

COSMIC DIMENSIONS

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CENTI ASTRO-SPACE ACTIVITIES

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Here we are 2 months into 2023. In the next couple of weeks, it will technically be spring. Where does the time go? I am looking forward to warmer weather and to be able to do more things outdoors. One of the things I plan on doing is taking photos and video tapping Space Science activities and riding my bicycle. These will be included in future issues of this newsletter and on YouTube. Maybe even me on my bicycle. I am still looking for contributors for future issues. Anyone (elementary school age to adult) interested in contributing articles, photos, pictures, etc. should contact me. You will get full credit for your submissions. Below is a list of what is covered in this issue.

- WHAT'S UP IN THE NIGHT SKY FOR MARCH
- PRIVATE SPACE COMPANIES
- JUPITER NOW HAS 92 MOONS
- JWST SPIES RINGS AROUND CHARIKLO
- LEARNING to GROW FOOD on MARS
- POTENTIAL HABITABLE EXOPLANET
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- QUOTE of the MONTH
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WHAT'S UP IN THE NIGHT SKY FOR MARCH

Presented by

Bill McClain https://www.youtube.com/watch?v=Pul_g8pQlnw

Alyn Wallace <https://www.youtube.com/watch?v=q6feVEiDCnE>

PRIVATE SPACE COMPANIES WORTH NOTING

RELATIVITY SPACE

They are developing next generation rockets by 3D printing them and located in Los Angeles, California, United States. Check out their website and some videos to give a taste of what they are about.

<https://www.relativityspace.com/>

VIDEOS

- 60 Years of the Same... Until Now
<https://www.youtube.com/watch?v=7LiJihSqCel>
- This Is Terran R
<https://www.youtube.com/watch?v=9BhkJEc6Q64>
- Relativity at SXSW: 3D Printing is Launching Rockets to the Future
<https://www.youtube.com/watch?v=y7ee9IqQoeM>

Impulse Space Propulsion

Impulse Space Propulsion is the developer of in-space transportation services for the inner solar system. They are located in El Segundo, California, United States. Check out their website and videos.

<https://www.impulsespace.com/>

VIDEOS

- Hello, Solar System! Introducing Impulse Space Propulsion
<https://www.youtube.com/watch?v=55anJTeBRrA>
- Relativity and Impulse Space Announce the First Commercial Mission to Mars
<https://www.youtube.com/watch?v=uuL7iYUNq6o>

ASTROBOTICS

Astrobotic Technology is an American [privately held company](#) that is [developing space robotics](#) technology for lunar and planetary missions. It is located in Pittsburg, Pennsylvania, United States. Check out their website and videos.

<https://www.astrobotic.com/company/>

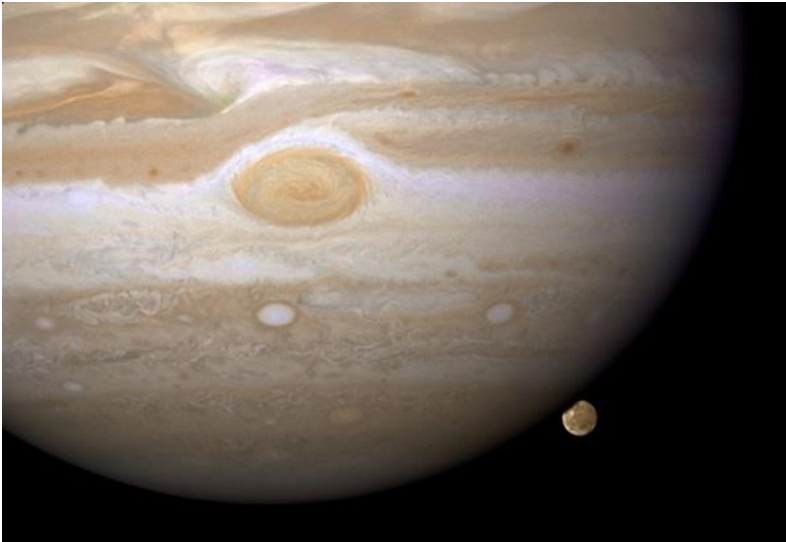
VIDEOS

- If We Colonize the Moon, This Company Wants to Ship Our Stuff
<https://www.youtube.com/watch?v=jhHiTsvXGPA>
- Interview with an Avionics Spacecraft Engineer
https://www.youtube.com/watch?v=uCMI_DCKt-M
- Griffin lunar lander takes a test drive with NASA's VIPER
<https://www.youtube.com/watch?v=Ya4nJpWpq-l>

JUPITER NOW HAS 92 MOONS, SURPASSING SATURN

The solar system's largest planet is once again the world with the most moons, as a dozen newly confirmed satellites put it ahead of the previous record-holder, Saturn.

