



WESTMINSTER ASTRONOMICAL SOCIETY, INC. (WASI)

Membership News



Volume 2 – Number 1

Winter 2024

Message from our Society's President, Cindy Ward

Happy New Year!

The big news this year is we're celebrating our 40th anniversary! Back in 1984, perhaps even before some of our current members were born, a group of dedicated astronomy enthusiasts formed the Westminster Astronomical Society, and here we are, decades later, still promoting the heavens above to Carroll County. Today we have monthly meetings at Bear Branch Nature Center and a number of outreach events each month. Amazingly, some of the original founding members still participate: Curt Roelle, Todd Bonner, and Frank Roelke remain active.

And don't forget the April 8 eclipse. While some of us will be traveling to sites where there will be 100% totality, here in Maryland we can expect 87% coverage of the sun.



WASI News

Reserve the date: Saturday April 13 will be Carroll County Astronomy Day, A Celebration of 40 years of the Westminster Astronomical Society, Inc. Held at Bear Branch Nature Center, it's a chance for us to come out with our telescopes and enjoy the skies together. The public is invited, so let your friends know.

We plan to do some solar observing in the afternoon, with a star party after dark. Telescopes will be raffled off and there will be plenty of WASI swag. If you haven't looked through our 14" Celestron in the observatory, well, you're in for a treat. Stay tuned for more news in the next newsletter.

Want to know more about our outreach events? Here's the calendar:

https://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=152

This news letter goes out quarterly. Please send your astrophotos and astronomy news to jack@ganssse.com

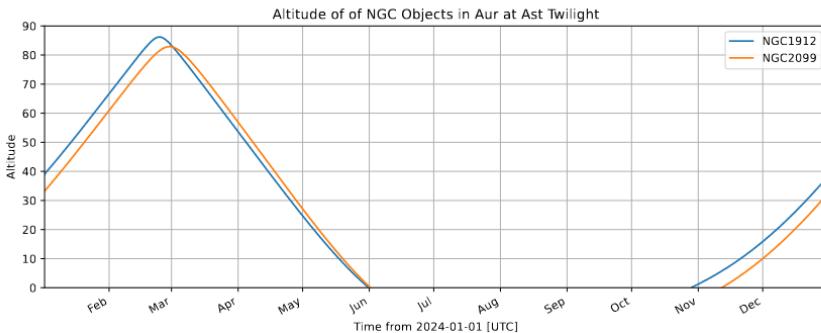
The WASI 130

Are you up for a challenge? The WASI 130 is a list of 130 interesting objects compiled by WASI members. All are visible in Maryland skies. It consists of 120 deep-space objects and ten pairs of double stars. Some of these you know well, like M42 and M51. Others, not so much. There's NGC7789, aka Caroline's Rose, discovered by Caroline Herschel (sister to the famous William Herschel). Caroline was an accomplished astronomer herself, and was the first woman to receive a salary as a scientist when King George III (the guy we colonists rebelled against) awarded her £50 per year.

WASI members have prepared materials to help you find all 130 objects. Chris Bennett created finder charts for each of them, which you can get here: https://drive.google.com/drive/folders/1uKEcFsJiNh1_O-hEh9GGc8XoVvZIRBM.

The charts are too big to do justice to here, but he also added viewing data for each object, such as this:

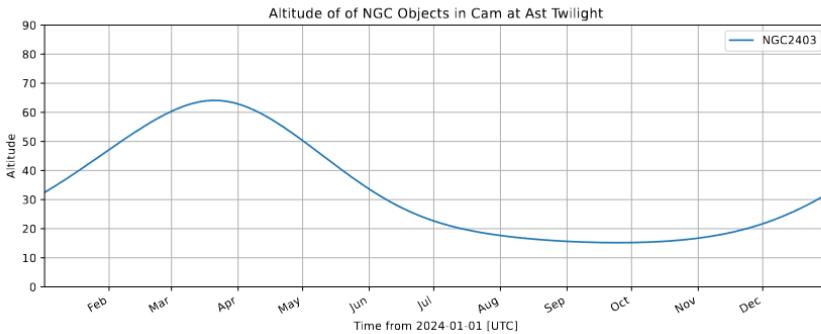
Auriga



NGC/IC Objects in Aur

NGC1912	OCI	05:28:42.49	+35:51:17.7	M038
NGC2099	OCI	05:52:18.35	+32:33:10.8	M037

Camelopardalis



NGC/IC Objects in Cam

NGC2403	Glx	07:36:51.40	+65:36:09.2	-
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Fridericus

Laurie Ansorge created a spreadsheet of the objects so you can record your observations. That is available here: https://westminsterastro.groups.io/g/main/files/Observing%20&%20Challenges/WASI_130%202024.xlsx. (The spreadsheet has four pages; one for the 120 DSOs, one for the double stars, one with definitions, and one with the usual scales for viewing conditions).

