



Astronomers have uncovered six sub-Neptune exoplanets dancing in lock-step around the same distant star, solving a big mystery in the process. The ancient, pristine system opens a window into how planetary systems form. The team's findings are published in Nature.

*Photo Courtesy CC BY-NC-SA 4.0 / Thibaut Roger / NCCR Planets*

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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](mailto: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  
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Vice President – Scott Conner

Secretary – Dave Kube  
740.223.6854

Treasurer – Ben Cruce

Counselors  
Ken Harris (2022)  
Kent Bretton (2023)  
Michael Borman (2024)

Webmaster – Michael Borman

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

[www.evansvilleastro.org](http://www.evansvilleastro.org)



## Local Events and Information

### EAS Update

Please Note: We have a Regular meeting scheduled for Friday, December 15<sup>th</sup>, 2023 at 7:30pm. This is our annual Astronomy Quiz Night and will be held at the Museum. Please see our Facebook Group and Webpages for Updates.

### EAS Update

Please Note: We have a Regular meeting scheduled for Friday, January 19<sup>th</sup>, 2024 at 7:30pm. This meeting will be held at the Museum. Please see our Facebook Group and Webpages for Updates.

### EAS Update

Please Note: : We have a Regular meeting scheduled for Friday, February 16<sup>th</sup>, 2024 at 7:30pm. This meeting will be held at the Museum. Please see our Facebook Group and Webpages for Updates.

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### 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.mlborman.org/forsale.htm>

**A series of stellar occultations has provided evidence that the ring system around this outer solar system object is evolving drastically.**



An artist imagines what rings might look like from the surface of the Centaur Chiron.

Photo Credit: *European Southern Observatory*

Chiron is weird. When found in 1977, it was the farthest minor planet known at the time. Its unusual orbit between Saturn and Uranus made it the first of a new class of solar system objects: the Centaurs. Around 1,000 Centaurs are known today, but Chiron remains special: In 2011, astronomers spotted a possible ring system around it. Now, with two new recently published studies, it has become clear that this system is undergoing some dramatic changes.

In one study, led by Amanda Sickafoose (Planetary Science Institute) and published in the *Planetary Science Journal*, the team analyzed data from a 2018 stellar occultation, when Chiron blocked out a background star. The second team, led by José Ortiz (Institute of Astrophysics of Andalucía, Spain), published another occultation, this one in December 2022, in *Astronomy & Astrophysics*. Both investigations clearly show that Chiron's ring system isn't stable like those found around other Centaurs, such as the two rings circling 10199 Chariklo. "The structure in Chiron has evolved very significantly from 2011 to 2022," Ortiz and his team conclude.

Ortiz and his colleagues discovered Chiron's rings, inspired by the discovery around Chariklo. In 2015, they reanalyzed data gathered during stellar occultations in 1993, 1994 and 2011, finding a possible double ring circling Chiron at approximately 314 km (195 miles). (Those results appeared in *Astronomy & Astrophysics*.) The structures explained Chiron's brightness variations as well as variable amounts of water ice found in multiple spectra.

**NGC 7727's cosmic merger foreshadows our own future.**



Gemini South, one half of the International Gemini Observatory operated by NSF's NOIRLab, captures the billion-year-old aftermath of a double spiral galaxy collision.

Photo Credit: *International Gemini Observatory/NOIRLab/NSF/AURA*

Lying 90 million light-years away in Aquarius, two galaxies in the midst of a cosmic merger were recently studied using the Gemini South Telescope in Chile. Astrophysicists captured streams of swirling gas and dust in NGC 7727, a peculiar galaxy containing two supermassive black holes separated by 1,600 light-years. The result is a mixture of active star-forming regions and clouds, intertwining the galaxy's features into what looks like a hazy ball of cotton candy.

NGC 7727 is very unusual in that it's essentially an ordinary barred spiral, save for the peculiarity of a binary black hole center. A 2021 study published in [Astronomy & Astrophysics](#) found that the supermassive black holes were the closest pair to Earth ever detected.

Astronomers measured the masses of the two black holes by looking at how the gravitational pull around them disturbs the movement of stars near them. The more massive of the two weighs in at 154 million times the mass of the Sun, while the other measures 6.3 million solar masses. While the pair are currently 1,600 light years apart, the black holes are expected to merge within the next 250 million years. When they do, the merger will create a single black hole with a mass exceeding 160 million solar masses.

The galaxy's unusual structure has a long history. The black holes have pulled together vast amounts of stars and dust, creating the knotted spiral arms we now see. One result is that the dust lanes bloom with newborn stars.



## January 2024

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 Reg.Mtg 7:30pm Museum	20
21	22	23	24	25	26	27
28	29	30	31			

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### Up and Coming Events 2023

Please Note we have a Reg. Mtg. scheduled for 7:30pm on Friday December 15<sup>th</sup>, 2023 @ Museum.

Please Note we have a Reg. Mtg. scheduled for 7:30pm on Friday January 19<sup>th</sup>, 2024 @ Museum.

Please Note we have a Reg. Mtg. scheduled for 7:30pm on Friday February 16<sup>th</sup>, 2024 @ Museum.

