THE

FLINT RIVER OBSERVER

NEWSLETTER OF THE FLINT RIVER ASTRONOMY CLUB

An Affiliate of the Astronomical League

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Officers: President, Larry Dove.
Vice President, Sean Neckel.
Secretary / ALCOR Terri Sutton.
Treasurer, Mark Sutton.
Board of Directors: Aaron Calhoun, Bill Evans, and George Ruff; Program/Observing Coordinator and Social Media Coordinator: Tom Partin.
Webmaster: Sean Neckel.
Newsletter Editor: Dawn Chappell.

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Club Calendar:
FRAC Meeting:
In place of our regular monthly meeting, FRAC will participate in an educational observing event at Crescent Elementary School on Thursday, November 12. This event is not open to the public, and FRAC members do not need to sign up in advance.

If you are bringing a telescope, please arrive in time to have it fully set up by 5:30 PM. The event will conclude at 7:30 PM.

The audience will be elementary school students and their parents, so please choose age-appropriate observing targets and explanations. See the attached flyer for more information

Public Observing Events:
In November we have two public events scheduled.

We will be at Indian Springs on Friday, November 13, and in case of clouds we will have a weather make-up date for Saturday, November 14. The event starts at 7:30pm.

On Friday, November 20, we will be at Lake Horton County Park in Fayetteville for a "Night Under The Stars". There is no weather make-up day for this event.

Fayette County Parks and Recreation has asked all participating FRAC members to create an account and register through its online registration catalog. Please complete that registration if you plan to attend.

FRAC Observing Events:
Our club observing weekend at Joe Kurz will be on November 6th and 7th from sunset until whenever.

The gate may be open now, so please be sure to leave the gate as you find it when the last person leaves for the night.

The lock code is 9321.

Please keep checking your email for updates regarding club events.

President's Message:
At our Sprewell Bluff star party, I was asked how far a light year is. I wasn't sure but knew it was several trillion miles and explained a little of the math. In fact, a Light Year (ly) is 5.88 trillion miles which I conveniently round to 6 trillion miles.

To define a light year, we have to define an Astronomical Unit (au). An au is the average distance between the earth and the sun. Over the years, an AU has been calculated as approximately 93 million miles. In 1838 Fredrich Bassel successfully measured the distance to a star other than our sun. Bassel computed the distance to 61 Cygni as 660000 au and further computed that light would take 10.3 years to travel that distance. This was given what was known about the speed of light at that time. Bassel did not intend to create a new concept of how to define distances, but he reasoned it would be easier for people to understand. The term took decades to become widely used.

Astronomical units are generally used within the solar system. Earth to sun, 1 au, Sun to Jupiter, 5.2 au, etc. We use light years to express distances to stars in our Milky Way galaxy, as well as galaxies far, far away. Our nearest star companion is Proxima Centauri at 4.2 ly (~25 trillion miles). Our nearest galaxy companion in the local group is Andromeda at 2.5 million ly (2.5 million ly x 6 trillion miles/ly, I'll let you do the math).

Clear skies,
Larry

Vice-President's Ramblings

A few months back, we had the opportunity to have Mason Starr, a PhD candidate from Georgia Tech present his work to us that he did on the NASA Lunar Flashlight project. To show our appreciation, Ann Angelheart sent Mason a framed picture of the moon (taken by me), and a $25 Amazon gift card. Thank you to Ann for suggesting this, picking out the frame, and for making it happen.



Mason's response is below:
Hi Ann,

I did receive the photo! It is gorgeous, huge kudos to whoever took it, and whoever picked out the lovely frame. I meant to reach out and thank you earlier but it's been crazy over here! We are currently T-4 hours from the launch of our new satellite!

It was a great experience giving a talk to the club! If you'd like, I am happy to send some additional speakers your way.

Thank you,

Mason Starr
PhD Candidate, Mission Operations System Engineer
Space Systems Design Lab, Georgia Institute of Technology

Sean

Alan's Astrophotography Series - Part 3: Guiding
Guiding is an important consideration in astrophotography. Let's address guiding with a German equatorial mount first. If you are using short focal lengths on a properly polar-aligned German equatorial mount it may not be needed. If you are doing short exposures, it may not be needed. If you are using longer focal length scopes and/or long exposures, then guiding will be needed.

