



CAPE FEAR Skies

Monthly Newsletter
Cape Fear Astronomical Society
Serving Wilmington, NC and Surrounding Areas

June 2025

Cape Fear Astronomical Society is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.

President's Message

by Ben Steelman

"Inspiring Outreach" is the theme of the upcoming July issue of Sky & Telescope. Contributing editor Ted Forte suggests some tempting summer targets for sharing with an audience of newbies, including kids, from the first-quarter Moon to the Lagoon Nebula to the galactic center in Sagittarius. And Rachel Huchmala describes a fascinating program out in Idaho, where staff at Boise State University are putting fair-sized telescopes in the hands of the state's elementary and secondary teachers, with training and guidelines about how to incorporate them in school STEM programs.

It's a reminder, and a challenge, to us to do what we can, when we can, to reach out to the community and show them how much fun astronomy can be. I've fretted in this space before about how CFAS has been turning into a Geezers' Club (although, with some enthusiastic new members, we're starting to turn that around!). We need to rebuild the ranks -- and with any luck some kids who come to our public viewings will feel inspired to pursue science as a career.

Forte makes the point that the typical "telescope petting zoo" can be a letdown for some folks, who've seen all those full-color Hubble images in magazines. We have to help them over the hump, show them the challenge of hunting down a wispy target then focusing in, and tell them a few stories along the way.

Anyone who can turn out for public events, please do so.

At right: A Carolina Beach State Park star party. Skip is setting up his scope. Jon, behind him, is starting his "Tour of the Solar System". More public typically come as it gets dark.

By the way: thanks to Alan Hilburn, who's recycling some of his not-so-old copies of S&T, Astronomy and The Reflector. I'll bring them to the June meeting to share with whomever wants them.

Keep Looking Up!

Calendar

The full club calendar is available at

https://www.capefearastro.org/calendar.htm

Saturday, June 7

Public Observing at Carolina Beach State Park

Sunday, June 8

★ Gastronomy ★

Watch your email

★ Cape Fear Astro Monthly Meeting ★

7:00pm – 9:00pm - 212 DeLoach Hall; UNCW

Walter Fowler of CHAOS: "Gravity Assist Flyby"

Also simulcast via Zoom

Events in the Future

/7 - Public Observing at Carolina Beach State Park

6/8 - CFAS Monthly Meeting. Presentation: Walter Fowler of CHAOS: Gravity Assist Flyby Maneuvers.

7/5 - Public Observing at Carolina Beach State Park

7/13 - CFAS Monthly Meeting. Presentation: Karl: something about Planetary Imaging

8/2 - Public Observing at Carolina Beach State Park

8/10 - CFAS Monthly Meeting. Presentation: Scott Jackson: "Galileo discovers Neptune"

8/30 - Public Observing at Carolina Beach State Prk

9/14 - CFAS Monthly Meeting Presentation: Karl: the rest of something about Planetary Imaging

9/27 - Public Observing at Carolina Beach State Prk

10/4 – Intl Obs the Moon at Cape Fear Museum

10/12 - CFAS Monthly Meeting. Presentation: TBD

10/25 or 11/1 - Public Observing at Carolina Beach State Prk

11/8 - CFAS Monthly Meeting. Presentation: TBD

12/14 - CFAS Holiday Celebration

Presentation Coordinator's Report

by Jon Stewart-Taylor

As presentation coordinator, I am responsible for finding presentations for each monthly meeting. For 2025, we're almost full. At this point, we only need a presentation for October.

Planned future presentations:

July: "The Software Side of Karl's Planetary Imaging - Part 1"

August: Scott Jackson: "Galileo discovers Neptune"

September: "The Software Side of Karl's Planetary Imaging - Part 2"

October: TBD

November: Frank Rich: "Using Setting Circles"

December: Holiday celebration

If you have a presentation in you longing to come out, or if you know someone who could cover an Astronomy, Space Science, or Physics topic at our level, please contact me. Even though 2025 is nearly full, we still have most of 2026 waiting for us.

Gravity vs. Dark Matter

by Roger Blake

Isaac Newton formulated his laws of motion and the law of universal gravitation and published them in 1687. They became known as “Newtonian Physics”.

The laws of motion remained the undisputed accurate model of physics for about 200 years, until in 1905 when Einstein showed that Newtonian physics was only valid at speeds well below the speed of light.

Newton’s universal law of gravitation is still assumed valid today, but has become under some suspicion since the 1970’s as one of candidates for the solution of the “galaxy rotation” mystery. Dark matter is another candidate.

