Roanoke Valley Astronomical Society

Amateur Astronomy News and Views
In Southwestern Virginia

Volume 41—Number 12 **December 2024**

RVAS November Meeting Notes

What is a Neutron Star?

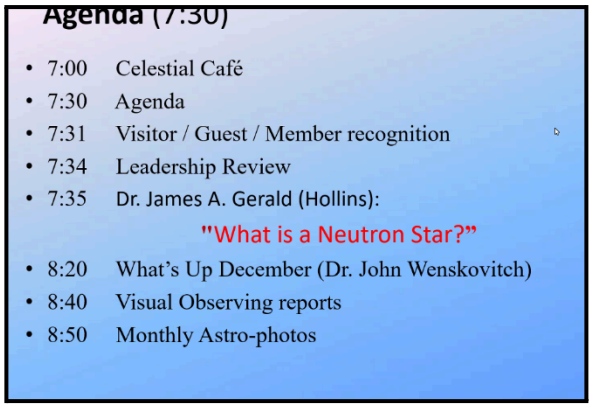
By **Erin Elliott, Secretary**

You can view this month's Zoom recording by clicking this link. The passcode to view the video is: **+6sSAY*!** This month, our recording is a little shorter (it happens!) You can find "What's Up" and all the information that follows. You can find a timestamp for each segment of the meeting next to the corresponding section header and a full list of timestamps below.

- **What's Up? | 0:00:20**
- **Visual Observing Reports | 00:19:04**
- **Astrophotography | 00:24:13**

After wrapping up the Celestial Café, we welcomed members and guests to the November meeting The meeting began at 7:30pm with an introduction from RVAS President, **Michael Good**.

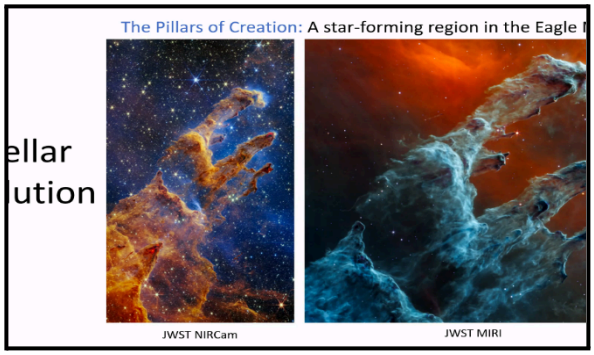
Attendance: There were 31 members and 1 guest in attendance. 15 individuals were in person and 16 attended virtually.



*November Meeting Agenda – **Michael Good Slide***

Program: James A. Gerald, PhD currently serves as the Associate Provost for Graduate Programs at Hollins University. He received a PhD in Electrical Engineering from Syracuse University in '93 and a second PhD in Physics from Johns Hopkins University in '95 based on tau-lepton research at CERN from '92 to '95.

Academic appointments include a Postdoc in nuclear physics at Brookhaven National Labs, a year at Christopher Newport University teaching physics and electrical engineering, and recently ten years at Delta State University in a variety of teaching and administrative posts. Nonacademic works includes 10 years working with the Air Force Medical Service on deployed medical records and surveillance as well as 6 years as a consultant to pharmaceutical and health insurance firms.



Stellar Evolution – James A. Gerald slideshow

What is a Neutron Star?

Summary of the HR Diagram

- Most stars lie on the main sequence
- Three classes of stars

Luminosity Classes

- Luminous stars tend to be less dense. As a result, they have a narrower absorption lines in their spectra
- H-R diagram broken into luminosity classes
- Star classification example

Convection graph

The Mass-Luminosity Relation

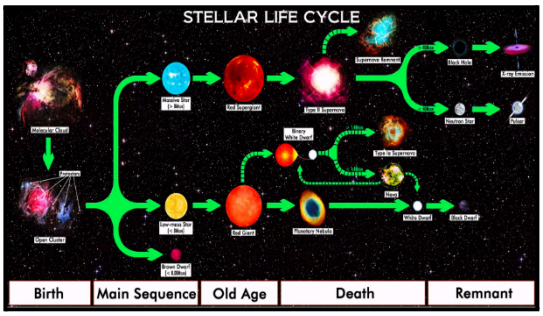
- Main-sequence stars obey a ***mass-luminosity relation***, $L=M^3$

