REFLECTIONS / REFRACTIONS

University Lowbrow Astronomers Monthly Newsletter

March 2026, Vol 50, Issue 3

Inside this issue:

NGC 7293 - HELIX NEBULA

BY GLENN KAATZ

The Helix Nebula, also known as NGC 7293, is a planetary nebula in the constellation Aquarius about 650 light-years away. This structure is also known as the Eye of God due to structures called "cometary knots" that are seen surrounding the central part of the nebula, giving the appearance of the iris of the human eye. The central star remnant is so energetic that it causes the expelled stellar material to glow brightly. Imaging of this object can be challenging due to its low southerly declination, especially in heavily light-polluted regions. For this image, I used:

Explore Scientific ED102 refractor
Celestron CGX mount
ASI1600MM main camera and ASI290MM guide camera
ZWO electronic filter wheel
ASIAIR plus
Astrodon 5nm Ha, Baader 6.5nm OIII and SII 1.25 inch filters
24 x 300 sec each for Ha, OIII, and SII for a total integration time of 6 hours
Processing: Pixinsight, Photoshop, and RC Astro Star, Noise, and BlurXterminator Pixinsight plug-ins.

M31

BY KYLE BJORKLUND

From Kyle's email: "Boy, did I learn something about processing in Siril over the last few days. And I suppose I should learn about the scripts more, but this let me learn the mechanisms happening in the background. Massive thanks for Douglas - when I read his post it gave an "ah-ha" moment. I was stacking fully white balanced frames so the edges were being finicky. I decided to mosaic all my tiles, then did an HDR merge with my shorter exposures, then finished with the white balance and background extraction - with little edits to hide the remainder of the panel lines in GIMP."

YOU'RE INVITED TO ... ASTRONOMER DEAN REGAS' ONLINE CLASSES

When: Wednesday March 11, 2026 07:00 PM Eastern Time

Topic: Comets and Meteors

A lot of comets have been making the news, but what are they and where do they come from? Plus what's the latest meteor showers and tips to see more shooting stars? Astronomer Dean Regas can take you into space for all the answers.

Link:
https://us06web.zoom.us/j/82695532026?pwd=bcp2bnmymnqcww5GYjJXRHzmmNCnWf.1
Passcode:990404

SIRIL SIMPLIFIED

BY JEFF KOPMANIS

I've been hinting and yammering about Siril and the marvelous new breed of Python scripts like VeraLux, CosmicClarity and SyQon, and of course, beaming at the results they give. Sooo…. I decided it's time to walk through the workflow to demonstrate how truly easy and approachable Siril is. In most dialogs, the default values are all you need. One caveat: since I only have captured frame data from my Seestar S30, it's what I'll be working with.

Get the Good Stuff

Get to https://siril.org and download the latest version of Siril (1.4.2) for your OS. It's available for MacOS, Windows, and Linux and works equally well on all of them. After firing it up for the first time, head to the **Scripts > Get Scripts** menu, and mark the checkbox next to the following list of scripts to retrieve and install them.

- VeraLux (all)
- CosmicClarity (all)
- AutoBGE (Automatic BackGround Elimination)
- SyQon-Starless
- OSC_ (pre-processing scripts)
- Seestar_Preprocessing.ssf
- DSA-Seestar_Mosaic_Preprocessing.ssf

CosmicClarity requires some local software to be installed. Go to their page and follow the instructions for your OS: https://www.setiastro.com/cosmic-clarity

Load Your Data

Siril helps you keep your files organized, so for each object, create a working directory, a **Home**, and inside, create a **Lights** directory for your subframes. If you have darks, flats, and bias frames, create directories for those inside the **Home**. Since I'm using a Seestar, I'll transfer only the .FIT files to the **Lights** directory. Siril will try to convert everything to .FIT (or .fits) file types, so save yourself some headaches. I'll be using the Rosette Nebula files (NGC 2238) for this tutorial.

In Siril, click on the "house" icon at the top to set your Home directory. Now, the fun can begin!

Stack 'Em Up

For Seestar files, to get a stacked image, we simply run the **Scripts > Siril Script Files > Seestar_Preprocessing.ssf** and it'll register, align and stack all of your subframes. If you have a more traditional image capture, you can use one of the **OSC** Siril scripts to automate things.

