Friends Of Galileo ASTRONOMY CLUB

Greg Smith – editor

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Program: Limiting Magnitude
Mark Thorson

Meeting: January16th
Mark Morris H S LGIC

A Far Out Month

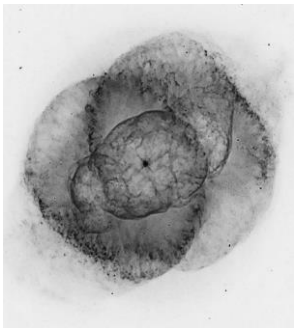
This year has started off with a couple of huge successes in solar system exploration. China has made the landing on the far side of the moon and has sent us pictures. Its rover Chang'e 4 has moved off it platform and is driving across the smooth plain of the far side crater Von Kármán Crater which lies within the South Pole-Aitken (SPA) basin, one of the largest impact features in the solar system. This is quite the feat as it required the placement of a communications satellite in a peculiar orbit that keeps it on the far side of the moon at all times as the moon orbits the Earth. This is located at the Earth-moon Lagrange point 2, a gravitationally stable spot beyond the moon from which the satellite can keep both Chang'e 4 and its home planet in sight. The satellite is visible from Earth so that communications can be carried out to the lander and rover. The US and Russia have never done this before as we have keep our landers and people on the near side for communication reasons. So congratulations to China's space program for achieving this milestone in lunar exploration.

NASA has pulled of the flyby of a Kuiper Belt object 4 billion miles from Earth in its meeting with 2014 KU69 or better known as Ultima Thule. What it found was a contact binary object that looks like a red snowman (at least it wasn't a yellow snowman). NASA will be receiving data from New Horizons for the next 20 months as it fly's away toward hopefully a third object. There will be pauses in data transmission as New Horizons passes behind the sun as it is doing now. These breaks are about 10 days long so as to get away from the interference of the suns radiation. [Read more in the following article.]

A third NASA probe, OSIRIS-Rex, is now in orbit of the Asteroid Bennu and is working on it exploration of this closer to home object. OSIRIS-Rex caught up with Bennu last month began a series of wide orbital flybys so that it could accurately measure the mass of the asteroid. By getting an accurate determination of its mass, OSIRIS-Rex can be put in a far more circular orbit of the asteroid.

We are living in a time of great exploration. We, as amateur astronomers, have a lot of good things to learn and look forward to in this next year.

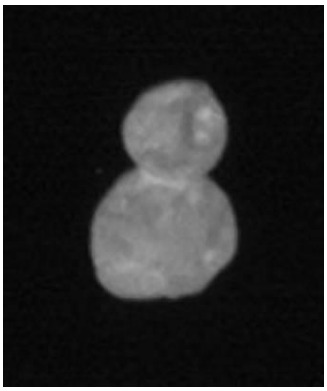
Every Day is a Star Filled Day
Every Night is a Starry Night



Hunt for Moons of Ultima Thule

The Hunt Is On for Moons around Ultima Thule

By Mike Wall, Space.com Senior Writer | January 4, 2019 07:47am ET



The most distant celestial object ever explored may well have moons, and astronomers are trying hard to find them.

In the wee hours of Jan. 1, NASA's New Horizons spacecraft zoomed past the small, frigid object Ultima Thule, which lies more than 4 billion miles (6.4 billion kilometers) from Earth. The probe has beamed home just a tiny fraction of its flyby data so far, but mission team members are already starting to get the goods on the far-flung rock.

For example, scientists now know that the 21-mile-long (33 km) Ultima Thule is composed of two roughly spherical lobes, which apparently began their lives as independent, free-flying objects. The duo quickly spiraled closer and closer together, joining up in the solar system's earliest days to form a reddish "snowman

Modeling work suggests that the two constituent bodies, dubbed "Ultima" and "Thule," likely completed one rotation every 3 or 4 hours around the time when they hooked up, mission team members said. But New Horizons' observations show that the present-day Ultima Thule takes about 15 hours to make a full spin.

"So, how did they slow down? Well, the best way to understand that is if there were another moon, or two or three, orbiting this system," Mark Showalter, a New Horizons co-investigator from the SETI (Search for Extraterrestrial Intelligence) Institute in Mountain View, California, said during a news conference Thursday (Jan. 3).

"Essentially, what those moons would do is put the brakes on the two bodies in the middle — slow them down" by carrying away the duo's angular momentum, he added.

So the hunt for Ultima Thule satellites — which began in earnest a while back, when the mission team was investigating potential hazards that could complicate the epic New Year's Day flyby — is hardly a lark.

The mission team has ruled out the existence of any sizable moons at least 500 miles (800 km) away from Ultima Thule, or within 100 miles (160 km) of the object, Showalter said. But that middle zone is a big question mark and will remain so until late January, when New Horizons beams home observations covering the region.

And, crucially, that in-between zone is the most likely place for satellites to exist in the system, Showalter said.

He and his colleagues are really hoping they turn up at least one moon, for such a find would help them tease out key details about Ultima Thule that they'll be hard-pressed to determine any other way.

"Any moon at all, on any orbit at all, will tell us the mass and the density to pretty decent usable precision," Showalter said. "And so we're very, very excited about that prospect."

Even if the search ultimately comes up empty, that doesn't mean Ultima Thule — which is officially known as 2014 MU69 — never hosted moons, he added. As "braking" satellites carry away angular momentum from their systems' central bodies, these moons move farther and farther out into space. So, it's possible that Ultima Thule once had such satellites, but these moons moved so far away that they were eventually lost.

The $700 million New Horizons mission launched in January 2006, tasked with returning the first up-close images of Pluto. The mission aced this goal when it cruised past the dwarf planet in July 2015, revealing Pluto to be a world of stunning beauty and geological diversity.

The Ultima Thule flyby is the centerpiece of New Horizons' extended mission, which runs through 2021. The spacecraft has enough fuel and power, and is in good enough health, to potentially fly past a third object, if NASA grants another mission extension, team members have said.

Minutes of the December Meeting

The annual Christmas party was held at the River View Condominiums with the help of Margaret Miller. We want to thank her very much for reserving the meeting room. The party was started by President Greg smith who thanked everyone involved in the setup and organizing. We had Astromedy and music. Astromedy is Astronomy related stand up comedy. Ted Gruber gave a very humorous routine of comedy for us. The Ripp sisters performed duets and solos on Piano and Violin. They did a great job and we enjoyed them very much. We discussed the upcoming Solstice Lantern Walk on the Solar System trail on Lake Sacajawea for the night of December 21. We all enjoyed a delightful meal of the many dishes provided by our members. Thanks all who stayed and helped clean up the meeting room.

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☞ January 2019 Meeting ☜

DATE: **Wednesday, January 16, 2019**

TIME 7:00 pm

PLACE: Mark Morris High School
Large Group Instruction Center
Use 17th Ave entrance.

PROGRAM: Limiting Magnitude
Mark Thorson

SNACKS:

DRINKS:

Friends of Galileo Club Officers

PRESIDENT	Greg Smith
VICE-PRESIDENT/ PROGRAM CHAIR	Ted Gruber
SECRETARY	Becky Kent
TREASURER	Steve Powell
WEBSITE	Roy Gawlick
NEWSLETTER ED.	Greg Smith
ALCOR	Tom Meek

Next Month's Newsletter Deadline

The deadline for items in next month's newsletter is:
Wednesday: seven days before next meeting.

Please feel free to send in your thoughts and experiences about your astronomical adventure.

Submit your material by E-mail to:

grlyth@msn.com