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**THE MORRIS MUSEUM
ASTRONOMICAL SOCIETY**

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The *Heavenly Herald* is produced quarterly for the membership of the Morris Museum Astronomical Society

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Message from the President

Anthony Pisano, President

Astronomy Day 2018

Welcome all visitors to Astronomy Day 2018 at the Morris Museum. We hope you will enjoy this fun filled and informative family day at the Museum.

The club uses this day to showcase and highlight all the equipment, talent and knowledge this all volunteer group has to offer the public. We also use this day to showcase our partnership with the Morris Museum. The MMAS works jointly with the museum staff to provide a fun filled and educational day for both children and adults.

This year's activities include solar and celestial observing (weather permitting), children's crafts, a meteorite display, two guest speakers, NASA posters and a telescope dis-

play.

I do hope you enjoy your day at the Museum and plan to visit us again.

Astronomy Day is only a single event in the year. We have many additional activities through out the year. Monthly meetings, celestial observing at the United Astronomy Clubs of New Jersey, a dark sky site in Hope, NJ and outreach events at libraries and civic organizations throughout the area. These are only some of our member activities.

Feel free to explore our group further by asking any of our members for more information or visit our website and/or Facebook page (addresses to the left).

Thank you for spending the day with us and we hope your experience is out of this world!!!

Club Meetings

Apr. 12 - Terrence Baz - "The Southern Skies "
 May 11 - Jay Gowers - "Planetary Probes "

**Monthly Meetings are the second Thursday of each month at 7:00PM.
 No meetings Jan., Feb., Jul., & Aug. check the website for specific information.**

Why We Have Yet To Find Extraterrestrial Life

By: Arizona State University

Are we alone in the universe? Few questions have captured the public imagination more than this. Yet to date we know of just one sample of life, that which exists here on Earth.

Although there is plenty of habitable real estate out there, "habitable" is not the same as "inhabited," says Arizona State University Regents Professor and noted cosmologist Paul Davies. Because nobody knows how non-life transitioned to life on Earth, it is impossible to estimate the odds of it springing forth elsewhere in the universe.

Davies presented his findings on Feb. 16 at the annual meeting of the American Association for the Advancement of Science in Austin, Texas.

"During my career, opinion has shifted from life's origin being a bizarre fluke unique in the universe ('almost a miracle' in the words of Francis Crick), to the belief that the universe is teeming with life ('a cosmic imperative' in the words of Christian de Duve)," Davies said. "How can we settle the matter? For several decades astronomers have been sweeping the skies with radio telescopes hoping to stumble across a message from ET. So far they have been met by an 'eerie silence.'"

"Meanwhile, astrobiologists have considered how signatures of microbial life might be detectable in the solar system

or in the atmospheres of extra-solar planets," Davies added. "If life really does form readily in Earth-like conditions, it should have started many times right here on Earth, so we should look for a 'shadow biosphere' of life, but not as we know it, under our very noses."

Davies is a cosmologist, theoretical physicist, astrobiologist and best-selling author. His latest book 'The Eerie Silence' is a celebration and critique of the search for cosmic company.

Davies is a member of the Breakthrough Listen Committee and formerly chaired the SETI Post-Detection Task group of the International Academy of Astronautics. He was the first person to champion the idea that life on Earth may have originated on Mars and transferred here in impact ejecta. Davies is director of the Beyond Center at ASU that researches how life began in terms of the organization of information in complex networks -- the software of life. His forthcoming book "The Demon in the Machine," is a penetrating look at the power of information to explain the physics of living matter.

MMAS Hats

We are currently looking for members that are interested in getting MMAS baseball style hats. The color of the hat would be dark blue with MMAS

embroidered on the front. If you are interested in a hat please contact Joe Molnar at josephmolnar@gmail.com or (973) 538-6294. Cost \$12.00



Out-Of-This-World Photos from Falcon Heavy's Historic Debut Flight

By: Calla Cofield, SPACE.COM

SpaceX's Falcon Heavy megarocket completed its first-ever launch on Feb. 6, lifting off from Kennedy Space Center in Florida. The launch was jam-packed with incredible moments, captured in jaw-dropping photos. Here are some of our favorite images of the day.

The Falcon Heavy's first stage consists of three Falcon 9 boosters strapped together. Those three columns of fire heading skyward was an awe-inspiring sight.

A few moments later, the rocket reached max Q, or the point at which the rocket experiences the maximum pressure load that it will undergo during the flight. The three flaming boosters burned steadily as the rocket headed skyward.