If you want to manually process and stack your images, Siril has all of the tools to do it, and it's relatively simple, but it's best described by Rich of the **Deep Space Astro** YouTube channel in this video: https://youtu.be/jwBLVT3Ecas

Whichever method you use to stack, you'll want to **Open** the resultant image if it doesn't autoload (some of the scripts do, some don't).

AutoStretch View

One word on the views that Siril is showing you. If you're just starting out your process, Siril will default to the Linear view, which won't display much of anything. To get a glimpse of the "pre-stretch" results, using AutoStretch view is better. BUT… remember to set it back to Linear before stretching! The control is at the bottom of the Siril window.

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SIRIL SIMPLIFIED continues ...

The Fun Starts!

I like to take care of the low-hanging fruit before I start finessing an image. So, running **Scripts > Python Scripts > Processing > AutoBGE** is my first run; all of the default values work fine. AutoBGE will get rid of a lot of gradients and other noisy stuff. **Image Processing > Remove Green Noise** is another quick run to get rid of junk.

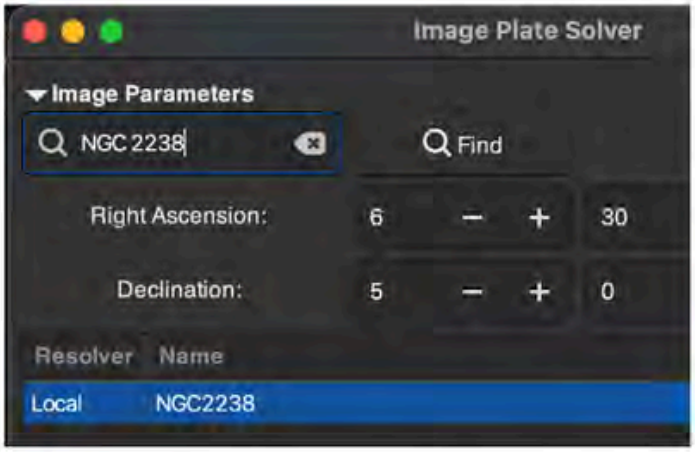
It's worthwhile to save a version of the file between each of these big steps to make it easier to pick up at a point in your process. Siril is VERY good at Undo/Redo, but it's a nice safety blanket. Use the "download" (Save As) button to the right of Save to bring up a file dialog so you can name your intermediate file.

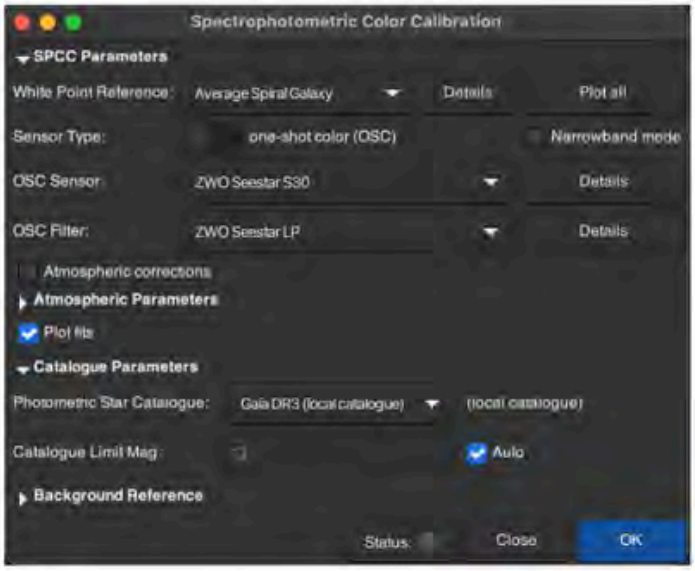
I like to do a color calibration before going further. To use the better color calibration tool, it requires you to Plate Solve first. Tools > Astrometry > Image Plate Solver. You'll need to find the object, so in my example, I'll type in "NGC 2238", press Find to ensure it gets the correct object, and then press the OK button to plate solve it.

To perform the color calibration, the best tool to use is Image Processing > Color Calibration > Spectrophotometric Color Calibration. In this panel, it's important to tell it what camera and filter you're using and whether you're using a Narrow Band mode or not. In my case, as long as I get the Sensor and Filter set, I'm good. I'd recommend un-checking the Plot fits box, as it only shows some interesting, but ultimately kinda useless graphs. Siril will remember these settings, so you only have to do it the first time out. Press OK to do the calibration.