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

### Moon Phases

New Moon	First Quarter	Full Moon	Third Quarter
January 11 <sup>th</sup> , 2024	January 17 <sup>th</sup> , 2024	January 25 <sup>th</sup> , 2024	January 3 <sup>rd</sup> , 2024 February 2 <sup>nd</sup> , 2024
<a href="http://www.timeanddate.com">Moon Phases courtesy of Time and Date.com</a>			

## ***EAS Meeting for November – 2023***

Prior to the meeting the EAS held a zoom presentation by our Guest Speaker Pranvera Hyseni presenting her program regarding her efforts to establish an Observatory in Kosovo. The meeting was called to order by President Tony Bryan @ 8:30pm. There were 14 members plus 10 guests attending via zoom. Board members Tony Bryan, Scott Conner, Mitch Luman and Dave Kube were present. A motion to wave the reading of the minutes and accept the minutes from the November 2023 Newsletter was passed. We had no visitors present. Carlisle Wisher from the museum joined us for the zoom presentation.

Vice President Scott Conner read the following upcoming events.

<b>Meeting/Astronomy Quiz</b>	<b>Friday, December 15</b>	<b>7:30 PM @ Museum</b>
<b>Regular Meeting</b>	<b>Friday, January 19</b>	<b>7:30 PM @ Museum</b>
<b>Regular Meeting</b>	<b>Friday, February 16</b>	<b>7:30 PM @ Museum</b>

**Treasurer Report** – Treasurer Mitch Luman reports that we have moved \$5k of our Savings into a 15 month CD.

### **Old Business**

**Special Projects Status** – Scott Conner reported that he is waiting for more of the stainless steel parts to be crafted. Tony Bryan reported that there has been no change on the bathroom remodel from previous month.

**Toyota Grant Status** – As can be seen, our multimedia equipment and accessories are being upgraded thanks to a grant funded by Toyota Motor Manufacturing Indiana.

**Saturn Watch** – A Saturn Watch took place on Saturday, October 21<sup>st</sup>, at the Evansville Museum. We had great support from EAS members setting up their telescopes. Thanks go out to Matt Merlo, Mike Borman, Bob Flater, Mitch Luman, and Tony. We do not have an exact count, but there were approximately 30 members of the public there and all were very interested about things in the night skies.

**Winter Meetings at Museum** – For the past several years, the EAS has been holding our December, January, and February monthly meetings at the museum so that members will not have to contend with navigating a potentially snow covered road to our observatory. December 15<sup>th</sup>, January 19<sup>th</sup>, and February 16<sup>th</sup> have been reserved. The museum has agreed to waive any cost to us in exchange for support at the museum by Tony and any other available EAS members during the April 8, 2024 Total Solar Eclipse. This is a cost avoidance of \$225. It is realized the majority of you have other plans on that day, but if anyone would like to help, please contact Tony.

### **New Business**

**Telescope Report** – A damaged Meade ETX-90 with Autostar was recently donated the EAS. Tony spent a day attempting to repair the severely damaged mount, but was unsuccessful. The telescope OTA was undamaged and removed from the mount. Potentially, the OTA would make a fine solar scope by adding a dovetail and white-light filter (cost ~\$100).

The EAS possesses two H-Alpha telescopes, a Coronado 40mm PST and a Coronado 60mm double stacked. After several years of use, both telescopes have degraded and no longer show Sun features as they were designed to do. Tony spent a day attempting to tune both instruments, but only achieved minimal improvements. It is recommended that both telescopes be returned to Meade for repair whenever funds are available

**Nature Study Group** - We are coordinating with Alexandra Brewer, from Mt. Carmel, to schedule a tour and observation for a very active Nature Study group that this winter is focusing on Stars & Sky. They recently kicked

off their study with a trip to the Evansville Museum's Planetarium. Currently we are exploring potential dates for their visit to the observatory.

**Eclipse Presentations** – We are receiving request for presentations for the upcoming April 8th Total Solar Eclipse. So far Tony has presented once and Ken has presented once. Currently we have eight presentations either arranged or in discussion. They are; Huntingburg, Jasper, Dubois, Ferdinand (x2), Birdseye, Washington, Alexandria. If anyone hears of a request, or would like to give or assist with a talk, please let us know.

**Presentation Next Month** – Scott Conner will be our quizmaster for the EAS Annual Constellation Quiz that takes place at the museum next month. We hope to see everyone at that great facility for an evening of fun!

**Election of Officers** – The current slate of officers is as follows: President-Tony Bryan, Vice President – Scott Conner, Treasurer – Ben Cruce Secretary – Dave Kube.

Our three EAS Counselors serve staggered three-year terms. Currently our Counselors are: Mike Borman, Ken Harris, and Kent Brenton. Ken Harris will be in year three next year. Kent Brenton will be in year two year. Mike Borman's term ends at the end of 2023. He has expressed interest in running for that position again. Randy Chapmen also express and interest in running against Mike so a ballet was cast and votes were counted and Mike Borman was reelected to a 3 year term.

Voting for unopposed positions took place by acclamation and all other positions were affirmed.

**Program Director** – After serving as Program Director for several years, Chuck Allen is stepping away so he can focus more on astronomy at a national level with the AL. We thank him for providing us with top-notch speakers that are the envy of every other society. He will be happy to help the new program director line up speakers or to offer programs. The Program Director is an appointed position. If anyone is interested in the position, please let a board member know.

**Other New Business** – No other new business was presented by attending members.

### **ANNOUNCEMENTS**

**Next Monthly Meeting** – Our next regular meeting is scheduled for 7:30 PM on December 17<sup>th</sup> and will take place at the Evansville Museum.

**ADJOURN MEETING**- Tony Bryan adjourned the meeting at 9:00pm

Respectfully Submitted – Dave Kube – Secretary