Charlotte Amateur Astronomers Club
www.charlotteastronomers.org

Next Meeting: Friday June 21st, 2019
Time: 7:00 PM
Place:
Myers Park Baptist Church
Education Building – Shalom Hall (Basement)
Address:
1900 Queens Road
Charlotte, NC 28207

CAAC June 2019 Meeting

RR Lyrae Variable Stars and the Evolution of Middle-mass Stars Like Our Sun

RR Lyraes are very old stars, on the order of billions of years. They have exhausted the hydrogen in their cores and the energy they radiate comes from the "burning" of helium into carbon in their cores. Alternately trapping and releasing this energy causes a sustained pulsation of the stars and a variation in the energy emitted from their surfaces.

Speaker

Mike Corwin retired from the University of North Carolina at Charlotte in 2014, where he spent 38 years in the Physics Department teaching physics and astronomy. His research focused on variable stars in globular clusters. He's published five text books, many research articles, and a few articles for popular science magazines. Several years ago, his daughter encouraged him to try his hand at fiction and in January 2019 he received an MFA in Creative Writing from Queens University.

From the President

Last June 8 approximately 20 members traveled to the South Carolina State Museum to tour the Bob Ariail Antiques Telescope collection. Our guides along with Tom Falvey, Director of Education, were our own Gayle Riggsbee and Gary Tous. After the tour members enjoyed the rest of the museum at their leisure.

I anticipate at least two more field trips this year. I am open to suggestions that you might have.

Gary Tous explaining one of the Bob Ariail telescope displays at SC State Museum

Ken Steiner
President

CAAC Treasurer's Report as of 05/31/2019

Part 1 of 2

Operating Fund

Purpose: Enable the CAAC to pursue our non-profit goals, maintain our facilities, and run our programs:

- Funds are acquired through ongoing receipts of dues, fees, and annual net Southern Star income (or expense).
- Funds are expended to meet operating obligations of the club.

1	**Operating Fund Balance: 04/30//2019**	$13,478.00
2	**Income**	
	Dues & Fees	280.00
	Hat Sale	10.00
	Expenses	
	GHRO Utilities	273.08
	Fees for Credit Card Service	6.42
	Meeting Expense	230.25
3	GHRO Maintenance	815.87
4	**Operating Fund Balance: 05/31/2019**	12,442.38

Part 2 of 2

Non-Operating Funds

Purpose: Administer gifts and donations for designated use.

1	**Balance 04/30/2019: Non-Operating Funds**	
	Scholarship Fund	3989.36
	Contingency Fund	27,634.83
	Long-Term Fund	7247.86
2	**Income**	
	Donation: Microsoft, BofA, Other	0.00
	Interest	.99
	Expenses or Transfers	
3		
	Balance 5/31/2019: Non-Operating Funds	
	Scholarship Fund	3989.36
	Contingency Fund	27,636.77
	Long-Term Fund	7247.86

Endowment Fund Balance $1240.06

Benton Kesler
CAAC Treasurer

CAAC Outreach Updates

CAAC Outreach need your help for upcoming events. We need people, scopes, and your expertise. Check the CAAC Night Sky Network Events Calendar for more details.

If you are interested in getting more involved with CAAC Community Outreach please contact Neil Easden at neileasden@me.com

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Secretary's Report:

ATTENTION:

If you are a former CAAC member and have not been keeping up with your membership dues, firstly please come back! We'd love to reconnect you with the love of astronomy through our club, use of GHRO observatory, and the camaraderie of our members.

Please also remember to return your badges on the table near the exit at the end of the meeting before you leave! Doing this will significantly reduce the chances of badges getting lost and reduce the amount of time (and cost) of having to re-create your name tag if it is lost. Thank you!

Register with the Night Sky Network! It is imperative that all members of the CAAC join the Night Sky Network (NSN). Many of the clubs outreach activities are managed by the NSN, as well as club communications (newsletters, event notifications, general email). The NSN is a wonderful tool specifically designed for amateur astronomy clubs like ours. Membership allows you to contact other members via email, and receive last minute updates for outreach events via text message:
http://nightsky.jpl.nasa.gov/club-apply.cfm?Club_ID=1468&ApplicantType=Member Pre-Monthly

Meeting Gathering Several CAAC members gather at Panera Bread (601 Providence Road, just a few blocks from our meeting place) at 5:30 prior to the monthly meeting. Anyone interested in sharing a meal with them is welcome.