SyQon Star Removal

The strategy is to take the stars out of the photo so that we can enhance the nebulosity of the image without blowing out the stars. Once the starless image is as good as we can make it, we carefully add the stars back in to retain their captured color and sizes. Key to this whole process is getting good star removal without affecting the background nebulosity. The SyQon company's tool does a spectacularly great job of it without adding background noise (that you have to remove later).





Before you begin, make sure Siril is displaying in Linear mode. Bring up **Scripts > Python Scripts > Processing > SyQon-Starless**. The defaults are set to reasonable parameters for your image and there's not much to configure, so press **Process Image**. It will load up the starless image and write out the star mask file.

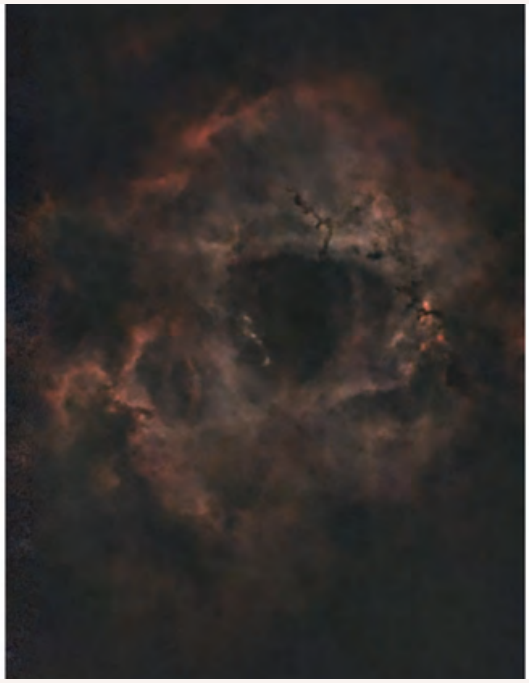
On the next page is what the Rosette Nebula looks like without stars. As you can see, even in an unenhanced image, lots of nebulosity shows up, with dust lanes, colors, shadows, etc. What a great place to start from!

Color Stretching

Siril has a number of built-in ways to stretch image colors, but frankly, they're complicated to use and simply don't produce the results I'd hoped for. However, the VeraLux suite of tools has a HyperMetric Stretch that is both easy to use and

SIRIL SIMPLIFIED continues, p. 5

SIRIL SIMPLIFIED continues ...



highly effective. Bring up the dialog through **Scripts > Python Scripts > VeraLux > VeraLux_Hypermetric_Stretch**. Hit the Live Preview button to bring up a preview window and size it (it will default to showing you a summary color histogram and give you zoom in/out abilities). Next, hit the **Auto-Calc Log** D button to take a reading of our image and give us some reasonable values to start with. Note, that **NOTHING** will affect your working image until you press the PROCESS button, so feel free to experiment with the 3 sliders. A summary of those...

- **Target Bg**: tends to default to 0.15, but sometimes lowering that to 0.14 can eliminate some background haze.
- **Log D**: This is your basic "brightening" slider. Use it to find the brightest your image can go without blowing out colors or pixels.
- **Protect b**: This slider can help protect shadows and other more subtle details from the Log D effects. It's a subtle control, so you may not need it.
- **Color Strategy**: This slider will control how "hard" or "sharp" vs. "soft" or "smoothed" the effects will be. Again, this is a subtle control, so you may not need it.

If you need more control on this panel, in the 0. **Processing Mode** section, you can switch to Scientific **(Preserve) mode**. This adds 3 more sliders to give you more control, but unless you're having trouble juggling the parameters to get the image you want, it can be left in Ready-To-Use mode.

Denoising

Sometimes, stretching can cause excess noise in the image to appear, and at this point, I like to use the **Cosmic Clarity Denoise** tool to massage it away. Bring up **Scripts > Python Scripts > Processing > CosmicClarity_Denoise**. The only 2 controls are which Mode to use, which I tend to get the best results with Full, and then how much **Denoise Strength** to use. This 2nd control can be bumped up or down depending on how much noise there is, but I find 0.50 is plenty in most cases.

Color Saturation and Hue

If you find your colors are too dull or too vivid, the VeraLux Vectra tool allows you to vary saturation and hue across both RGB and CMY primary and secondary color groups. **Scripts > Python Scripts > VeraLux > VeraLux_Vectra** will bring up the panel. Note, there's a fun "vector" display to show you your color profile. A preview of your image is included in this window. When you finish with Vectra, make sure you **Save** or do a Save-As, as described above.