Two of the Falcon Heavy's first-stage boosters returned to Earth and completed a synchronized touchdown on two land-based pads. Watching one booster complete this maneuver is awesome — watching two boosters do it at the same time was like watching a science-fiction movie.

This was a test flight for Falcon Heavy, so SpaceX did not load up the rocket with a real payload. Instead, Elon Musk,

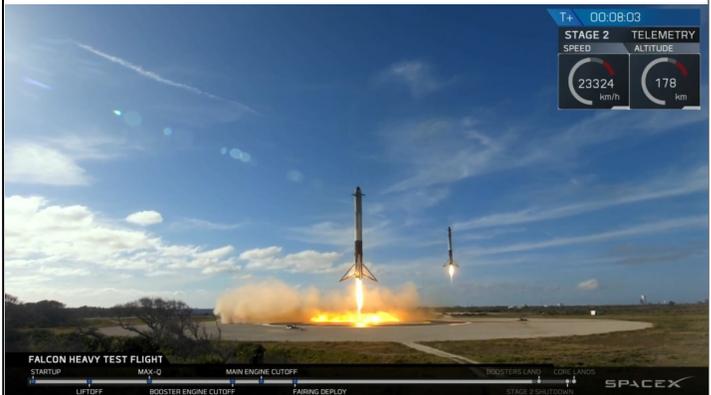
the company's founder and CEO, put a Tesla Roadster on board, carrying a mannequin passenger named "Starman." Cameras mounted on the payload delivered amazing views of Starman and the Roadster hovering over the ocean early in the flight.



A Tesla Roadster, carrying a dummy passenger named "Starman," orbits the Earth after launching into space on the Falcon Heavy on Feb. 6, 2018.

Later, SpaceX posted on YouTube a livestream from one of the cameras, which shows the Roadster orbiting Earth as a part of a planned 6-hour cruise phase. The curvature of the Earth is visible behind Starman's head, and a remarkable amount of detail can be seen on the planet, including clouds and the glint of the ocean. When the

planet drifts out of view, the camera captures the pure blackness of space.



Two of the three first-stage boosters from the Falcon Heavy rocket touch down on landing pads after launch on Feb. 6, 2018.



The Falcon Heavy rocket taking off from Launch Pad 39A at NASA's Kennedy Space Center on Feb. 6, 2018.



"Starman" riding in a Tesla Roadster aboard a Falcon Rocket headed for a solar orbit, after launch on Feb. 6, 2018.

Night Sky Network

Astronomy Clubs bringing the wonders of the universe to the public



The Moon

APR. 2018

	Last Quarter	08
	New Moon	15
	First Quarter	22
	Full moon	29

MAY. 2018

	Last Quarter	07
	New Moon	15
	First Quarter	21
	Full moon	29

JUN. 2018

	Last Quarter	06
	New Moon	13
	First Quarter	20
	Full moon	28

Links

- www.badastronomy.com
- www.heavens-above.com
- www.nightskynetwork.com
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- www.scopereviews.com
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- www.cloudynights.com
- www.nightskiesnetwork.com
- www.uacnj.org

Interstellar Asteroid Oumuamua Had Violent Past, Say Researchers

In October 2017, the Pan-STARRS 1 telescope in Hawaii picked up a faint point of light moving across the sky. It initially looked like a typical small asteroid, but additional observations over the next couple of days allowed its orbit to be computed fairly accurately.



This artist's impression shows the first interstellar asteroid — 1I/2017 U1 'Oumuamua.

The orbit calculations revealed beyond any doubt that this body did not originate from inside our Solar System, like all other asteroids or comets ever observed, but instead had come from interstellar space.

Although originally classified as a comet, additional observations revealed no signs of cometary activity after it passed closest to the Sun in September 2017. 'Oumuamua was reclassified as an interstellar asteroid.

Since October, Queen's University Belfast researcher [Wesley Fraser](#) and co-authors have been analyzing the brightness measurements of the object.

The astronomers discovered that 'Oumuamua wasn't spinning periodically like most of the small asteroids and bodies that we see in our Solar System.

Instead, it is tumbling, or spinning chaotically, and could have been for many billions of years.

While it is difficult to pinpoint the exact reason for this, it is thought that 'Oumuamua impacted with another asteroid before it was fiercely thrown out of its system and into interstellar space.

"Our modeling of this body suggests the tumbling will last for many billions of years to hundreds of billions of years before internal stresses cause it to rotate normally again," Dr. Fraser said.

"While we don't know the cause of the tumbling, we predict that it was most likely sent tumbling by an impact with another planetesimal in its system, before it was ejected into interstellar space."

"It is quite unusual compared to most asteroids and comets we see in our own Solar System."