For telescope guiding there are four main methods. Let's start with a separate guide scope equipped with a guide camera. First, you want a very sensitive guide camera. QHY, ZWO, and Player One make good guide cameras. Starlight Xpress makes some sensitive ones, and SBIG makes them too. SBIG has guide cameras that have a mechanical shutter. That comes in handy for making dark frames. However, software like PHD2 will use dark libraries so the shutter is not a necessity.

Secondly, you will need a guide scope. The guide scope can have a shorter focal length than the main scope. It should be solidly attached to the main telescope.

The advantage to the separate guide scope is that you can always find a guide star due to the wide field of view. This is helpful if your main scope has a long focal length (2000 mm or more). However, it has a disadvantage. The thermal expansion/contraction can cause the guide scope to shift in relationship to the main scope which can cause guiding errors. If you are using an SCT, the mirror movement will not be corrected by the external guide scope.

The other alternative is to use off-axis guiding. In that scenario a housing with a 90-degree pick-off prism is installed in front of the camera. The prism reflects light to a port which houses your guide camera. In this case, the focal length of the guide camera is the focal length of your main scope. There are no guiding errors associated with thermal expansion or mirror flop. The only disadvantage is that if you are using a scope with a very long focal length it may be difficult to find a guide star. You may have to jog the scope a little to find a guide star.

Some cameras have a separate guide sensor next to the main sensor. These will give excellent guiding and correct the impact of any mirror movements. If you are using filters, then the guide sensor will be behind the filter so it will make the guide star appear fainter or undetectable.

The last alternative is more expensive. If you have a high-end telescope mount, preferably with absolute encoders, it is possible to model the sky and do unguided exposures. Results are dependent on the quality of the mount, the telescope and the telescope's focal length.

It should be noted that guiding will not work with Alt-Az mounts unless you have extra equipment or do only short exposures. If you tried guiding for long exposures without extra equipment the image would suffer from field rotation. To be successful the scope would have to be equipped with a field de-rotator, and

you would need an off-axis guider attached after the rotator. Then it would guide well. It is possible to do the guiding with a separate guide scope, but the guiding software has to do something called coordinate translation. It is rarely used, and most guiding software does not support it.

However, companies like Planewave offer Alt-Az mounts with de-rotators for scopes that use off-axis guiding. They can also model the sky and do unguided imaging. Those types of mounts are very expensive.

Next Month's Article: Mounts

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FRAC T-Shirts

FRAC T-shirts are still available! They are $20 at all FRAC gatherings.

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FRAC meeting:

FRAC meeting October 8, 2026, at 7:30pm at the UGA Gardens in Griffin and on Zoom.

14 members joined us at the meeting at the Garden building: Larry and Twila Dove, Carlos Flores, Alan Pryor, Wade and Carmen Simmons, Eugene Rush, George Ruff, Alfred McClure, Stephen and Joseph Littleton, Ben Barker, Mark Hess, and Tom Parton.

6 club members joined us on Zoom: Chelsea Neckel, Clayton Wilson, Dave and Rosanne Stone, Scott Hasson, and Anne Angelheart

Topics Discussed:

- Carlos Flores gave a presentation on Supernovae.

FRAC Observings:
The club held its monthly observing event at Joe Kurz WMA on Friday, October 9th and Saturday, October 10th.

Public Observing Events:

In October we were scheduled to have a public observing at Indian Springs State Park on October 2nd or 3rd. Both dates were cancelled due to weather.

On Saturday, October 17th we met at Sprewell Bluff Park in Thomaston, GA for a public observing event. Club members that participated were George Ruff, Larry Dove, King Davis, Brent Hayslett, Scott Hasson, Ann Angelheart, Dave and Rosanne Stone, and Sean and Chelsea Neckel.

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Solar System Observing November 2026

Mercury is very close to the sun and not observable**.**

Venus just passed in front of the sun and is not observable.