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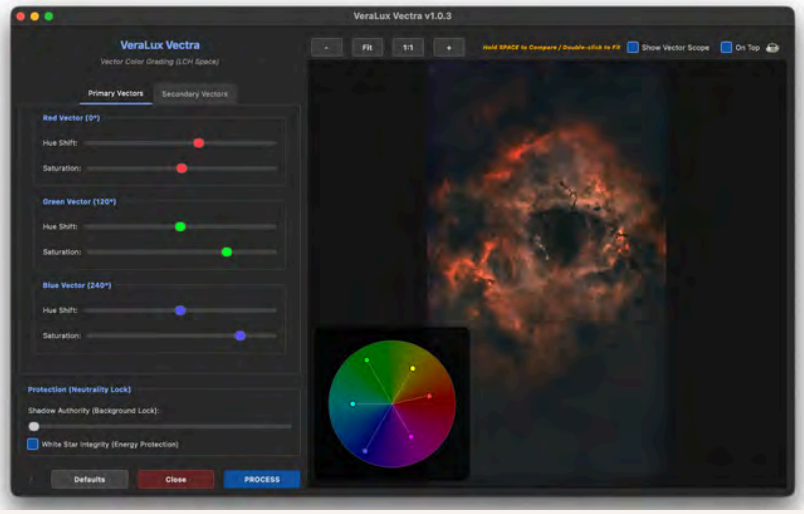
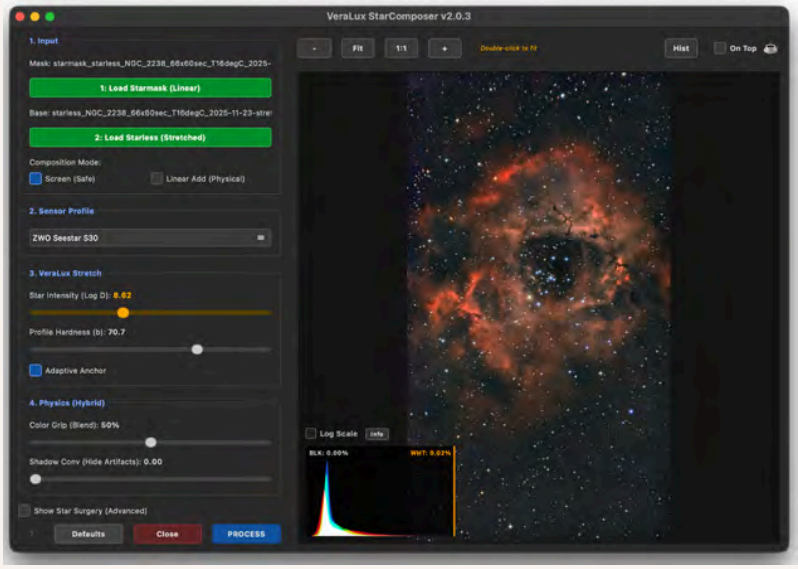
SIRIL SIMPLIFIED continues ...

Bringing It All Back Together

You've slid and tweaked as much as you can and your image is looking pretty good, so it's time to bring the stars back into the fold. **Scripts > Python Scripts > VeraLux > VeraLux_StarComposer** will bring up the tool. It has numbered steps to guide you to load your star mask first, then your starless stretched image. The tool will look in your Home directory for these files. Next, make sure your **Sensor Profile** is correct to match the setting(s) you've made earlier (it should).