Stellar Life Cycle

- Birth, Main Sequence, Old Age, Death, Remnant

All stars are born on the main sequence out of an Interstellar Gas Cloud

- General Characteristics



*Stellar Life Cycle – **Dr. Gerald slide***

To the Protostar Stage

The Life of Our Sun

White Dwarfs

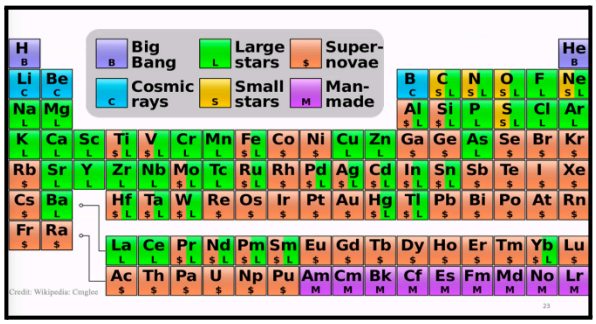
- Their gravity compresses them to a size comparable to Earth

Planetary Nebulae

- Make good pictures

The Life of a High-Mass Star

Elements come from different interstellar sources



*Periodic Table – **Dr. Gerald slide***

What's Up? | 0:0:20: Before turning to our program for the evening, Michael asked **John Wenskovitch** for his "What's Up?" program on what the skies of September have in store for us. John's "What's Up? Highlights" in this issue provide a summary of the program. You can watch a recording of his program by clicking the link at the beginning of the newsletter.

John also highlighted the following Astronomical League Program for members to check out: Alternate Constellation Observing Program.

Member Observation Reports | 00:19:04: Mark Hodges got himself a birthday present of the Celestron Origin smart telescope that comes with everything you need: camera, scope and computer. He took it outside early in November and enjoyed taking pictures with it. You can find a few in this month's astrophotography section.

RVAS Member, **John Sheffey** (a RVAS member for 9 years) is looking for opportunities to dive more into the astrophysics field. He has been doing some informal training on his own and wants help in soaking up more knowledge. Alternative energy (pulsar/ black hole singularity/ and dark matter sources) are the main areas of interest. You can reach out and email him at sheff09@gmail.com

Zoom Screenshot – ***Mark Hodges Photo***

Astrophotography | 00:24:13: We thank **Tom Cerul**, **Ed Dixon, Michael Good, Ben Hartman, Mark Hodges, Dave Thomas** and **Caleb White** for providing their work this month. We had a variety of images focusing on near and deep sky objects.

To provide each image with the focus it deserves, we are sharing the submissions in a separate article in this newsletter. Do not miss checking out the rest of these images.

You can also visit our RVAS Facebook Group to see photos posted throughout the month.

Next month: Stay tuned for details for December's meeting,, which will likely be more of a social event than a normal tech meeting.

The meeting was adjourned at 8:50pm.

RVAS Monday Dec 16, 2024
Winter Social

For our next meeting, we will meet in our new "regular" classroom at VWCC, STEM Building Room ST212. Please bring something to share for our Winter Social. We will gather, visit some, grab some goodies for all those present in person, and then Dr. John Wenskovich will present our What's Up presentation. John always does a great job! We will take another break for food, and then we will take a look at the Astro-photos that were posted since our last meeting. RVAS will provide a limited set of choices on sweet tea and soft drinks. There are plugs available for anyone wanting to bring some dish in a crock pot. We hope you can join us IN PERSON for this social (it's more fun to see you face-to-face).

