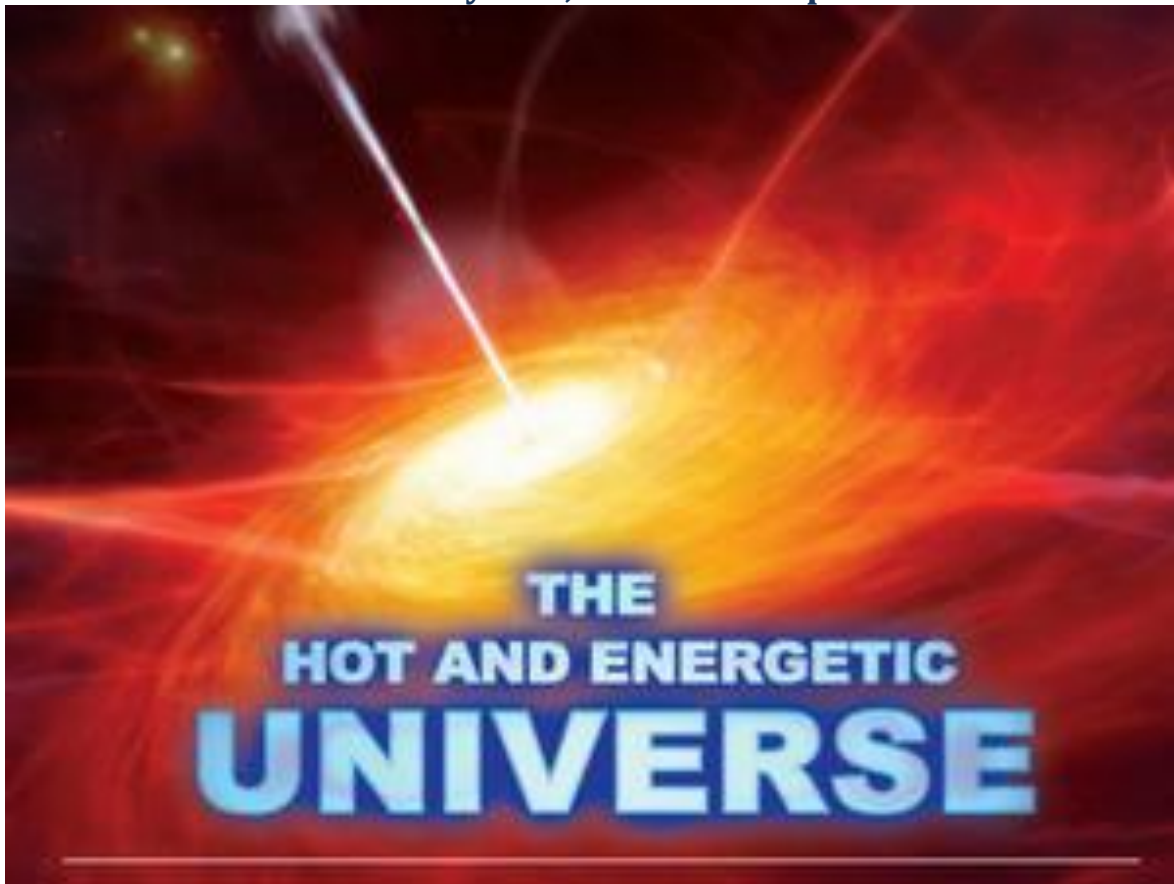


**February Meeting at The Evansville Museum  
February 15<sup>th</sup>, 2019 @ 7:30pm**



**The Program for the Evening presented by Mitch Luman in full-dome format  
at the Koch Immersive Theater and Planetarium**

**The Hot and Energetic Universe presents several of the greatest achievements of modern astronomy  
related to celestial observations made possible by High energy astrophysics.**

**Inside this Issue..**

- 2 – Local Events and information
- 3 – News around the Globe
- 4 – Calendar
- 5 – EAS Minutes

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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 2019 Officers and Contacts**

President – Tony Bryan  
812.827.3234  
[evansvilleastro@gmail.com](mailto:evansvilleastro@gmail.com)

Vice President – Scott Conner

Secretary – David M Kube  
740.223.6854

Treasurer – Ted Ubelhor

Counselors  
Mitch Luman (2017)  
Michael Borman (2018)  
Ken Harris (2019)

Webmaster – Michael Borman

Program Director  
Matt Merlo

Newsletter editor – Dave Kube  
[dasiceman@yahoo.com](mailto:dasiceman@yahoo.com)

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 @ the **Museum** beginning @7:30pm on February 15<sup>th</sup>, 2019. The program will be a presentation of the Full-Dome Movie "The Hot & Energetic Universe".