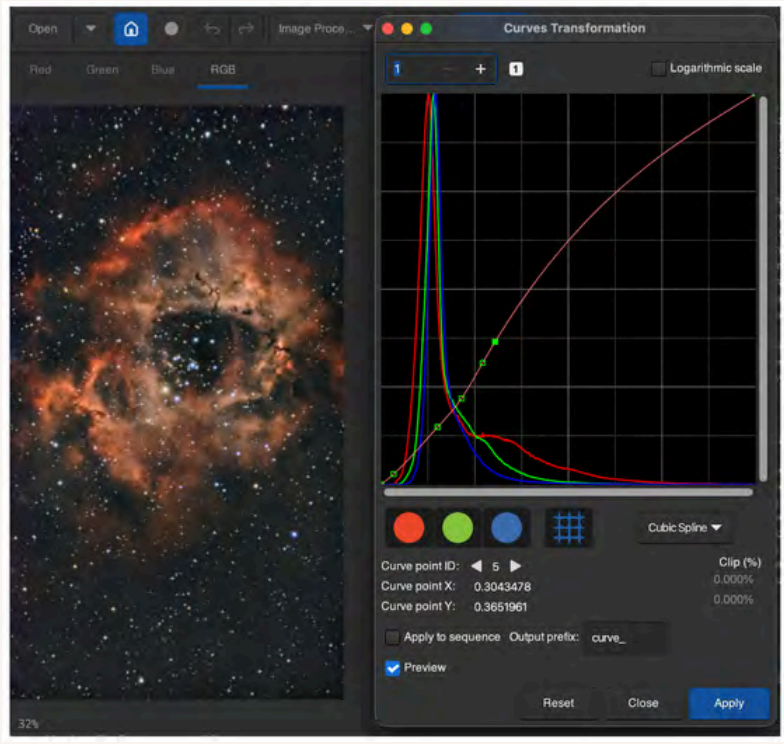
Now comes the "magical" part! Slide the **Star Intensity Log D** (orange) slider to increase the brightness (and apparent size) of your stars. Use the **Profile Hardness** to control how the stars look: slide to the right will give you more point-like stars, while sliding to the left gives you a softer profile.



As with the other tools, nothing will happen until you hit **PROCESS**. After closing the panel, be sure to **Save** your file.

Final Touch-Up

If after all of this tweaking you still want to make your image "pop", you can use a traditional Curves tool (works just like GIMP or PhotoShop) to boost or calm colors in your image. I**mage Processing > Stretches > Curves Transformation** will bring up the tool. You can use multiple flex points to vary the curve, turn colors on/off and use the left mouse button to add a flex point, or the right mouse button to remove one. You can **Apply** changes within the tool as well. When you're done, **Close** the tool. **Save** your file!



Sharing Your Work

Siril gives you 2 ways to do this very easily. With the button with a Camera on it, you can choose to "Save a Unique File", which will save a .PNG file to your Home directory, or you can Copy to Clipboard to paste it into an email, or a Facebook post, or wherever.

Cleaning Up

Siril runs pretty cleanly, but the aligning/stacking process leaves a process directory which isn't used again and can be discarded.

SIRIL SIMPLIFIED continues, p. 7

SIRIL SIMPLIFIED continues ...

Final Results

In spite of the apparent length of this article, the process is really quite easy and once you get used to a few things, most post-processing can take 20-30 minutes, even if you're picky. The real test is what you get out of the effort. At right is the best I could conjure up with the Seestar app, and below is what I did while writing this article. I hope that makes a convincing case for kicking the tires with Siril. Have fun!

UPCOMING SPEAKER SCHEDULE

March 20: Jim Shedlowski

Topic: The Way We Found the Universe

April 17: TBD

May 15: TBD

June 19: TBD

July 17: TBD

August 21: Club Picnic!

University Lowbrow Astronomers - Meeting Minutes February 20, 2025 7:30pm

Our February meeting at the Detroit Observatory began at 7:36 PM with guest speaker Dr. John Monnier talking about his work as the Principal Investigator of the STARI Mission. Ground based interferometry has been used many times to reduce both atmospheric disturbance and to null out a central star. The STARI mission is an engineering proof-of-concept to demonstrate feasibility of Infrared (IR) interferometry from low Earth orbit using commercial cubesat components. The goal is to encourage space based interferometry in future science missions searching for earth-like exo-planets. The main challenges are project management, cost, and formation flying. Dr. Monnier hopes to demonstrate good optical performance at sufficient separations to achieve a dynamic range of 1,000,000:1 in measuring the IR spectra of earth-like planets.

At 8:47 PM Charlie Nielsen began our business meeting.

Charlie sent an email with proposed changes to our by laws and has received a lot of support in replies. The plan is to vote on the by-law changes at our March meeting, please join us. Charlie is tracking email responses, but we will be voting in person.

Last meeting we discussed purchasing a one-power image intensifier that would let people see the nebulosity and rich star fields of the milky way. A fully equipped unit would cost around $5000. While expensive, it would offer a unique view of the night sky. The Ford astronomy club has one and so does Brian Ottum. Brian has kindly offered to bring his image intensifier to an open house, so we can try it and evaluate its use with members and the public. Please come out and try it. We would like member feedback before we consider such an expense.