The galaxy rotation problem, also known as the rotation curve problem, is a discrepancy between the predicted and observed velocities of stars in galaxies, which was first discovered in the 1970s The observations showed that the rotation speeds of stars in spiral galaxies did not decrease as expected with increasing distance from the galaxy's center.

The expected rotation curve is based on Newton’s law of gravitation as shown for the planets of our solar system in Fig. 1. The vertical axis is the orbital speed and the horizontal axis is the distance from the Sun. The expected Newtonian behavior is that orbital speeds fall off quickly with distance.

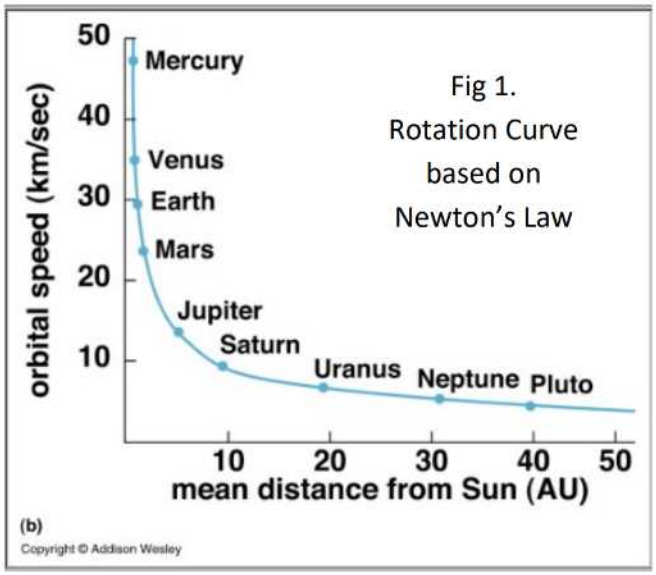


Fig 1. Rotation Curve based on Newton’s Law

The measured galaxy rotation speed remains almost constant with distance as shown in Figure 2.

The difference between the curves is a monumental discrepancy in physics which hasn’t been solved in 50 years. Clearly there’s an aspect of physics at work here that is unknown!

Astronomers are investigating two possible causes.

1. Maybe Newton’s law of gravitation is only for valid over short distances, just like his laws of motion were only valid at low speeds.
2. Maybe there’s hidden mass in the galaxy that can’t be seen in telescopes. Astronomers use the term “Dark matter” for the hidden matter, but have no idea what it might be.