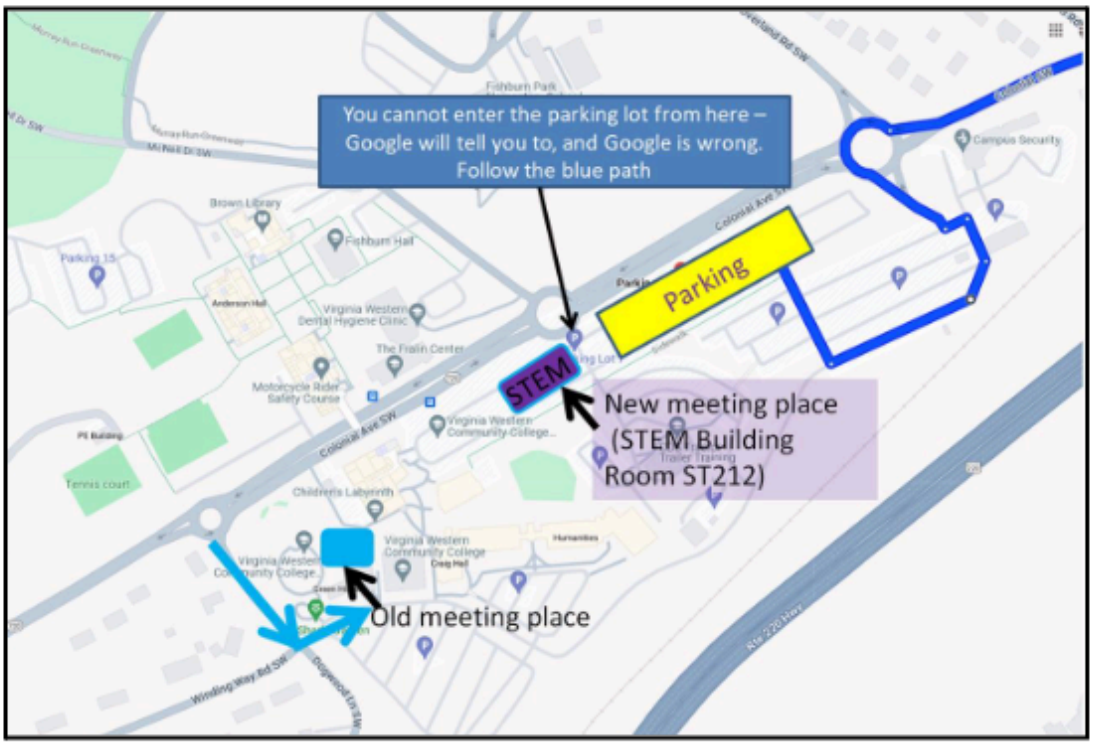
Christmas Cheer to All,
Michael Good

The Roanoke Valley Astronomical Society is a membership organization of amateur astronomers dedicated to the pursuit of observational and photographic astronomical activities. **Meetings are held at 7:30 p.m. on the third Monday of each month. See calendar on last page of newsletter for location. Meetings are open to the public.** Observing sessions are held one or two weekends a month at a dark-sky site. For information regarding joining RVAS, including annual dues, click here. Articles, quotes, etc. published in the newsletter do not necessarily reflect the views of the RVAS or its editor.

Directions to RVAS Meeting Location

Virginia Western Community College STEM Building, Room ST212
3094 Colonial Ave SW, Roanoke, VA 24015

VWCC is located in the southwestern area of the City of Roanoke. The STEM Building is accessed via the roundabout at Overland Drive and Colonial Avenue, near Campus Security at the top right of the map. The STEM Building is at the opposite end of the Colonial Avenue parking lot from Campus Security. Follow the darker blue path from the roundabout and park anywhere in the lot.



Note: Google provides incorrect guidance to access the parking lot from the roundabout at McNeill Drive. That roundabout **<u>does not</u>** provide an entrance to the parking lot.

