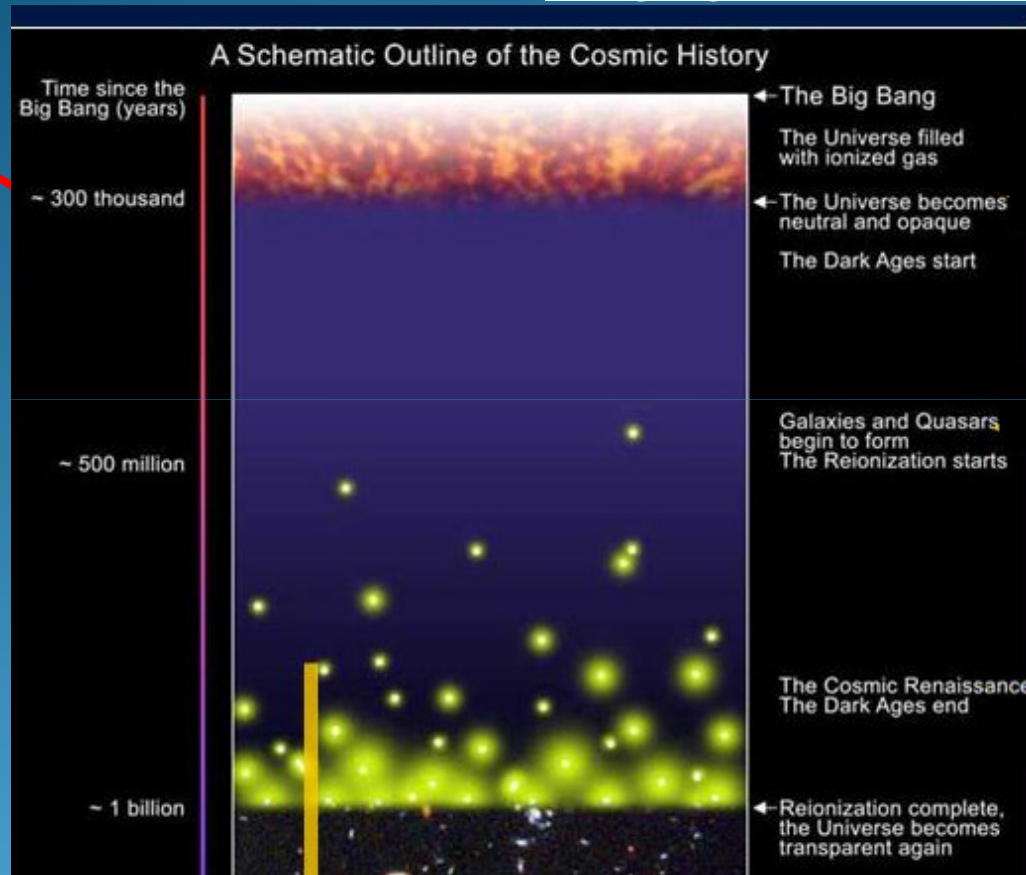
Credit: ESO/M. Kornmesser

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# Abergavenny Astronomy Society

## What's in the news this month?

### Imaging the first Galaxies



Credit: SG Djorgovski et al & Digital Media Center, Caltech

Astronomers at the UofMass & Mexico's Instituto Nacional de Astrofisica, using the Large Millimeter Telescope on the summit of a 15,000-foot extinct volcano in Mexico have detected the second most distant dusty, star-forming galaxy ever found in the universe, born the first billion years after the Big Bang. It is the oldest object ever detected by the LMT.

Min Yun, UofMass, said "...we are seeing this galaxy from 12.8 billion years ago"

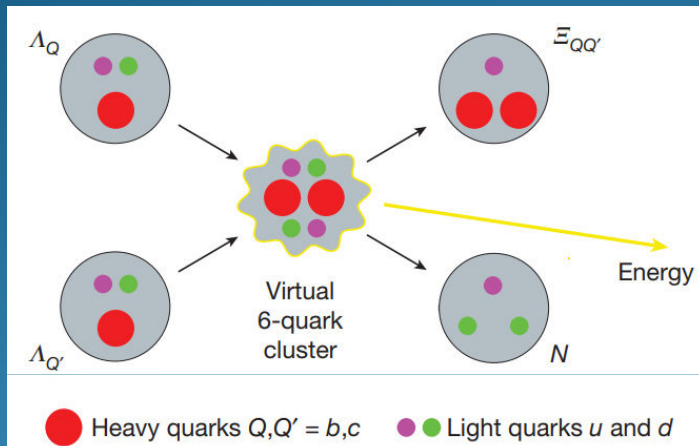
"Seeing an object within the first billion years is remarkable because the universe was fully ionized, ie it was too hot and too uniform to form anything for the first 400 million years. ... This new object is very close to being one of the first galaxies ever to form."

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# Abergavenny Astronomy Society

## What's in the news this month?

### Particle Physics – What's bigger than a atomic fusion explosion?



Israeli and American physicists have come across a new type of fusion reaction that is startlingly powerful. Initially, the scientists were a bit scared and thought it's better not to publish the research least it fell into the wrong hands, leading to a planetary-bomb. The fusion, however, can't sustain a chain reaction so scientists say the process is, for

all practical reasons, harmless. So – no need to worry then!!

What was it Rutherford said about splitting the atom? *"The energy produced by the breaking down of the atom is a very poor kind of thing. Anyone who expects a source of power from transformation of these atoms is talking moonshine"*

Leicester, 11<sup>th</sup> Sep, 1933.

A standard fusion bomb involves fusing 2 isotopes of hydrogen to produce a Helium atom and a neutron, converting 0.02 units of mass into energy ( $E=mc^2$ ). What these experimenters propose is to fuse 2 bottom quarks together, forming a nucleon and releasing up to 8 times more energy than the reactions in an H bomb, that is 138 MeV compared with 17.6MeV for hydrogen fusion.

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