Michigan Math and Science Scholars (MMSS) has requested three dates for viewing at Peach mountain each with rain dates: June 23rd, (rain date 25th), July 14th, (rain date 16th), and July 21st, (raindate 23rd). Consider helping with these very receptive high school students.

August 29th, 2026 is the Owosso Airport fly-in star gazing event – look for email on how to participate.

VP Ken Cook reported he went to the Hayden Planetarium in Manhattan and purchased gift cards from their gift shop. We can use them to thank our speakers. Dr Fred Adams declined our ususal offer of a hat, tee shirt, or gift card after his talk at our January meeting. Ken passed around a card for members to sign to thank Dr Adams for his presentation.

Ken also reported that Christine Cook submitted our upcoming events to the Ann Arbor Observer for both print and web editions.

VP Don Fohey brought newly revised and printed ULA brochures. Please take a few and give them to interested people.

Don reminded us that next week (23rd - 27th) has very nice planetary alignments. He will set up a scope for public viewing in Leslie Park on Friday the 27th. Look for an email with details.

OD Jack Brisbin reported that the observatory is in good shape having survived very cold January temperatures. He presented graphs of ambient, dew point, and inside temperatures. Our two electric heaters kept the observatory temperature at or bove 40F well above the dew point. Our temperature logger hangs from the McMath mount in the middle of the space.

Jack showed a picture of the club 17.5" scope mirror mount and electrical components. Work will continue to replace aging batteries, wires, and connectors to improve its reliability.

Jack discussed the difficulties with moving the 17.5" and other equipment in and out of the observatory due to the rocks and sloping ground near the entrance. He had pictures of our current sloped entrance and showed catalog pages of metal ramps to improve access. Kurt Hillig asked about maximum acceptable slope and possibly using ⅜" plywood for temporary ramps. There was discussion about improving the surface with: ramps, concrete, re-grading, or filling with dirt. No recommendation yet on how to proceed but Jack and other members will continue to work on plans.

FAAC Astronomy Conference and swap will be March 28th, 9 AM - 3 PM. Jack will reserve a swap table to sell some excess and little used equipment. Members attending the swap may use the table and floor space to show and sell their equipment too. Please email Jack if you are interested in using the table space.

Jeff Kopmanis reported that Barry Chapman and Tim Miller are quickly moving our website into Barry Chapman's web hosting servcie. They expect to have all our web content moved or archived prior to the expiration of our Hostgator contract. They plan to move the club domain and associated DNS records on Sunday February 22nd. Switching access to the new hosting will then be under our control. The officers have access to the new site via a temporary URL, and the public content looks very good so far. Barry and Tim will switch to our new website once all the infrastructure and the public content is in place. They plan to transfer the youngastronmomers domain after the main site is moved and operational.

Jeff brought flyers from the FAAC conference and swap, please take one if you would like.

Jeff noted the Astronomical League sent an email informing people that any request from their officers for monetary help is a forged scam attempt which should be deleted.

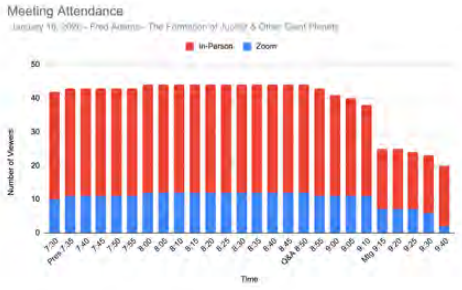
He enjoyed reading the Living Universe, a book by Brain Turner sent to the club by Brite Publishing. It covers the big bang to the present day and our copy is available. Please email Jeff if you would like to borrow it.

Jim Forrester mentioned that Maybury State Park astronomy night is March 21st, which is also a Messier Marathon night. Don Fohey sent an email to Friends of Maybury State Park asking about the event but has not received a reply. More information from the City of Northville:
https://www.northville.org/events/details/astronomy-at-the-equinox-6740
and possibly Farmington Community Stargazers: https://sites.google.com/view/farmingtonstargazers

At 9:30 PM Kurt Hillig made a motion to adjourn, supported by Doug Nelle.

REMINDER: MEMBERS PLEASE HELP!
Plan on attending an open house this summer. Your presence with or without a scope is helpful. Come and share the night sky with the public, they appreciate learning about and seeing the stars that are fading away in our overly bright suburban nights.