What's Up? Highlights

December 1 to 31, 2024

This Month:

Our December skies will be planet-rich once again, with good views possible for every planet at some point during the month. Mercury is an evening-sky object as the month begins, but it switches to a morning-sky object fairly early, with its greatest western elongation occurring on Christmas morning. Venus remains an evening object throughout the month, getting higher above the horizon and not setting until almost 9pm on the 31st. All of the outer planets with the exception of Mars are visible in the evening sky throughout the month, with Jupiter rising at 5:25pm on the 1st and the other gas and ice giants already above the horizon. Jupiter reaches opposition on the 7th, the last of the outer planets to reach that status for 2024. As the month begins, Mars rises at 8:59pm, but it continues to appear earlier every night, eventually rising at 6:38pm on the 31st. As Saturn gets closer to its equinox, we start to see some Moon shadows appear on its cloud tops. Titan's shadow will be the most obvious by far, but the 15-day and 23-hour timing of its orbit makes these events daylight observations. The Geminid meteor shower is projected to peak in the evening of the 13th, but the glare from the upcoming full moon on the 15th will reduce the visible meteor count by a bit. The winter solstice on the 21st brings the shortest calendar day, with the earliest sunset occurring at 5:01:30pm on the 6th (the latest sunrise doesn't occur until January). And finally, let's hope for another aurora outburst or two, as well as the eruption of T CrB (which will be a morning object now)!

Celestial Events:

- December 6: View the shadow of Titan on Shadow (in daylight at 3-4pm)
- December 7: Jupiter opposition (6pm)
- December 13: Geminid meteor shower, estimated peak at 8pm
- December 21: Winter solstice (4:20am)
- December 22: Ursid meteor shower, estimated peak at 12:22am
- December 23: Io and Ganymede double shadows on Jupiter (about 2:45-3:45am)
- December 24: View the shadow of Titan on Shadow (in daylight at 2-3pm)

Sunset and Twilight:

- Sunset ranges from 5:02pm (1st) to 5:12pm (31st), earliest sunset 5:01:30pm on the 6th
- Evening twilight ends from 6:34pm (1st) to 6:45pm (31st)

Lunar Phases and Apsides:

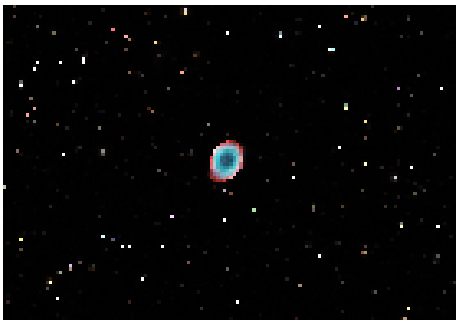
- New Moon: December 1, 1:21am
- First Quarter: December 8, 10:26am
- Perigee: December 12, 8:20am (227,025 miles)
- Full Moon: December 15, 4:01am
- Last Quarter: December 22, 5:18pm
- Apogee: December 24, 2:24am (251,335 miles)
- New Moon ("Black Moon"): December 30, 5:26pm

