

Cassiopeia A and the Elements Lurking within it



This Funfetti-like bloom called Cassiopeia A shows the aftermath of a supernova, or a massive star explosion, about 11,000 light-years from Earth. The vibrant colors added to this image denote the elements detected within it; for example, the blue blobs are titanium, iron is orange and oxygen is purple. While astronomers aren't certain how some giant stars explode, Cassiopeia A is providing some clues. Using nearly two decades worth of data from NASA's Chandra X-ray Observatory, scientists discovered bubbles of titanium — the same element used to make your electronics and jewelry — that could have boosted the boom's shock wave.

Photo Courtesy: NASA/CXC/RIKENT. SATO ET AL.; NUSTAR: NASA/NUSTAR

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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 2021 Officers and Contacts

President – Tony Bryan
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Vice President – Scott Conner

Secretary – Dave Kube
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Treasurer – Amy Barrett

Counselors
Ken Harris (2019)
Mitch Luman (2020)
Michael Borman (2021)

Webmaster – Michael Borman

Program Director
Chuck Allen

Newsletter editor – Dave Kube
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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



Local Events and Information

EAS Update

Please Note: Our next regular meeting is scheduled for 7:30 PM on Friday, November 19, 2021 as a Zoom Meeting. Our meeting Agenda will include our yearly election of Officers and a presentation (TBD) by Chuck Allen.

EAS Update

EAS Update:

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

FOR SALE:

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>

Letter from our President

Dear Members,

We will hold our annual election of officers during our Zoom meeting on Friday November 19th, just prior to the presentation (topic TBD) arranged by our Program Chairman, Chuck Allen.

Normally, the election process would take place during an in-person meeting. Last year, voting and nominations from the floor took place during a Zoom Meeting. This year, we will do the same. As a reminder, here is the process, step by step:

1. The current slate of officers will be announced: The current slate of officers is President-Tony Bryan, Vice President – Scott Conner, Treasurer – Amy Barret, Secretary – Dave Kube, Counselor – Ken Harris. *Please note – Our three EAS Counselors serve staggered three year terms. Ken Harris's current term will be ending on December 31st and he has accepted the nomination to serve three more years if elected.
2. Nominations from the floor for officers and a counselor will be requested. Persons making nominations and nominees must be members of the Evansville Astronomical Society in good standing.
3. Voting will take place by members in good standing, typing into the Zoom chat window. If a nomination is present (other than the slate above) names will be typed by voting members.
4. If the slate of officers is unopposed, an acclamation will be requested and YES or NO will be typed by voting members. Votes will be public and tallied by one or more of our seated Counselors and a volunteer member.

Meeting Presentation

The James Webb Space Telescope – Background, Hardware, and Mission
Time: Nov 19, 2021 08:00 PM Central Time (US and Canada).

Join NASA Solar System Ambassador Tony Bryan, and learn about the James Webb Space Telescope, set for launch on December 18, 2021 at 07:20 EST.

To join this Zoom Meeting click the link below:

<https://us02web.zoom.us/j/85162824372?pwd=Tm5xWGsyWHIDWWJsa1NPRUFhVWVwUT09>

Meeting ID: 851 6282 4372
Passcode: 018523

Please check our Facebook Group page and/ or our website for meeting information updates.

Clear skies,

Tony Bryan
EAS President

How Astronomers Probe the Sun's Explosive Past.



This tornadic coronal mass ejection was captured by NASA's Solar Dynamics Observatory on Aug. 31, 2012.

Credit: NASA Goddard Space Flight Center

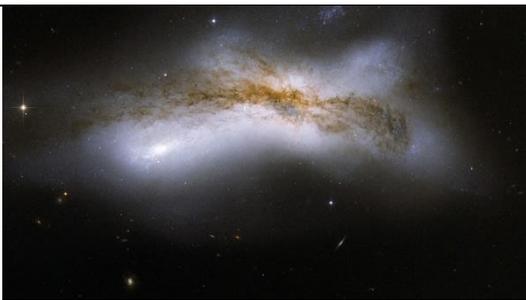
The Sun is an active star. Even at its most quiet, its surface trembles and shimmers as if it can barely hold in the contents of its hot belly. And when it finally releases that frightening power — launching a solar flare or a coronal mass ejection (CME) into interplanetary space — we can only hope the blast misses Earth.

If it doesn't miss, Earth bears the brunt of the Sun's fury. This can cause our planet to experience strong geomagnetic storms, which may disrupt navigational systems, overload power grids, and knock out satellites in orbit. The economic costs of a powerful and well-aimed solar explosion could add up to billions of dollars per day.

Preventing potential disaster brought upon us by our closest star will be difficult, to say the least. To stand a chance, we have to learn more about solar activity. To understand the extreme end of solar behavior, we need to observe the Sun on long timescales — and peer into its distant past.

The first evidence of solar activity that humans noticed was sunspots, with the earliest known records dating to 28 B.C. in ancient China. Detailed telescopic observations of sunspots go back to the 1600s and represent perhaps the longest-running series of direct observations of any natural phenomenon. Counting sunspots revealed that their numbers change periodically over time in an 11-year cycle — from virtually zero to tens or even hundreds of spots dotting the Sun's face at once.

Observing Peculiar Galaxies, 40 years Ago.



NGC 520 is the product of two galaxies colliding — a fact that can be easily intuited by looking at this Hubble Space Telescope image, but one that eluded observers for many years.

Credit: NASA, ESA, the Hubble Heritage (STScI/AURA)-ESA/Hubble Collaboration, and B. Whitmore (STScI).

Observing a galaxy is always an exciting experience. You know that the diffuse glow in your eyepiece comes from the combined light of billions of stars organized in a vast cosmic system so distant that its gleam takes millions of years to reach your telescope. Most telescopic observers have examined at least a few galaxies, and those with larger apertures have probably ventured beyond the confines of the Messier list to observe some of the thousands of galaxies listed in the *New General Catalogue*.

It has been said that all galaxies are peculiar to some extent, but here we are talking about the truly strange or distorted galaxies — those officially classified as “peculiar.”

There are a number of things which can give galaxies the distinction of being peculiar:

- strange shapes
- strange halos
- rings
- plumes and tails
- unusual dark lanes
- unusual placement of HII regions
- excessively bright or peculiar nuclei
- apparent explosions
- particularly distorted interactions with other galaxies
- possible interactions with intergalactic clouds of dust or gas.

December 2021

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	21	22	23	24	25
26	27	28	29	30	31	

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Up and Coming Events 2021

EAS Meetings and Events are currently on hold or cancelled due to the current COVID-19 situation.

Please Note we have a Zoom Meeting scheduled for 7:30 PM on Friday, November 19th, 2021

Please visit our Web Page <http://www.evansvilleastro.org> for updates.

Please visit our Facebook Group Page for updates.

Moon Phases

New Moon	First Quarter	Full Moon	Third Quarter
December 4 th , 2021	December 10 th , 2021	December 18 th , 2021	December 26 th , 2021

Moon Phases courtesy of Time and Date.com

EAS Zoom Meeting Notes for October – 2021

The October 15th, 2021 zoom meeting began about 7:30 pm. There was no call to order since this was an informal meeting. There were 11 members and no visitors present.

We were reminded by Tony Bryan that next month's meeting would include the selection of officers for the upcoming year.

Our Program Chairman, Chuck Allen, presented us with a unique and informative presentation entitled "It's a Small World." Unusual/ Oddities about the moon.

The meeting ended about 9:30 pm.

Respectfully Submitted – Dave Kube – Secretary