Minutes respectfully submitted,
Ken Cook, VP

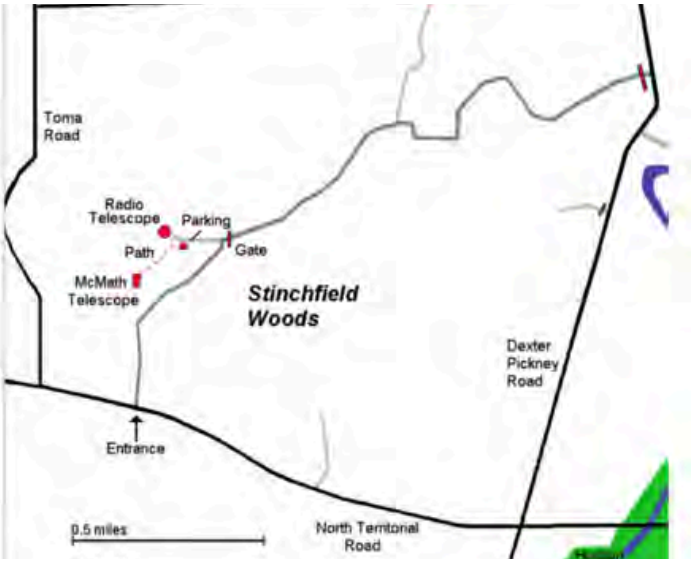


Max	12	32
Percent	27.27%	72.73%
Total	44	

PLACES & TIMES

Monthly meetings of the University Lowbrow Astronomers are held on the third Friday of each month at 7:30 p.m. The location is usually the Judy & Stanley Frankel Detroit Observatory. The Observatory is located at 1398 E. Ann St., Ann Arbor. The Ann Street Parking Structure (M86), the Catherine Street Structure (M5), the Glen Street Structure (M61), and the School of Public Health II Lot are usually open after 6:00 p.m. Mon-Fri. The M86 structure is closest to the Detroit Observatory.

Peach Mountain Observatory is the home of the University of Michigan's 25-meter radio telescope and McMath 24" telescope, which is maintained and operated by the Lowbrows. The entrance is addressed at 10280 North Territorial Road, Dexter MI, which is 1.1 miles west of Dexter-Pinckney Rd. A maize and blue sign marks the gate. Follow the gravel road to the top of the hill to a parking area south of the radiotelescope, then walk about 100 yards along the path west of the fence to reach the McMath Observatory.



PUBLIC OPEN HOUSE / STAR PARTIES

Public Open Houses / Star Parties are generally held on the Saturdays before and after the New Moon at the Peach Mt. Observatory but are usually canceled if the forecast is for clouds or temperatures below 10 degrees F. For the most up-to-date info on the Open House / Star Party status call: (734) 975-3248 after 4 pm. Many members bring their telescope to share with the public and visitors are welcome to do the same. Mosquitoes can be numerous, so be prepared with bug repellent. Evenings can be cold so dress accordingly.

Lowbrow's Home Page
http://www.umich.edu/~lowbrows/

MEMBERSHIP

Annual dues are $30 for individuals and families, or $20 for full time students and seniors age 55+. If you live outside of Michigan's Lower Peninsula then dues are just $5.00. Membership lets you access our monthly newsletter online and use the 24" McMath telescope (after some training). Dues can be paid by PayPal or by mailing a check. For details about joining the Lowbrows, contact the club treasurer at: lowbrowdoug@gmail.com

Newsletter Contributions:
Members and non-members are encouraged to write about any astronomy-related topic. Contact the Newsletter Editor: Amy Cantu cantu.amy@gmail.com to discuss format. Announcements, article, and images are due by the 1st day of the month as publication is the 7th.

Telephone Numbers:

President:	Charlie Nielsen (734) 747-6585
Vice President:	Don Fohey
	Brian Ottum
	Ken Cook
	Tim Miller
Treasurer:	Doug Scobel
Observatory Director:	Jack Brisbin
Newsletter Editor:	Amy Cantu
Key-holders:	Jim Forrester
	Jack Brisbin
	Charlie Nielsen
Webmaster:	Barry Chapman
Online Coordinator	Jeff Kopmanis

A NOTE ON KEYS: The Club currently has three keys to the Observatory and the North Territorial Road gate to Peach Mountain. University policy limits possession of keys to those whom they are issued. If you desire access to the property at an unscheduled time, contact one of the key-holders. Lowbrow policy is to provide as much member access as possible.

Email to all members
Lowbrow-members@umich.edu