November 2024

Ctrl- Click on the picture see the source file and additional information

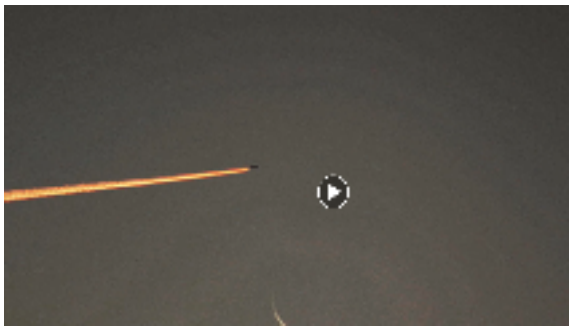
David Thomas

Tom Cerul



Ben Hartman

David Thomas



Ed Dixon

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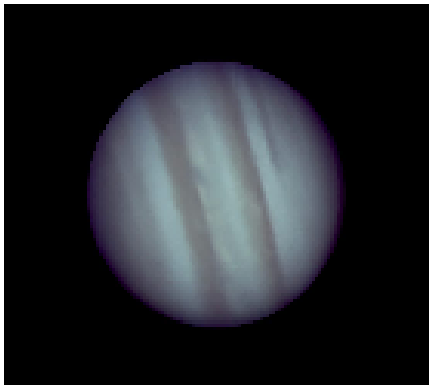
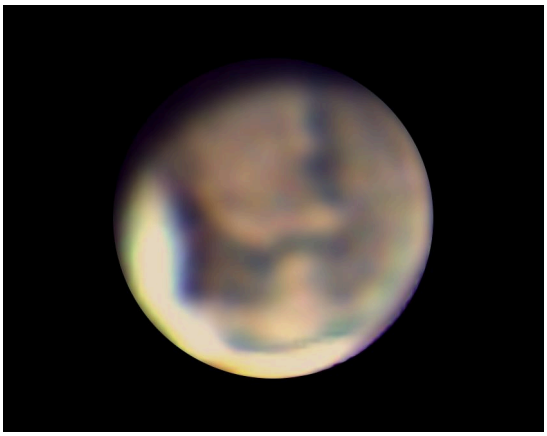
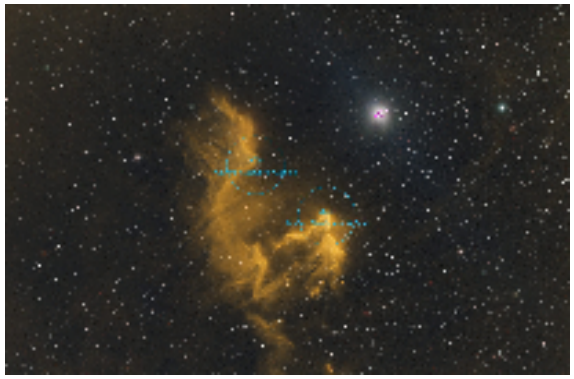
Tom Cerul 	**Ed Dixon** 
Ed Dixon 	**Ben Hartman** 

Ed Dixon

Tom Cerul

Tom Cerul



Ed Dixon

Mark Hodges

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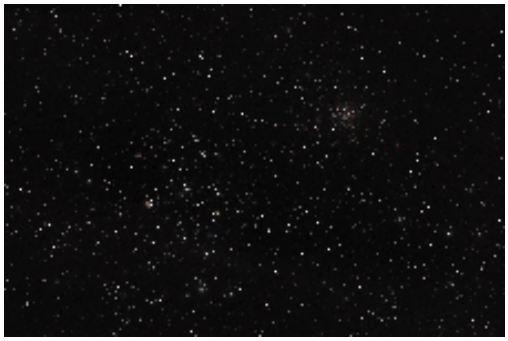
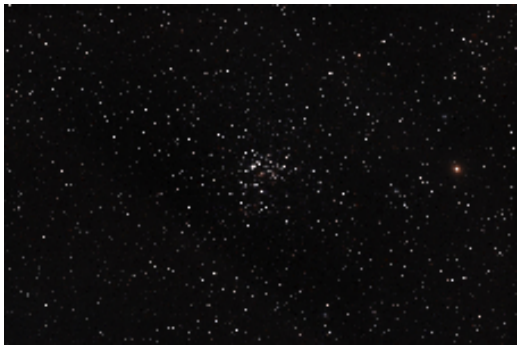
Mark Hodges 	**Mark Hodges** 
Mark Hodges 	**Mark Hodges** 
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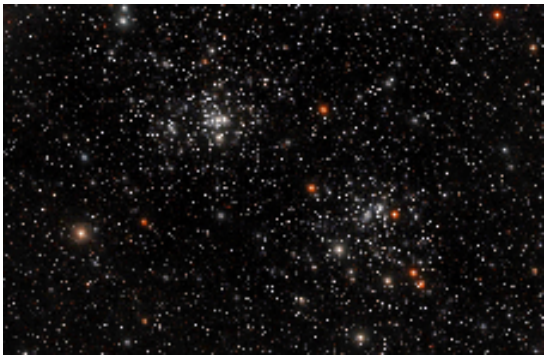
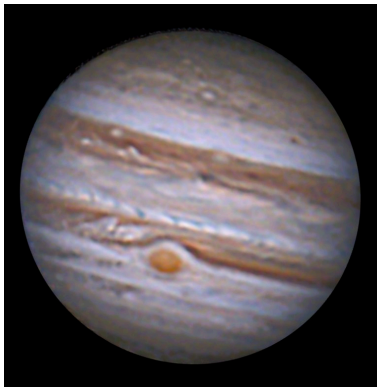
Mark Hodges 	**Ed Dixon** 
Ben Hartman 	**Bill Krause**