### EAS Update:

Please Note we have a Winter Work/ Cleanup day scheduled for Saturday, March 2<sup>nd</sup>, 2019 beginning at 10am at the Observatory. This is to help prepare the facilities for the new year.

### EAS Update:

Please Note we have our first Regular Meeting of the year scheduled at the Observatory on Friday, March 15<sup>th</sup>, 2019 @ 7:30pm.

### EAS Update:

Please Note we have our first PSW of the year scheduled at the Observatory on Saturday, March 16<sup>th</sup>, 2019 @ 7:30pm. Members are asked to come 2 hours early to do any final cleaning and preparations.

Please Note we have a Members Only Observing Session scheduled for Saturday, April 6<sup>th</sup>, 2019. Location and Time TBD.

Please Note we have a Regular Meeting scheduled at the Observatory on Friday, April 19<sup>th</sup>, 2019 @ 7:30pm.

### FOR SALE:

Meade 8-inch Newtonian on heavy-duty LXD75 mount with AutoStar2 GoTo capability. Used very little. Asking \$850.

Cave Astrola 10-inch f/15 Cassegrain on heavy-duty mount. Converts to an f/4 Newtonian. 10-inch Mathis RA drive gear. Asking \$900.

Call Jim at 812-471-3017

### 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.mborman.org/forsale.htm>

***Our Solar System's Formation was a Lot Messier than You Think.***



The early solar system was a violent place: it wasn't just asteroids, but whole planets that veered on strange courses.

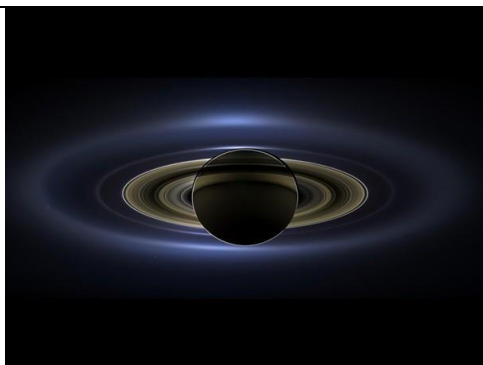
NASA

When most of us learn about the solar system, it seems like a pretty well-ordered place. Our Sun formed first, about five billion years ago, and the planets appeared a little later. As a very general trend, these planets grew larger and less dense the farther from the Sun they formed.

But this story leaves out the chaotic dynamics and frenetic reshuffling that occurred when our solar system was young. Nature may like order eventually, but that order evolves out of pure chance. Our solar system may be settled down now, but in its youth, it was a wild place.

Remember that nature starts most chains of events pretty randomly. So sometimes planets will form on orbits that aren't stable over the countless millennia of the planets' lifetimes. Occasionally that instability means planets crash into each other. More often, it means they veer cosmically close — not colliding, but close enough for gravity and momentum to send them careening off on strange orbits. We use this “slingshot effect” all the time with spacecraft to great benefit, but random encounters result in random slingshotting. Sometimes planets may fling themselves out of the solar system entirely — like the Mars-sized object that collided with Earth to form our Moon, and now is nowhere to be found. Scientists have found a few of these rogue planets, unattached to any identifiable star, drifting in the cosmos.

***Saturn's Rings are Surprisingly Young.***



Using observations from NASA's Cassini spacecraft, researchers have found that Saturn's rings are actually much younger than the planet itself.

NASA/JPL-Caltech/SSI

During NASA's Cassini spacecraft's Grand Finale, the craft dove between the planet and its rings. In doing so, it collected new insights into the ringed planet, including the surprising age of Saturn's rings. According to a new study, scientists have found that Saturn's rings are actually much younger than the planet itself. And they most likely formed in the last 100 million years.

Before swooping in between the planet and its rings, Cassini orbited the planet outside of its rings. That made it hard to separate the gravitational effect of the rings from the gravity of the planet and, in the process, find the rings' mass. Scientists have suggested that the mass of Saturn's rings is directly linked to their age, so that answer had to wait until Cassini's final days.

As the craft dove between Saturn and its rings, researchers monitored a radio link between the spacecraft and Earth. This allowed the team to accurately measure the gravitational field around the planet without the gravitational effect of the rings getting in the way.

After finding that the rings have a fairly low mass, they came to the conclusion that the planet's rings are only 10 to 100 million years old. This is much younger than the planet itself, which is estimated to be 4.5 billion years old. “There were already clues from Voyager and Cassini measurements that the rings had not formed with Saturn,” less said. “But now we have much more concrete evidence, which was only possible to obtain during the final phase of the mission.”

