

Hello Space Pioneer,

We did our best once again to pick the most interesting space news for our November issue. As we said goodbye to Cassini, it is time to focus on new space missions and endeavors. We strongly encourage you to search for more space news after you are done reading this issue of Astro Newsletter. The truth is, you can never get enough space news!

We currently have 21 schools participating in Future Explorers Program and 10 schools in Partner School Science Program. It goes without saying that we expect mindblowing projects and everlasting friendships to be made throughout the school year. The first 3-4 weeks of the programs were already quite fruitful. Enjoy your read!

## SPACE NEWS IN A FLASH

- Dwarf Planet Haumea Has a Ring
- SpaceX Launches, Lands Recycled Rocket
- Small Asteroid or Comet 'Visits' From Beyond the Solar System
- Planet Nine Does Exist, NASA Evidence Suggests
- Sun-Like Star May Have Devoured 15 Alien Planets
- Dwarf Planet Ceres Once Had an Ocean?
- Scientists Answer to Mystery of What Formed Martian Landscapes

*Astronomy compels the soul to look upward, and leads us from this world to another.*

*- Plato*

### Dwarf Planet Haumea Has a Ring

A unique opportunity to study the dwarf planet Haumea has led to an intriguing discovery: Haumea is surrounded by a ring.

Add this to the already long list of unique things about the weird-shaped world with a dizzying rotation and a controversial discovery.

On January 21, 2017 Haumea passed in front of a distant star, in an event known as an occultation. The background star can – pardon the pun – shine a light on the object passing in front, providing information about a distant object — such as size, shape, and density — that is otherwise difficult to obtain. Since an occultation with Haumea had never been observed before, scientists were first eager, and then surprised.

This is the first time a ring has been discovered around a trans-neptunian object, and the team said this discovery shows that the presence of rings could be much more common than was previously thought, in our Solar System as well as in other planetary systems.



The team said their data shows that the egg-shaped Haumea measures 2,320 kilometers in its largest axis. It takes 3.9 hours for Haumea rotate around its axis, much less than any other body in the Solar System that measures more than a hundred kilometers long. It orbits the Sun in an elliptical loop that takes 284 years to complete. Additionally Haumea has two small moons.

(<http://www.universetoday.com>)

## SpaceX Launches, Lands Recycled Rocket

SpaceX launched a rocket that had already flown to space and landed it successfully on an ocean platform, as part of its ongoing effort to recycle costly rocket components.

The satellite aims to provide television coverage and communications capabilities to North America, Hawaii, Mexico and the Caribbean.

It is a "dual-mission" satellite for the US-based operator EchoStar and Luxembourg-based operator SES.

About 10 minutes after launch, the tall portion of the rocket, known as the first stage, returned to Earth for a controlled, upright landing on a droneship called "Of Course I Still Love You," stationed in the Atlantic.

(<http://www.spacedaily.com>)

## Sun-Like Star May Have Devoured 15 Alien Planets

A distant sun-like star may have devoured a dozen or more of its own Earth-size planets, new research shows.

Researchers named the star Kronos, after the Titan of Greek mythology who ate his own children out of fears they'd dethrone him, according to a statement from Princeton University. Kronos belongs to a binary star system, or double-star system, located 350 light-years from Earth.

Astronomers discovered the star's ravenous habits while comparing its chemical composition to that of its stellar twin, named Krios — the Greek Titan god of the constellations and Kronos' older brother. The results showed that Kronos had an unusually high level of rock-forming minerals, suggesting it feasted on roughly 15 Earth masses' worth of rocky planets in its lifetime, according to the study.

(<https://www.space.com>)



## Small Asteroid or Comet 'Visits' From Beyond the Solar System

A small, recently discovered asteroid - or perhaps a comet - appears to have originated from outside the solar system, coming from somewhere else in our galaxy. If so, it would be the first "interstellar object" to be observed and confirmed by astronomers.

This unusual object - for now designated A/2017 U1 - is less than a quarter-mile (400 meters) in diameter and is moving remarkably fast. Astronomers are urgently working to point telescopes around the world and in space at this notable object. Once these data are obtained and analyzed, astronomers may know more about the origin and possibly the composition of the object.

(<http://phys.org>)

## Dwarf Planet Ceres Once Had an Ocean?

In March of 2015, NASA's Dawn mission arrived around Ceres, a protoplanet that is the largest object in the Asteroid Belt. Along with Vesta, the Dawn mission seeks to characterize the conditions and processes of the early Solar System by studying some of its oldest objects. One thing Dawn has determined since its arrival is that water-bearing minerals are widespread on Ceres, an indication that the protoplanet once had a global ocean.



Naturally, this has raised many questions, such as what happened to this ocean, and could Ceres still have water today? Towards this end, the Dawn mission team recently conducted two studies that shed some light on these questions.

(<http://www.universetoday.com>)

## Planet Nine Does Exist, NASA Evidence Suggests

Planet Nine is out there, and astronomers are determined to find it, according to a new statement from NASA. In fact, mounting evidence suggests it's hard to imagine our solar system without the unseen world.

The hypothetical planet is believed to be about 10 times more massive than Earth and located in the dark, outer reaches of the solar system, approximately 20 times farther from the sun than Neptune is. While the mysterious world still has yet to be found, astronomers have discovered a number of strange features of our solar system that are best explained by the presence of a ninth planet, according to the NASA statement.

(<http://www.livescience.com>)

## Scientists Answer to Mystery of What Formed Martian Landscapes'



Working over a ten year period at the Plataforma Solar de Almeria (CIEMAT) Denk has designed and built a device to make enough oxygen and water for 6 to 8 astronauts, powered by a thermal solar reactor. In 2017 it completed a six-month test run.

The idea is not new; just the implementation.

Denk's simple solar reactor could chemically split water from lunar soil, and electrolysis could then split the H<sub>2</sub>O into oxygen and hydrogen. But few other attempts used solar reactors, and ones that did had flawed designs, due to undersizing the solar concentrator to heat the reactor - and none exceeded bench scale.

(<http://www.spacedaily.com>)

# SCHOOLS IN ACTION

We made a great start to our educational programs with all of our participating schools and all the mysteries of Mission Patches have been revealed! These students needed no help from professionals when it came to designing a Mission Patch. Great details and awesome placement of objects on all the patches we saw so far. Thank you for sharing your imagination and creativity with us! Well done!



Bahçe ehir College, Antalya



Erkan Ulu, Istanbul



Final School, Samsun



Rota College, Izmir



Fen Bilimleri, Kırklareli



ISTEK Atanur O uz, Istanbul



FMV Ni anta 1, Istanbul



ISTEK Mavi ehir, Izmir



YÖNDER, Istanbul

## Astronomy Picture of the Day

**Explanation:** Many Distant galaxies lie beyond a foreground of spiky Milky Way stars in this telescopic field of view. Centered on yellowish star HD 14771, the scene spans about 1 degree on the sky toward the northern constellation Andromeda. At top right is large spiral galaxy NGC 891, 100 thousand light-years across and seen almost exactly edge-on. About 30 million light-years distant, NGC 891 looks a lot like our own Milky Way with a flattened, thin, galactic disk. Its disk and central bulge are cut along the middle by dark, obscuring dust clouds. Scattered toward the lower left are members of galaxy cluster Abell 347. Nearly 240 million light-years away, Abell 347 shows off its own large galaxies in the sharp image. They are similar to NGC 891 in physical size but located almost 8 times farther away, so Abell 347 galaxies have roughly one eighth the apparent size of NGC 891.



NGC 891 vs Abell 347