

Microbes could Potentially Survive on Mars for 280 million years.

Reminder EAS Meeting on December 16th @ 7:30pm will be at the Evansville Museum.



New research suggests a tough bacteria called *D. radiodurans* could long withstand harsh martian radiation in a state of stasis under the surface. If and when humans venture to Mars, they will need to consider how the microbes they bring with them might set up shop on the Red Planet.

Photo Courtesy: Dotted Yeti/Shutterstock

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The EAS newsletter, Observer, is published monthly. Anyone wishing to contribute articles or photos may mail them to the club's PO Box: EAS, PO Box 3474, Evansville, IN 47733, or e-mail them to the editor at:

dasiceman@yahoo.com

The **Evansville Astronomical Society (EAS)** is a non-profit organization fully incorporated in the state of Indiana. It has, as its primary goal, the advancement of amateur astronomy. Founded in 1952, the society seeks to:

- 1... maintain adequate facilities for its members and the public in order to extensively study the skies and
- 2... promote an educational program for those who wish to learn more about the science of Astronomy.

Meetings are held the third Friday of each month, except June, when the annual EAS picnic is held. The society also sponsors monthly Open House events during the warmer seasons that afford the public an opportunity to tour the observatory.

EAS 2023 Officers and Contacts

President – Tony Bryan
812.827.3234

evansvilleastro@gmail.com

Vice President – Scott Conner

Secretary – Dave Kube
740.223.6854

Treasurer – Mitch Luman

Counselors
Michael Borman (2021)
Ken Harris (2022)
Kent Bretton (2023)

Webmaster – Michael Borman

Program Director
Chuck Allen

Newsletter editor – Dave Kube
dasiceman@yahoo.com

For more information about the EAS or directions to the Observatory, please visit the club's web page:

www.evansvilleastro.org



Local Events and Information

EAS Update

Please Note: We have a Regular Meeting scheduled for 7:30pm on Friday, December 16th, 2022. This meeting is scheduled to be at the Evansville Museum. Please see our Facebook Group and Webpages for Updates.

EAS Update

Please Note: We have a Regular Meeting scheduled for 7:30pm on Friday, January 20th, 2022. This meeting is scheduled to be at the Evansville Museum. Please see our Facebook Group and Webpages for Updates.

EAS Update

Please Note: We have a Regular Meeting scheduled for 7:30pm on Friday, February 17th, 2022. This meeting is scheduled to be at the Evansville Museum. Please see our Facebook Group and Webpages for Updates.

EAS Update

EAS Update

EAS Update:

Please visit our website <http://www.evansvilleastro.org> and our Facebook Group page to keep yourself up to date for any changes.

Telescopes and accessories for sale...

Orion AstroView120ST, Equatorial Refracting Telescope and accessories. 120mm (4.7") aperture and 600mm focal length, includes sturdy adjustable-height tripod, equatorial mount, finder scope and an internal polar alignment scope. Includes two Plossl 1.25" eyepieces (25mm and 10mm), 6x30 finder scope, star diagonal. \$600.

Contact: Karen Caruso 812-629-8089 (cell)

Telescopes and accessories for sale...

As mentioned in last month's issue, Mike Borman still has some excellent telescope equipment and imaging accessories for sale. Some of the gear has already been sold. If interested, go to Mike's web page. Here is the link: <http://www.mrborman.org/forsale.htm>

Saturn's Moon Enceladus may be more Habitable than thought.



New research suggests the subsurface soda ocean on Saturn's moon could increase the availability of phosphorus — a key ingredient for life as we know it.

This artist's concept shows the plumes of ice particles erupting from fractures in the south polar region of Saturn's moon Enceladus.

Photo Courtesy: NASA/JPL-Caltech

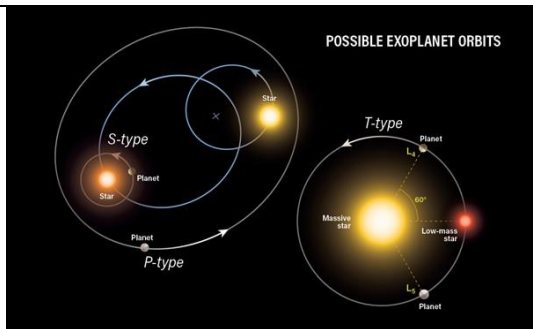
In our solar system, Saturn's moon Enceladus is unique: It provides scientists direct access to a global ocean hidden beneath the moon's icy surface. That's because Enceladus is constantly venting its subsurface water out into space.