Earth is very colorful right now**.**

Mars is visible starting around 1:30am until dawn.

Jupiter is visible starting around 2am.

Saturn is visible starting around 10:30pm until dawn.

Uranus is visible through a telescope starting around 10pm until 6am.

Neptune is also visible through a telescope, starting around 10pm until 2am.

Moon: LQ 11/1 New: 11/9 FQ: 11/17 Full 11/24
https://in-the-sky.org/
In the sky, November 2026
Targets for November observing;
1. Saturn rises in the east after sundown is putting on a show with the rings opening up.
2. Leonid meteor shower peaks ~ November 17th.
3. Constellations: Cassiopeia, the summer triangle is still overhead, great square of Pegasus and with-it, Andromeda.
4. DSOs: M31 Andromeda Galaxy, M33 Triangulum Galaxy, and NGC 6946 Fireworks Galaxy
5. Double stars: Albireo in Cygnus nearly overhead in the summer triangle, Almach in the Andromeda constellation
6. Mars-Jupiter conjunction Nov 16th, pre-dawn, so get up early!

Classifieds:
If you have something you would like to buy, sell, or trade, email the specifics, including your contact information to stneckel@gmail.com

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The Cocoon Nebula, Courtesy of Alan Pryor. Photographed on 8/16/26

The Cocoon Nebula is also known as Caldwell 19 or IC 5146. It is an emission nebula with dark lanes going through it. It is interesting to note that young stars are emitting the radiation that excites the hydrogen in the Cocoon Nebula and causes it to glow. It is surrounded by the dark nebula, Barnard 168. The dark nebula extends farther out and is best seen in the full-sized photo which can be found at Cocoon_Nebula. The dark nebula is actually a molecular cloud. The Milky Way stars form the background, and it is noticeable that the Cocoon and the dark nebula are blocking out many stars of the Milky Way background. The nebula and molecular cloud are star forming regions. The nebula is about 4000 light-years away. It will take at least a 14" telescope to see it. The Cocoon is in the constellation of Cygnus. It is about 12 degrees northeast of Deneb. That is about twice the distance between Deneb and Sadir.

The photo was taken with a 14" telescope using a QHY600PH monochrome camera. There were 2 hours and 21 minutes of exposure (20 luminance frames, 8 red frames, 8 blue frames and 11 green frames at 3 minutes per frame).



Northern Lights, Courtesy of Eugene Rush



Northern Lights, Courtesy of Betsy Foutch

The Northern Lights by Eugene Rush

I am sure we have all seen the fantastic photos and videos of the Northern Lights (Aurora Borealis) on the internet; truly one of Nature's most spectacular displays. Auroras occur when charged particles from the sun collide with gases in the Earth's upper atmosphere.

Peak viewing of these ghostly glows occurs from late August to mid-April and are most visible near the magnetic poles; both North and South (Aurora Australis at the South Pole.) The countries of Canada, Alaska, Iceland, Norway, Sweden and Finland are the best places to see the auroras. But thanks to increasing solar activity, they're now appearing farther south and more frequently than usual. In fact, Georgia and most of the South got treated to the auroras in May 2024 and November 2025.

The May 11, 2024 aurora displays occurred due to the Sunspot Region 3664 that produced a G5 level (extreme) geomagnetic storm resulting in the auroras Being visible as far south as Florida over several days. While I missed the auroras, I did photograph the Sunspot Region on May 12, 2024.



Sunspot Region 3664, Courtesy of Eugene Rush

The November 11, 2025 aurora displays occurred due to a Level G4 (severe) geomagnetic storm and were somewhat less spectacular than the May 2024 displays; but were still visible over much of the South, Texas, Arizona and California. I did manage to take a cell phone photo of the aurora from Sharpsburg, GA on November 11, 2025.

My cousin, Betsy Foutch, also photographed the aurora from Lebanon, TN on November 11, 2025.

While our photographs are not anywhere near the dazzling internet images; it was, none-the-less, special to at least see a pink glow of Nature's wonder from our own backyards.

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