By Alison Klesman



Jupiter (shown here with its largest moon, Ganymede) is the most massive planet in the solar system. It is also now the planet with the most known moons. NASA, ESA and E. Karkoschka (University of Arizona)

In 2019, [Saturn captured the title of the planet with the most moons](#), after astronomers announced the ringed planet hosts 82 circling satellites. (That number was further bumped up to 83 in 2021.) But now, Jupiter just took back the crown.

Jupiter now has 92 confirmed moons with orbits published by the International Astronomical Union's [Minor Planet Center](#). This includes 12 newly announced moons, half of which were first spotted around Jupiter within the past two years. The 12 new jovian moons are enough for the king of planets to rightfully reclaim its title as king of satellites as well. To read more click the link: https://astronomy.com/news/2023/02/jupiter-now-has-92-moons?utm_source=acs&utm.

JAMES WEBB SPACE TELESCOPE SPIES RINGS AROUND CENTAUR CHARIKLO

The detailed observations reveal strong evidence of water ice and may help shed light on how rings can form around such a small object.

By Tom Metcalfe



Chariklo's rings might look when viewed from the surface of the centaur, which is a small solar system object that skirts the line between asteroid and comet. NASA/JPL-Caltech

The half-asteroid, half-comet dubbed 10199 Chariklo, located beyond Saturn, is a ball of rock and ice about 170 miles (270 kilometers) across. Due to its rather diminutive size, astronomers were surprised in 2013 when they detected rings around it — something they only expected to find around giant planets.

Now, Chariklo's rings have been observed by the [James Webb Space Telescope \(JWST\)](#), revealing strong evidence of water-ice in the system. The new observations are also helping scientists learn more about why such a small object like Chariklo has rings at all. To read more click the link:

https://astronomy.com/news/2023/02/jwst-spies-chariklo-rings?utm_source=acs&utm

LEARNING to GROW FOOD on MARS COULD TRANSFORM FOOD PRODUCTION on EARTH

Agricultural technologies to grow food on Mars can help address climate change, sustainability, and food scarcity challenges.

By Evan Fraser, The Conversation, Lenore Newman, The Conversation



Growing food in space will rely on innovative agricultural technologies. NASA

Could we feed a city on Mars? This question is central to the future of space exploration and has serious repercussions on Earth too. To date, a lot of thought has gone into [how astronauts eat](#); [however, we are only beginning to produce food in space](#). Space launches [are quite expensive](#). And with the growing desire to establish a human presence in space, we are going to have to consider food production in space. But the challenges are vast, requiring research into how plants respond to a variety of changes including to [gravity](#) and [radiation](#).

As food and agriculture researchers, we explored this question in our latest book, [Dinner on Mars](#). We believe that a sustainable martian food system is possible — and that in building it, we'll change food systems on Earth. However, this will take some out-of-the-box thinking. To read more click the link: https://astronomy.com/news/2023/02/growing-food-on-mars?utm_source=acs&utm

Astronomers discover potential habitable exoplanet only 31 light-years from Earth

Is Wolf 1069 b the Earth-like exoplanet we've been looking for?

By Laurence Tognetti



An artist's depiction of Wolf 1069 b. (Image credit: NASA/Ames Research Center/Daniel Rutter)

Astronomers have detected a new Earth-like exoplanet. A team using the 3.5-meter (11.5-foot) telescope at the Calar Alto Observatory in Spain have [found a rocky exoplanet](#) orbiting within its red dwarf star's habitable zone (where liquid water could be possible on the surface). The discovery was made using the radial velocity method, in which small wobbles in a star's location indicate the presence of a planet. To read more click on the link: <https://www.space.com/wolf-1069-b-exoplanet-habitable-earth-mass-discovery>

FAMOUS SIENTIST

Moon Mountain Name Honors NASA Mathematician Melba Mouton



Melba Mouton, a mathematician and computer programmer in NASA's Trajectory and Geodynamics Division at NASA's Goddard Space Flight Center in Greenbelt, Maryland.
Credits: NASA

Scientists recently named a mesa-like lunar mountain that towers above the landscape carved by craters near the Moon's South Pole. This unique feature will now be referred to as "Mons Mouton," after NASA mathematician and computer programmer Melba Roy Mouton (MOO-tawn).