March 2019

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

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**Up and Coming Events 2019**

**Regular Meeting – Friday, February 15<sup>th</sup> – @ Museum @ 7:30pm**

**Winter Cleanup/ Workday – Saturday, March 2<sup>nd</sup> – @ Observatory @ 10:00am**

**Regular Meeting – Friday, March 15<sup>th</sup> – @ Observatory @ 7:30 pm**

**PSW – Saturday, March 16<sup>th</sup> – @ Observatory @ 7:30 pm**

**Members Only Observing Session – Saturday, April 6<sup>th</sup> – Time/ Location TBD**

**Regular Meeting – Friday, April 19<sup>th</sup> – @ Observatory @ 7:30 pm**

**Moon Phases**

New Moon	First Quarter	Full Moon	Third Quarter
March 6 <sup>th</sup> , 2019	March 14 <sup>th</sup> , 2019	March 20 <sup>th</sup> , 2019	March 28 <sup>th</sup> , 2019

[Moon Phases courtesy of Time and Date.com](http://Time and Date.com)

***EAS Meeting Minutes for January 18<sup>th</sup>, 2019***

The meeting was called to order at 7:37 pm by President Tony Bryan. There were 18 members including 2 new member and no visitors present. The reading of the minutes was motioned to be accepted as published in the newsletter and seconded. The motion passed by a unanimous vote.

V. President Scott Conner announced the below list of up-coming events.

<b>Lunar Eclipse</b>	<b>Sunday, January 20</b>	<b>9-11:30 @ Four Freedom's</b>
<b>EAS Meeting</b>	<b>Friday, February 15</b>	<b>7:30 pm @ Evansville Museum</b>
<b>EAS Meeting</b>	<b>Friday, March 15</b>	<b>7:30 pm @ Observatory</b>

**TREASURER'S REPORT** – Treasurer Ted Ubelhor reported that our funds are OK and donations have covered the cost for meetings at the museum through February. We currently have 50 paid members at the present time.

**SPECIAL PROJECTS**

**Dome Repair** – Tony installed a new motor and redesigned the control circuits with larger relays and larger gage wires. A hand control circuit will be added in the next few weeks. The dome now rotates, but final adjustment of the ring and idlers is needed. This probably will be done on the upcoming clean-up day.

**Bathroom Remodel** – Over the next several weeks, more effort will be put into finishing the Men's bathroom remodeling and expected to be complete in a couple of months.

**OLD BUSINESS**

**Capital Campaign** – We have fallen behind on getting the capital campaign for the auxiliary observatory to house the Questar telescope. At the upcoming planning session, a draft letter will be presented for review and finalization.

**NEW BUSINESS**

**Refrigerator** – Wesley Connor has offered a gently used refrigerator at very low cost (basically donated it). Now we have to figure out how to move it. We will need a truck and appliance dolly. Any ideas?

**Lunar Eclipse** – The EAS will be co-hosting the lunar eclipse event this Sunday at the Four Freedoms Monument in Evansville.

**Summer Programs** - We have recently had requests for summer programs at area libraries (Huntingburg Library, Holland elementary, and Henderson Library). It seems the summer reading program taking place at many area libraries is themed "A Universe of Stories" this year.

**Planning Session** – The officers and counselors will be having our 2019 Planning Session on Sunday, January 27. The events calendar will be posted shortly thereafter. Until then, watch our website and Facebook page for events.

**February Meeting and Presentation** - Our February meeting will take place at the Museum in Evansville. Mitch is scheduled to be our presenter that evening. Members have been generous in donating, and costs associated with having meeting at the museum have been fully covered. Thank you!

**ANNOUNCEMENTS**

**Next Monthly Meeting** - Our next regular meeting is scheduled for 7:30 PM on February 15th at the Evansville Museum. Mitch Luman will present the Museum's newest full-dome movie, Space Next. If you arrive late and find yourself locked out, please send a text message to a EAS officer.

**2019 Texas Star Party** – The 40th Annual TEXAS STAR PARTY will be April 28-May 5, 2019. If you intend to go you must first submit a Registration/Reservation Request Form TONIGHT! This will put you in the lottery for a chance of being selected as one of the 500 people to attend. The link for registration is <http://texasstarparty.org/get-started/>

**Moon Calendars** – Mitch has moon calendars available at the museum shop.

**Tonight's Program** – The program for tonight is a look ahead at the highlights of the night sky for 2019 using the theater's Digistar planetarium projection system, by Mitch Luman.

Meeting was adjourned at 7:52 pm

Respectfully submitted by Dave Kube, EAS Secretary