Jack Ganssle put together a short description with pictures for each object. Those are here: <https://westminsterastro.groups.io/g/main/files/Observing%20&%20Challenges/The%20WASI%20130.pdf>.

So, gentlemen and gentlewomen: start your telescopes! Bring your results to WASI membership meetings.

Eclipse Photos From Our Members

Ian Slepian and Jeff Silver went to San Antonio for the eclipse. The following photos are from that expedition. Ian used a Nikon D7100 equipped with a 18 to 300 mm zoom lens with a Thousand Oaks mylar solar filter. The photos were taken at 300 millimeters focal length .



Here's two more from Ian and Jeff:



*Eclipse Oct 14, 2023 , 11:52:08 just as
approaching annularity. 300mm,
1/500", f8 iso 1600, Ian Slepian*



*Eclipse, Oct. 14, 2023, 11:54:50 am,
CDT, 300mm, 1/500", f8, iso 1600
Ian Slepian*

corrected time: 11:53:50

dsc 1683

Laurie Ansorge got some great shots:



Jupiter!

Laurie Ansorge used the Sky & Telescope calculator to time and capture the transit of the Great Red Spot across Jupiter.



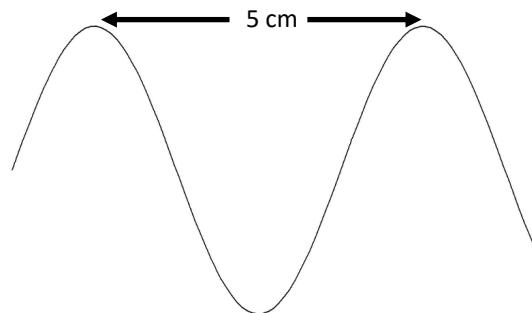
Back to Basics: What is Light?

Our telescopes collect light, of course, but what is it?

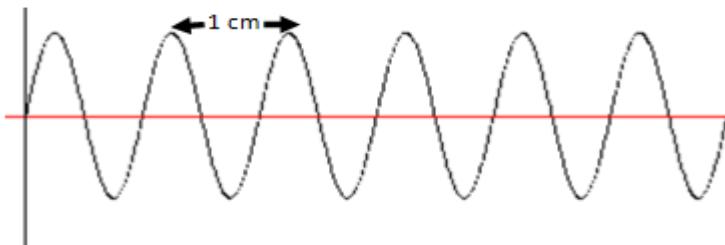
Light is part of the electromagnetic spectrum. Perhaps that phrase is a little intimidating, but the idea is quite simple. It's "electromagnetic" because it is composed of electric and magnetic fields that oscillate at some frequency. Think of the electricity coming from an outlet: in the USA that oscillates at 60 Hertz, or 60 times per second. "60 Hz" is the frequency of that wave.

The electromagnetic spectrum is simply the collection of all frequencies of these waves from zero to as high as you care to go. If you tune your FM radio to WBJC at 91.5 MHz you're selecting a frequency of 91,500,000 Hertz, or cycles per second. That's a pretty fast oscillation! But it's nothing compared to what our eyes sense. Visible light is just an electromagnetic field oscillating at nearly a million billion cycles per second (i.e., Hertz).

Astronomers don't like to use Hertz as the numbers are just too big. Better: wavelength, which is just the distance between each cycle. To go from Hertz to wavelength we divide into the speed of light (which is about 300,000,000 meters per second): wavelength = speed-of-light/frequency, or $300,000,000/\text{frequency}$.



If this wave were an electromagnetic wave, and not a drawing on a page, the wavelength is 5 cm (or 0.05 meter). Using the formula above, that gives us a frequency of $300,000,000/0.05$, or 6 billion Hertz. That's around the frequency used by many radars.