Members of NASA's Volatiles Investigating Polar Exploration Rover ([VIPER](#)) mission proposed the name to the International Astronomical Union (IAU). The flat-topped mountain is adjacent to the [western rim of the Nobile Crater](#), on which VIPER will land and explore during its approximately 100-day mission as part of NASA's Artemis program.

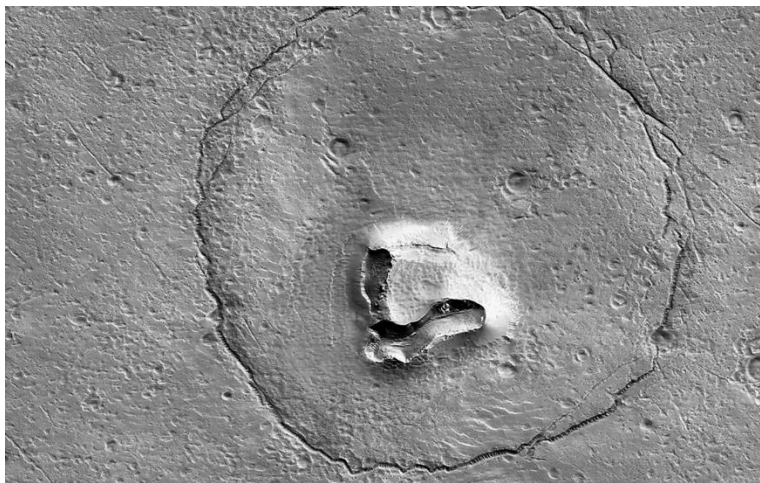
The IAU theme for naming mountains (mons) on the Moon focuses on "scientists who have made outstanding or fundamental contributions to their fields." The lunar landmark naming honors and recognizes Mouton's life, her accomplishments as a computer scientist, and her contributions to NASA's missions.

"Melba Mouton was one of our pioneering leaders at NASA," said Sandra Connelly, the acting associate administrator for science at NASA Headquarters in Washington. "She not only helped NASA take the lead in exploring the unknown in air and space, but she also charted a path for other women and

people of color to pursue careers and lead cutting-edge science at NASA." To read more click on the link: <https://www.nasa.gov/feature/ames/moon-mountain-name-honors-nasa-mathematician-melba-mouton>

Source: [NASA](#)

SPACE PIC OF THE MONTH



A BEAR ON MARS? In late January 2023, NASA's Mars Reconnaissance Orbiter captured this image of a feature on Mars that bears the uncanny resemblance to... well, a bear! The mission team thinks the nose may be a hill with a V-shaped collapse structure, the eyes may be craters, and the head may be a circular fracture pattern. [NASA/JPL-Caltech/University of Arizona](#)

EARTH-SIZE EXOPLANET SPOTTED 72 LIGHT-YEARS AWAY

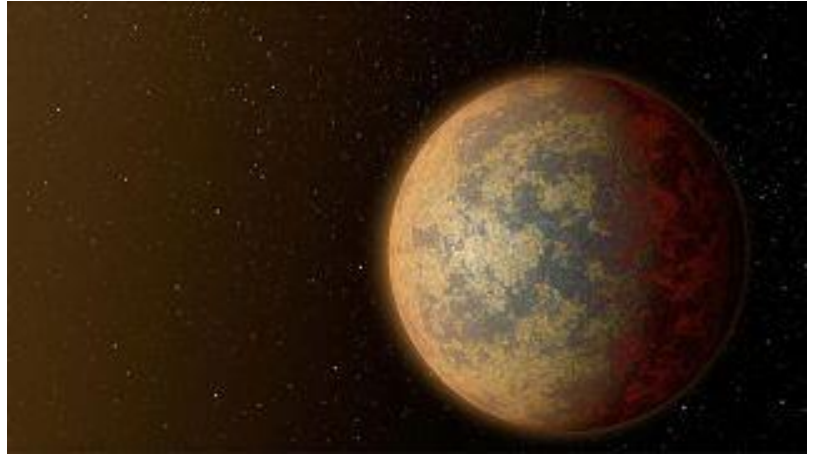
Researchers hope to discover more exoplanets in the K2-415 system.

By Stefanie Waldek

Look out, everyone: There's a new exoplanet in town.