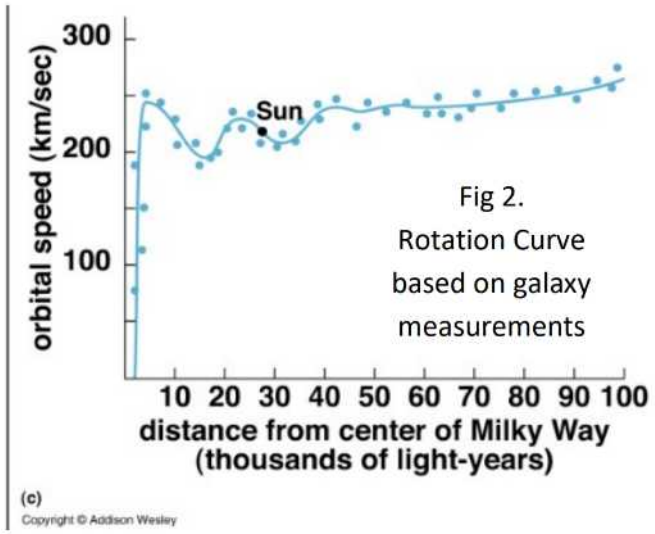


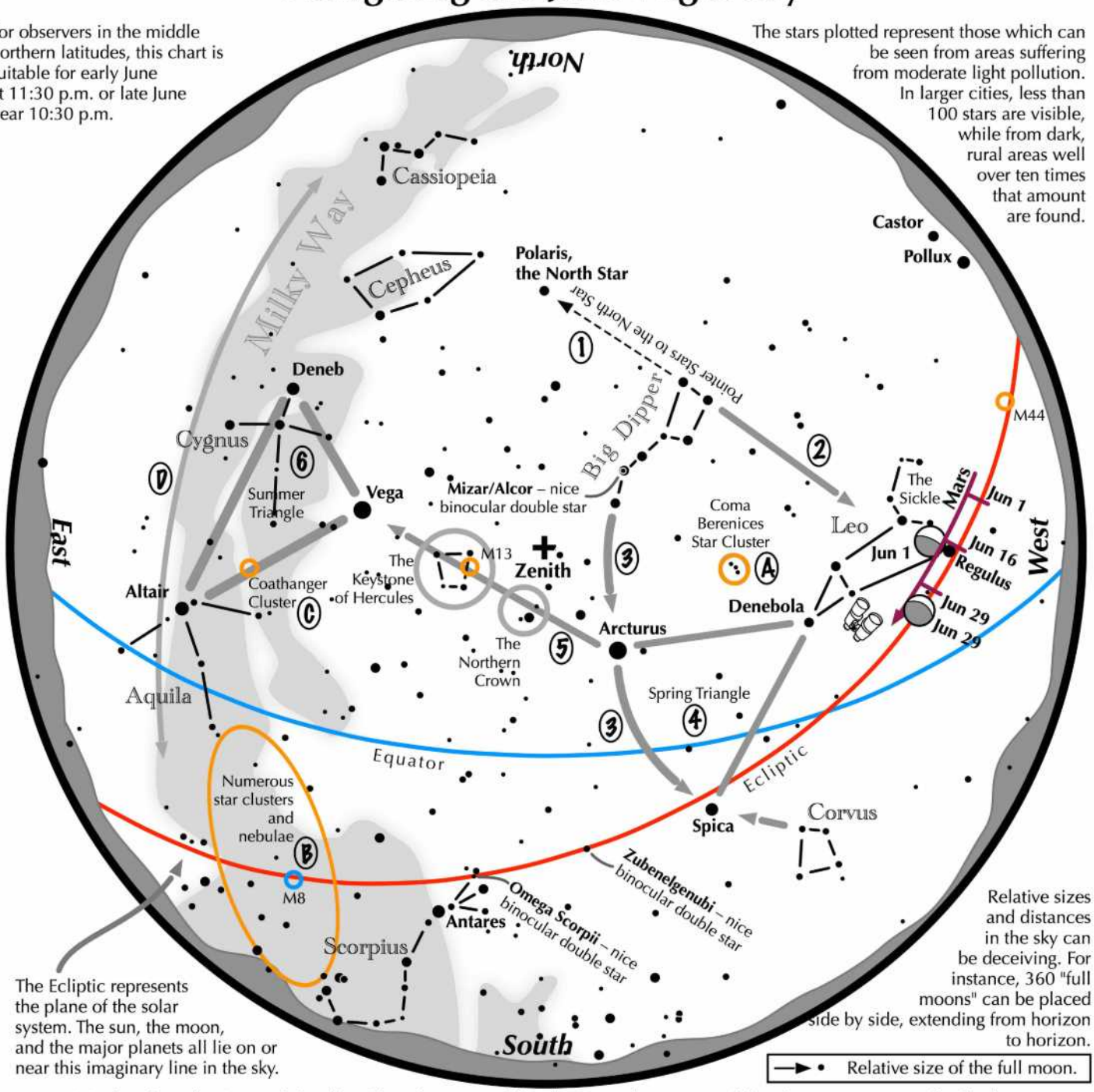
Fig 2. Rotation Curve based on galaxy measurements

My money is on gravity. It seems simpler and more reasonable. What do you think?

Navigating the June Night Sky

For observers in the middle northern latitudes, this chart is suitable for early June at 11:30 p.m. or late June near 10:30 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the June night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
3. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
4. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
5. To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
6. High in the east are the three bright stars of the Summer Triangle: Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars of Antares and Altair, hides an area containing many star clusters and nebulae.
C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
D. Sweep along the Milky Way for an astounding number of faint glows and dark bays.