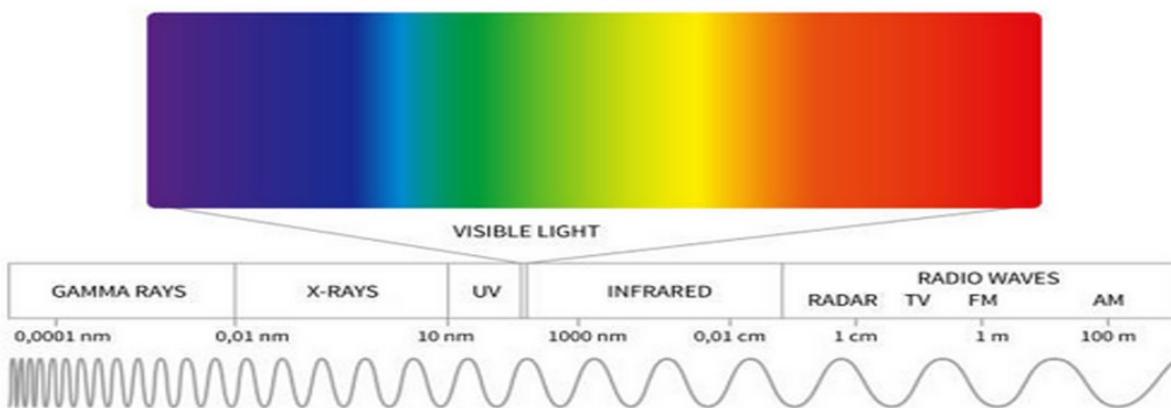
At 1 cm this is a shorter wave than the previous, and its frequency is $300,000,000/0.01$, or 30 billion Hertz. That's awfully fast, but still a snail's pace compared to visible light.

The shortest wavelengths (i.e., the highest frequencies) human eyes can see are around 450 billionths of a meter, or 450 nanometers (abbreviated nm). The wavelength determines what color we sense. 450 nm is in the violet. The longest our eyes can detect are around 700 nm (red). A human hair, by comparison, is about 100,000 nm in diameter.

Visible light is just a tiny segment of the electromagnetic spectrum, which includes radio waves (at long wavelengths, typically tens to hundreds of meters) to gamma rays at a tiny fraction of a nanometer.

The energy of an electromagnetic wave is proportional to its frequency (or inversely to wavelength) so short waves like X-rays and gamma rays have enough energy to kill; radio signals don't. Nor does light, happily, though it can make killer astrophotos.

Here's a view of the electromagnetic spectrum. Light occupies just a sliver:



Fun Astro Facts

- The sun is powered by fusion, of course, where (mostly through what's called the *proton-proton chain*) hydrogen is converted to helium and energy. It burns an astonishing 700 million tons of hydrogen *each second*.
- Only 5 million of those tons are converted to energy, but Einstein showed us (via $E=MC^2$) that represents a staggering amount of energy. (C , the speed of light, is a big number. C^2 is monstrous.)
- Each proton (hydrogen) collides with another 17 million times per second. But most of those collisions are “wasted”; it takes on average one billion years for such a collision to result in energy-producing fusion.
- The sun contains 99.9% of the total mass of the solar system.
- The sun's mass is 333,000 times the Earth's.
- The core of the sun, where fusion is happening, is only about 1/4 of Sol's diameter.
- In the core, the temperature is 15.7 million degrees Kelvin. Yet the sun's surface is “only” 5700 degrees.

WASI FAQs

Newsletter - Please send pictures, articles, and ideas for the newsletter to jack@ganssle.com.

Facebook - We're active and sharing images on our Facebook page, found here:

Join/Renew membership link: <https://www.westminsterastro.org/join-wasi/>

If you've already entered your contact information (renewing), skip the "database" link: <https://paypal.me/WAstroSInc>

This past year we made membership renewals easier by going to a new structure with renewals due starting in June 2024, and June as the renewal month going forward (coincides with the Astronomical League). Here's what is in everyone's letter that comes with the membership card:

At renewal time, we offer a multi-year membership structure with these options:

1-year membership remains \$25 for individuals or families

2-year membership for individuals or families @ \$45

4-year membership for individuals or families @ \$80

Individual youth (under 18) remains \$5/year

The new structure offers cost breaks and fewer payments for more observing time!

- On time payment means eligibility for the annual incentive .
- Keep access to the members-only groups.io pages/information
- Receive members-only access/notifications on Night Sky Network
- Keep/get discount rates for popular astronomy magazines
- Borrow from the WASI scope/literature library

Files and club member correspondence & wiki links are found here: <https://westminsterastro.groups.io/g/main>. Remember to set your communication preferences.

We meet monthly on the 2nd Wednesday of the month:

Back to Basics from 7:15 PM – 7:30PM; General Meeting 7:30PM – 9:30PM

Bear Branch Nature Center Carroll County; 300 John Owings Rd.; Westminster, MD 21158

Website: <https://www.westminsterastro.org/> (Zoom info for hybrid meetings)