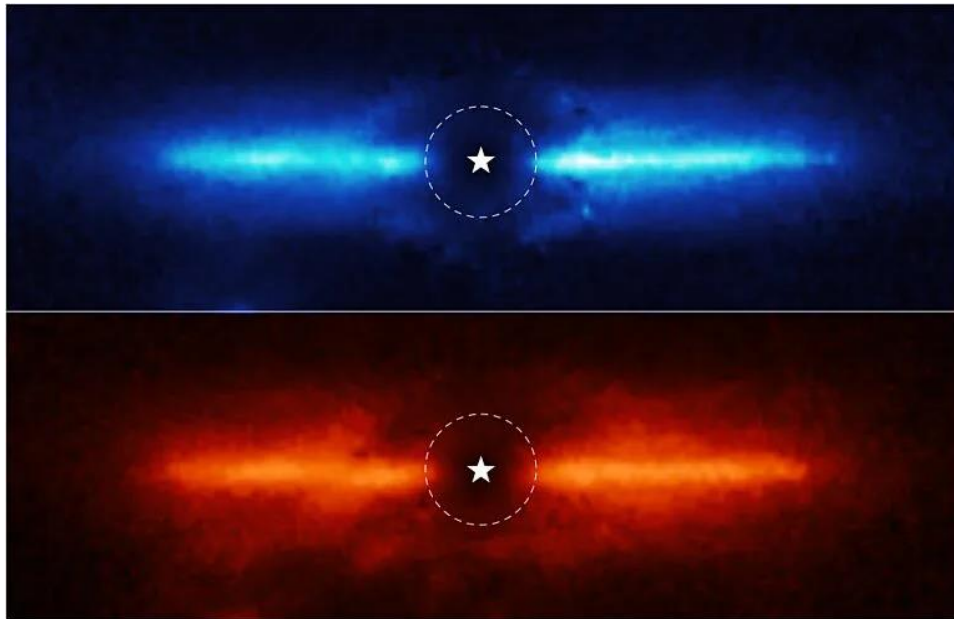
An international team of researchers searching for transiting [exoplanets](#) (those that cross their host star's face from our perspective) has made its latest discovery — an Earth-size body just 72 light-years away from us.

K2-415b, as the newly discovered world has been named, orbits the nearby [red dwarf](#) star K2-415. Researchers identified the exoplanet in the data of NASA's now-defunct Kepler space telescope, its secondary mission K2, and its successor, the [Transiting Exoplanet Survey Satellite](#). While K2-415b is not the closest known exoplanet to Earth, it is, on a cosmic scale, one of our close neighbors. And it's a particularly intriguing exoplanet for astronomers to study. To read more click the link: <https://www.space.com/k2-415b-nearby-earth-size-exoplanet>



An artist's rendering of HD 219134b, another "local" Earth-sized exoplanet that could be similar to the newly discovered world K2-415b. (Image credit: NASA/JPL-Caltech)

MORE WORLDS, ANYONE?



This is what a budding star system looks like. JWST captured these two images in different wavelengths of infrared light, showing the debris disk around AU Mic, a red dwarf star located 32 light-years away. To see the debris, JWST used its coronagraph to block the intense light of the central star (marked on this image by a white star shape, with the region blocked by the coronagraph shown by a dashed circle). The star has two known planets; the debris disk is the result of collisions between leftover planet-forming materials. **Image Credit: NASA et al, image processing by Alyssa Pagan (STScI).**

QUOTE of the MONTH

“ The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom. ”

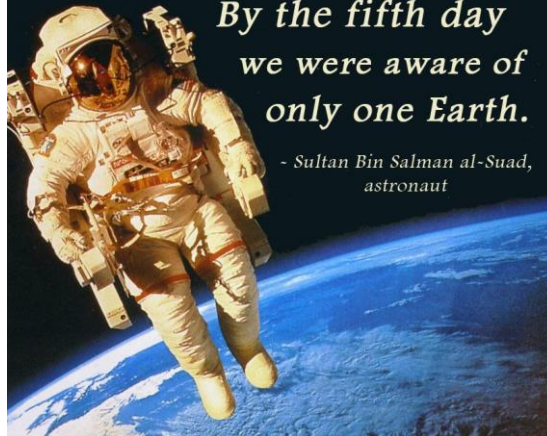
Isaac Asimov

SPACE QUOTE of the MONTH

The first day or so we all pointed to our countries. The third or fourth day we were pointing to our continents.

By the fifth day we were aware of only one Earth.

- Sultan Bin Salman al-Suad, astronaut



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