Numerous geysers spew water vapor hundreds of miles into space through cracks that seem clawed into the moon's south polar region. During its flybys, the Cassini spacecraft "tasted" some of the plumes, and its analysis indicated the water may have come from a carbonate-rich subsurface ocean.

A few of the plume's contents — salty ice particles, ammonia, carbon monoxide, and other organic materials — strengthened the case for the potential habitability of Enceladus' ocean. However, Cassini's analysis did not reveal phosphorus, a key ingredient for life.

But now, a group of researchers have, for the first time, estimated the presence of a form of phosphorus called orthophosphate, which Earth life uses in many contexts. The researchers also found the phosphorus is both highly soluble and stable in Enceladus's salty subsurface ocean.

Can Solar Systems Exist in a Binary Star System?



When binary stars are similar in mass (left), the two stars orbit the system's center of mass (denoted here with an X). Planets in an S-type orbit circle just one star in the system, while planets in a P-type orbit revolve around both stars together. When one star far outweighs the other (right), the smaller star orbits the larger one. A planet in a T-type orbit would share the orbit of the smaller companion around the larger star, locked into one of two positions — the L4 or L5 Lagrangian points — ahead of or behind the smaller star.

Photo Courtesy: Astronomy: Roen Kelly

Yes, planetary systems can exist in binary star systems. As of July 2019, astronomers have found 97 planetary systems containing 143 planets around binary stars. These planets may orbit just one of the stars in the binary system, called an S-type (satellite-type) orbit, or they can orbit both stars together from outside the binary, called a circumbinary or P-type (planet-type) orbit. Most of the known planets in binary systems have S-type orbits, in which they orbit close to one star and essentially ignore the companion star, which is farther away.

There is a third option, although no planets with this type of orbit have been found yet: a T-type orbit. In this configuration, one star in the pair is much smaller than the other. The smaller star orbits the larger star and the planet shares the orbit with the smaller star, gravitationally locked into a position either 60° ahead of or 60° behind the smaller star. These positions are called Lagrangian points. Planets in T-type orbits are sometimes called Trojan planets — just like the Trojan asteroids, for example, that share Jupiter's orbit around the Sun.

January 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20 Reg.Mtg 7:30pm	21
22	23	24	25	26	27	28
29	30	31				

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Up and Coming Events 2022

Please Note we have a Reg. Mtg. scheduled for 7:30pm on Friday December 16th, 2022 @ Museum.

Please Note we have a Reg. Mtg. scheduled for 7:30pm on Friday January 20th, 2023

Please Note we have a Reg. Mtg. scheduled for 7:30pm on Friday February 17th, 2023

Please keep eye out for 2023 schedule.

Please visit our Web Page <http://www.evansvilleastro.org> or our Facebook Group Page for updates
Events may be cancelled due to Covid at time of event

Moon Phases

New Moon	First Quarter	Full Moon	Third Quarter
January 2 nd , 2023	January 9 th , 2023	January 17 th , 2023	January 25 th , 2023
Moon Phases courtesy of Time and Date.com			

EAS Meeting for November – 2022

Our November meeting at the EAS Observatory was officially called to order @ 7:45pm by president Tony Bryan. Officers in attendance were Tony Bryan, Mitch Luman, Dave Kube and Scott Conner. There were 7 members present. We had 2 visitors present. Both were students from Louisville.

Reading of minutes from our September meeting was motioned by Ken Harris and Seconded by Randy Chapman to be accepted as printed in the November 2022 EAS Observer Newsletter. Motion was carried by all members present.

UPCOMING EAS EVENTS

Vice President Scott Conner announced our upcoming events.

Regular Meeting	Friday, Nov 18	7:30 PM @ Observatory
Regular Meeting/Quiz Night	Friday, Dec 16	7:30 PM @ Museum
Regular Meeting	Friday, Jan 20	7:30 PM @ Museum??
Regular Meeting	Friday, Feb 17	7:30 PM @ Museum??

TREASURER'S REPORT

Mitch Luman reported our finances are in the black.