Astronomical League *www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.*

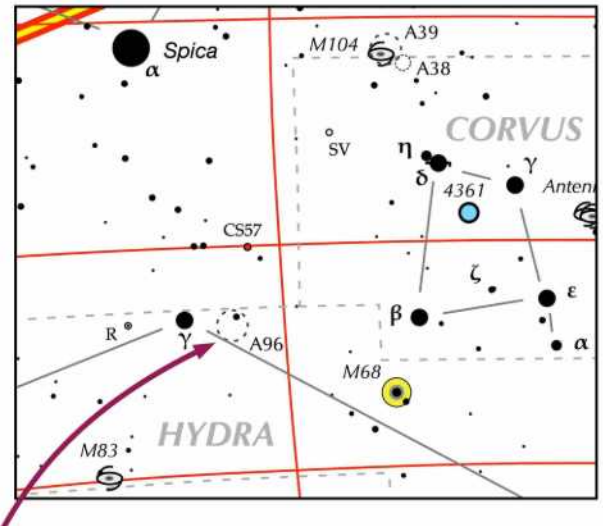
Seahorse Asterism

On the Astronomical League's Asterism list as no. 96

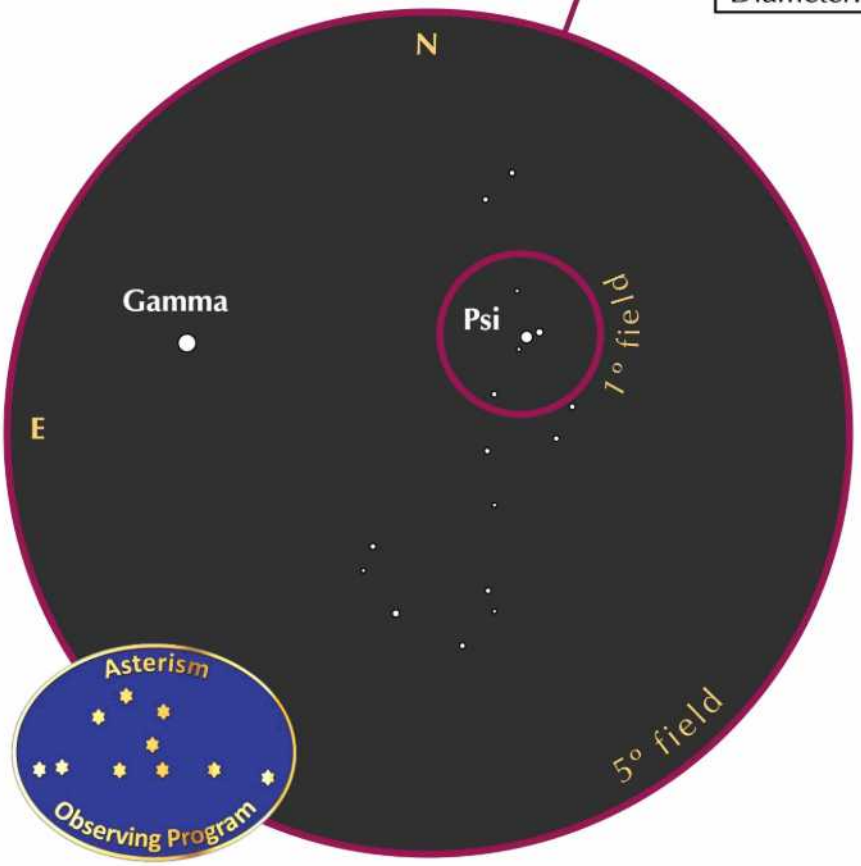
How to find the Seahorse ...

1. 10° south of Spica lies 3rd magnitude Gamma Hydrae. (10° is the angular width of your fist on your outstretched arm.)
2. Place Gamma at the center of the finder (or binocular) field.
3. At the west edge of the finder (or binocular) field lies the 4.9 magnitude Psi Hydrae.
4. Aim the finder (or binoculars) at Psi.
5. Follow the string of 7th, 8th, and 9th magnitude stars as it roughly traces the outline of a seahorse.

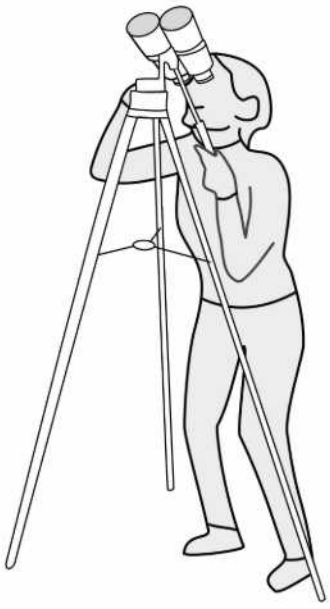
To see it through a finderscope or binoculars, clear, dark skies are a must!



96 Asterism: Seahorse
Magnitudes: 4.9 – 9.6
Diameter: 15 x 90 arc–minutes



Use a tripod to help bring in the asterism's 7th, 8th, and 9th magnitude stars.