News from GHRO

1. The June 1 Star Party at GHRO was a wash, let's hope for better weather in July. Telescope training is June 22, a 3rd quarter moon. July's training on July 13.
2. Please come down and use the outstanding facility. Remember, it's your observatory, so please use it. We do ask that you clean up before you leave. A good practice is to act as if you are going camping…pack out what you pack in.
3. Finally, several of us are doing remote imaging. If you're at GHRO, please be careful around the private observatories…the roofs can roll off at any time.
4. Cosmic Camporee is just around the corner, we're shooting for October 26, 2019. It's a little later than the past few years, let's hope that buys us some crisp autumn air.

GHRO Information (see http://1drv.ms/1m2wPUn)
GHRO is located at 1427 Bloomwood Drive, Lancaster, SC. (some GPS show city as Pageland). Gravel road leading to the observatory is located 5.22 miles east of the "522 Grill" on Taxahaw, Rd.

Facebook FAQ
https://www.facebook.com/CharlotteAstronomers/ scroll down to NOTES, then Frequently Asked Questions page for more information about GHRO. Be sure to share your astronomy photos and observing tips.

Night Sky Network -- "Heading to GHRO"
For updates on GHRO, be sure to join the https://nightsky.jpl.nasa.gov/index.cfm "Heading to GHRO" message group.

Jim Gaiser, Director GHRO.

As always, we care about the safety and security of all visitors to our observing facility, the GHRO. To keep us all mindful for the need to keep alert while visiting the observatory, we provide the following reminder. Please share this with your family and any visitors who may join you at the observatory.

*** WARNING ***

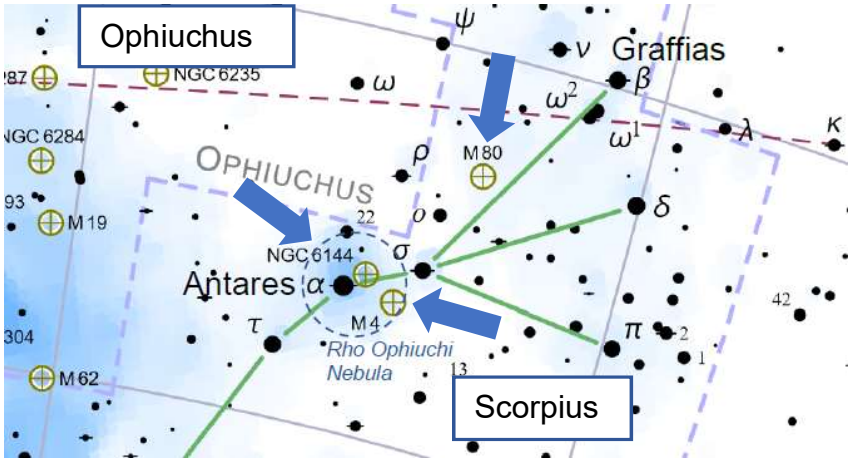
This facility and adjoining area may contain uneven terrain, dangerous wildlife, low light conditions, and dangerous man-made obstacles.

By using this facility, users assume the risk of personal injury, and loss or damage to personal property. All persons should use extreme caution at all times.

Users of this facility agree to hold harmless the Charlotte Amateur Astronomers Club, its Directors, and its members for any and all injuries sustained while participating in club activities or using this facility.

June Sky Challenge

Are you looking for something to discover in the night sky? Try these with a modest size telescope, with some patience and persistence! Or come down to the GHRO and get a really fine look! This month let's look at three globular clusters, all in Scorpius.



The southern summer Milky Way is rich in globular clusters. Several are within about a binocular field-width of bright, orange-red Antares. **M80** isn't so prominent, but can be located easily halfway between Graffias (Beta Scorpii) and Antares.

The discovery of M80 has been credited to both Messier and Mechain, both of whom recorded the cluster in January 1781; Messier's observation seems to have preceded that of his friendly rival by about three weeks. Messier describes it as "A nebula without a star in the Scorpion, between the stars g [now Rho Ophiuchi] and Delta. It was compared with g to determine its position.