SPECIAL PROJECTS

Special projects will continue to be worked while the observatory is shuttered for the winter season.

OLD BUSINESS

PSW –The last PSW of the year was held on October 22nd. Tony Bryan presented a 35 minute version of “The Lives of Stars” prior to viewing from telescopes in the dome. Dave Kube was our telescope operator for the evening, Ken Harris, Randy Chapman, Mike Marshall, and Tony Bryan assisted and answered questions.

There were 22 members of the public in attendance. Six of those were USI students from Matt Merlo’s ASTR 101 class. One young man was very interested in becoming a member and he was provided with a membership application. We received cash donations of \$58. We likely will pick up one new membership as a result of this PSW.

Fall Cleanup – The fall cleanup took place on October 22nd. Six members were present, namely Scott Conner, Dave Kube, Ken Harris, Anthony Corn, Kevin Bonges, Mike Marshall and Tony Bryan.

Our day commenced at 10:00 AM. We accomplished several tasks, including but not limited to: scraping and recoating flat roof of dome deck, installation of door trim inside bathroom, replacing crown molding on bookshelf in office, cleaning of the chairs and floor in the meeting hall, cleaning of the dome area, cleaning of half of the under-stairs storage area, spraying for bugs inside and out, cleaning of the triangular storage cabinet in dome area, taking out much trash and old magazines, winterizing mower, general vacuuming and cleaning in other areas, trimming of greenery within the perimeter fence, adjusting angle of outside cameras.

Anthony Corn was presented with an appreciation award certificate and NSN lapel pin. Anthony was due to receive this award in October of 2019 for helping at PSWs and mowing our lawn, but medical factors and then COVID concerns had prevented him from attending any EAS functions since September of 2019. Because Anthony's work schedule interferes with him attending EAS events until sometime next year, the President used this opportunity to present his award with Dave, Ken, Mike, and Scott witnessing. We ended the day at about 4:30 PM.

Tony Bryan had expenses of \$29.94 for Pizzas and \$12.29 for a 24 Pack of Rosette Buttons w/Screws (ceiling tile repair). Cost to the EAS for those items will be \$0 (items were donated by Tony). Scott Conner had expenses for doughnuts and 5 gallons of metalized roof coating.

Library Telescope Status – Due to inventory shortages, the library scope awarded by the Astronomical League to the EAS for donation to the Chandler Library has yet to arrive. Inventory shortages are impacting delivery. I checked Telescope.com, and they have an expected ship date of December 14, 2022.

NEW BUSINESS

Meeting Costs - We have the museum reserved for our December meeting, which is our annual Astronomy Quiz Night. The rental for the Museum will be \$75. Ken Harris and Scott Conner have graciously made donations that offset the rental charge. Our January and February meetings are also scheduled to be at the museum. If any member desires to sponsor us for an evening and cover a portion or all of the cost of rental, the Society will appreciate your generosity.

Election of Officers – The current slate of officers is as follows: President-Tony Bryan, Vice President – Scott Conner, Treasurer – Mitch Luman, Secretary – Dave Kube. Current Counselors are: Mike Borman and Ken Harris. Our three EAS Counselors serve staggered three-year terms. Ken Harris will be in year two next year. Mike Borman will be in year three next year. We are in need of a counselor to begin a three-year term. Randy Chapman and Kent Bretton have accepted nominations for the open counselor position.

Voting for unopposed positions took place by acclamation. Voting for our 3rd counselor position took place by ballot. Ken Harris tallied the vote from all attending members in good standing. Kent Bretton was elected to serve a 3 year term for counselor.

Other New Business - Does any member present have any business to discuss this evening?

ANNOUNCEMENTS

Next Monthly Meeting - Our next regular meeting is scheduled for 7:30 PM on December 16th at the Evansville Museum. Mitch Luman will be our Quizmaster for the evening.

Tonight's Program – Mitch Luman will give a presentation on his recent trip to the Hidden Hollow Astronomy Conference in Mansfield, Ohio at the Warren Rupp observatory.

Scott Conner announced that he has an upcoming PSW for the Girl Scouts on November 12th, 2022 and an upcoming PSW for the Cub Scouts on November 19th, 2022. Dave Kube volunteered to assist on the 19th.

ADJOURN MEETING Meeting was adjourned at 8:00pm

Respectfully Submitted – Dave Kube – Secretary