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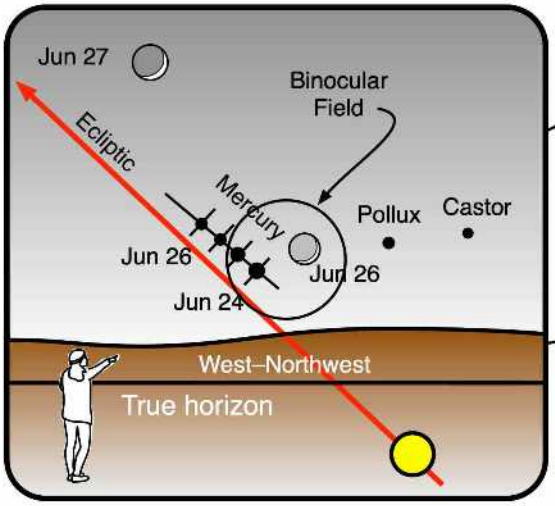
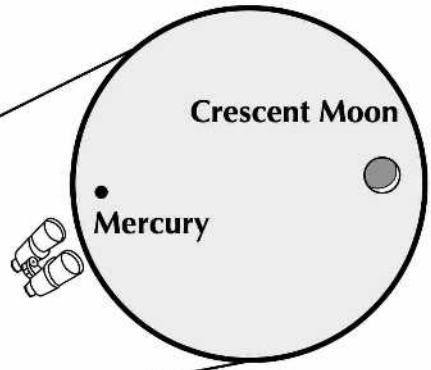
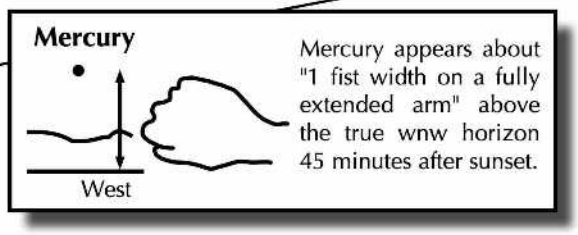
Mercury, Castor & Pollux, and the young moon in the evening twilight





View through 10x50 binoculars on June 26



June 24 – June 27, 2025:
Mercury and the young crescent moon 45 minutes after sunset in the west-northwest

The young moon & Mercury in the evening twilight

Have you ever spotted Mercury? Many stargazers have not. The early evenings of June 24 – 27 present good opportunities to catch the elusive little planet. Look low into the western twilight 45 minutes after sunset.

- Using binoculars, look on June 24 for the stars Castor and Pollux in a line with Mercury.
- Two nights later, the very thin crescent Moon joins them, floating between Mercury and Pollux. The Moon and Mercury lie in the same binocular field. Can you see Earthshine on the Moon's dark side or is the twilight too bright?
- On June 27, a slightly thicker crescent Moon hangs above Mercury. Earthshine should be more easily visible.

Get to Know YOUR Astronomical League

The Astronomical League (Astroleague or AL) is one of the largest amateur astronomical organizations in the world. The organization serves to encourage an interest in astronomy (especially amateur astronomy) and promote the science of astronomy by:

- ✓ fostering astronomical education;
- ✓ providing incentives for astronomical observation and research;
- ✓ assisting communication among amateur astronomical societies.

CFAS is one of over 300 member societies affiliated with the Astroleague. Your membership in CFAS allows you take full advantage of this relationship so periodically review the information below to see how the Astroleague can support your astronomical interests and endeavors.

Astroleague Home Page	www.astroleague.org
Astroleague YouTube Channel	https://www.youtube.com/channel/...
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AL Related News, Information and Reminders	Information: The AL hopes to resume hard copy issues of Reflector with the June 2025 edition. Click HERE for the Astroleague News Page and be sure to check the Astroleague Home Page weekly for new and important posts. Contact Hank Lyon, hlyon8448@gmail.com, for any changes to your Reflector delivery preferences (US Mail, Email or Both).
Astroleague Home Page	www.astroleague.org

The Astroleague Correspondent (ALCor) is your link between CFAS and the Astroleague. Don't hesitate to contact your ALCor if you need assistance with anything Astroleague related whether its general information or detailed coordination of observing program completions for certification. Check back each month to see anything new.

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CFAS Correspondence:

Please contact the society at: CFAS, P.O. Box 7685, Wilmington, NC 28406

Members are welcome and encouraged to submit articles or other input for *"CAPE FEAR SKIES"*. Submit any and all interesting items for publication to Karl Adlon, Editor (email kmja79@yahoo.com).

Cape Fear Astronomical Society is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.

CFAS Officers:

President:	Ben Steelman
Vice-Pres:	Jon Stewart-Taylor
Associate VP	Karl Adlon
Secretary:	George Pappayliou
Treasurer:	Bill Cooper
ALCor	Hank Lyon

Dues: Dues for 2025 are $25 for Individual and $32 for Family Membership. Students dues are $5 per year.

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