The nebula is round, its center brilliant and it resembles the nucleus of a small comet, surrounded by nebulosity." At magnitude +7.3 you'll easily sweep up M80 through a 3-inch telescope. Its stars appear tightly packed, so at 70x it looks more like a tiny, glowing cloud with a bright core. Under excellent conditions (and fairly high power), one can begin to resolve delicate dark rifts in the central core, but even then there's no real resolution of the cluster into individual stars.

The huge, loose cluster **M4** is only 1.3° west of brilliant Antares, the fiery orange heart of the Scorpion. The "M" stands for Charles Messier, and anything that made this 18th-century observer's list is an easy target for newcomers to astronomy. All the telescopes Messier used were quite small; not even one had as much light grasp as a good 4-inch telescope of today Such an instrument at 70x will show many of M4's individual stars, some of which seem to be arranged in a central bar that runs nearly north-south. This feature is most prominent in an 8-inch telescope, and in larger instruments, it appears enmeshed in a multitude of fainter stars. As with almost any globular cluster, the longer one stares, the more patterns seem to emerge.

Just slightly north and east (one degree away), you hopefully will find another globular cluster, **NGC 6144**. Dimmer, at 9th magnitude, with a 6-inch telescope or greater – and a steady dark sky – you should get a pleasing view. Though visually close to M4, in reality, it is three times further away.

Acknowledgements:

NightSkyInfo www.nightskyinfo.com/archive for target descriptions, adapted.

Mag Star 7 Star Atlas Project © 2005 Andrew L. Johnson for star maps (clipped)

Edited by Mark Hoecker

What's Up in the Sky?

Highly Recommended Download and print a good *FREE* star map (including interesting objects to look for) monthly from:

Skymap http://www.skymaps.com/downloads.html

You'll also find a good monthly sky map in each issue of *Sky & Telescope* or *Astronomy* magazines.

New to the Night Sky?

Are you puzzled by folks in the club who point up in the sky and say "There's Gemini... and you can see Leo rising over there...and doesn't Regulus look clear tonight"? Are you trying to figure out where those darn constellations are? Those large star atlases are pretty intimidating… confusing… and expensive.

A good starting point could be called, *My First Star Atlas*…. but in reality it is 4 simple but very helpful FREE star chart pages from the Stephen F. Austin State University – called ***SFA Star Charts***. Pages 2 & 3 show you about 90% of everything you need to get started. There are even a couple pages that explain how to use a start chart. Clear and straight-forward.

Go to this link and print out the pdf file on the largest paper you have available, though standard letter paper is fine:

http://observe.phy.sfasu.edu/SFAStarCharts/SFAStarChartsAll.pdf

While these charts do not show the myriad of deep sky objects, they DO show the constellations and brightest stars – a good introduction to the night sky!
Happy Observing!

NEW January, 2019 Revision is POSTED!

An *ENHANCED* Star Atlas – FREE!

Our CAAC member, Mark Hoecker, has used the *Mag 7 Star Atlas – Color Milky Way version* (available on the internet) and added some enhancements including:

- A star map index to quickly identify the individual star chart you are looking for.
- Blue directional arrows at the edge of each chart guiding you to the adjacent chart. Also large page numerals were added in the lower right corner, helpful when thumbing through the charts.
- Finally, he manually added common star names and a selection of deep sky object names to the star charts, helpful in finding your way around the sky.

Such enhancements are allowed under the Creative Commons License by Andrew L. Johnson, author of the original charts.

SUGGESTION: While printing at the largest paper size you have available is helpful, a great alternative if you have a "letter size" color printer with a manual auxiliary feed slot, is to print on "legal size" (8½ x 14-inch) heavy paper or even "card stock". You could also punch holes and place in a legal-size report cover available at office supply stores. You would then have a wonderful star atlas to help you through the night skies!

If you have access to a color printer that can print on 11 x 17-inch paper (or card stock), you can print a magnificent copy whose readability will rival that of very nice, commercially available atlases.

To download your ***Mag-7 Star Atlas Milky Way version – ENHANCED***, go to the CAAC website and scroll down the left column to "Mag 7 Star Atlas" and follow the link.
Happy Observing!

CAAC CONTACTS

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