

REFLECTIONS / REFRACTIONS

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University Lowbrow Astronomers Monthly Newsletter

August, 2026, Vol 50, Issue 7

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WR-134

BY GLENN KAATZ

I recently completed this image of WR-134 and its environment. WR-134 is a variable Wolf-Rayet star located around 6,000 light years away in the constellation Cygnus, surrounded by a faint bubble nebula blown by the intense radiation and fast wind from the star. WR-134 is five times the radius of the sun, but due to a surface temperature over 63,000 K it is 400,000 times as luminous.

This image was collected over 4 consecutive nights and is in the HOO palette. WR-134 is also known as HD191765, HIP 99377, and V1769 Cygni. It is the brightest of the four stars that are in close proximity within the bubble.

William Optics Zenithstar 61
William Optics Flat 61 field flattener
ASI1600MM Pro main and ASI 120MM mini guide cameras
ZWO AM5N harmonic mount
ZWO OAG and electronic filter wheel
ZWO ASIAir Plus
Astrodon 5 nm Halpha (53 x 300 sec frames), Baader 6.5 nm OIII (72 x 300 sec frames) filters
Total integration time: 10h 50 min

Processing: Pixinsight with RC-Astro Noise, Star, and BlurXtermionator plugins, touchups done using Adobe Photoshop □



Ann Arbor, Michigan

DEEP INTO THE LAGOON (M8)

PHOTOS BY ADRIAN BRADLEY, DONOVAN DREW, JEFF KOPMANIS, CHARLIE NIELSEN, & BRIAN OTTUM

At right, Donovan Drew. Just over 10 hours of imaging at 1477mm focal length, f/7

Right middle: Brian Ottum. 56 minute, 420mm, f/2.8. 6-inch reflector

Bottom right: Jeff Kopmanis. 40 mins. 30s frames. Seestar, Alt-Az mode

Below: Charlie Nielsen. 60 min. 30s frames, Seestar, EQ mode

Next page, Adrian Bradley's wide view of the region



BELOW: Adrian Bradley's photo of the Milky Way core, a wide-angle view of the region that includes M8 (the Lagoon Nebula), featured in close-up by several Lowbrow members on the page 2. □



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

**Eclipse Chasing
Wednesday August 5 at 7pm
EDT**

**Astronomer Dean Regas takes
you around the world to see
eclipses past, present, and
future.**

**Use this link on Aug 5:
[https://us06web.zoom.us/j/832
88344984?](https://us06web.zoom.us/j/83288344984?pwd=0HTMhCr181kqijaKMtWb3a23PafKqp.1)
pwd=0HTMhCr181kqijaKMtWb
3a23PafKqp.1**

Passcode:821541

**Dean Regas, Your Astronomer
Host of the Looking Up podcast
<https://www.astrodean.com>**

SN2026 SQF IN NGC3310

BY ADRIAN BRADLEY

I was able to put my SeeStar 50 on NGC 3310 and capture light from the supernova.

Conditions:

Location: Van Buren Twp, MI, in a 'back 40' nature area by condos (where my home is)

SQM-L Meter - 17.75 avg.

Light Pollution from nearby Canton, Ann Arbor, and even Detroit - heavy!

Stars Naked Eye Visible: All 8 of the Big Dipper Asterism (if you really try hard), All three main stars of the Summer Triangle, plus Sadr and other stars of Cygnus, and, well, the Moon.

Image time: 20 minutes

Per Frame: 30 seconds.

Instrument: SeeStar 50

Time Imaged: 11:30 to 11:50pm EDT

Description:

NGC 3310, 59 million light years away from us, has a visual magnitude of +10.80. It's apparent size in arc minutes is 3.1 x 2.4. So it shows up as a tiny blob when the SeeStar hits it in the conditions I've imaged it at... and likely would remain a blob even if imaged in dark conditions.

The supernova appears immediately above and left of the galaxy, indicating that a star within the outskirts of the galaxy went supernova. This might be akin to what the Milky Way would look like from this galaxy if Betelgeuse went supernova.

Estimating the magnitude of the supernova:

In the original email thread, the imager mentioned magnitude +11.6. This is very likely, but we can also look at stars that were imaged around it that have similar brightness and figure out how close that estimate is.

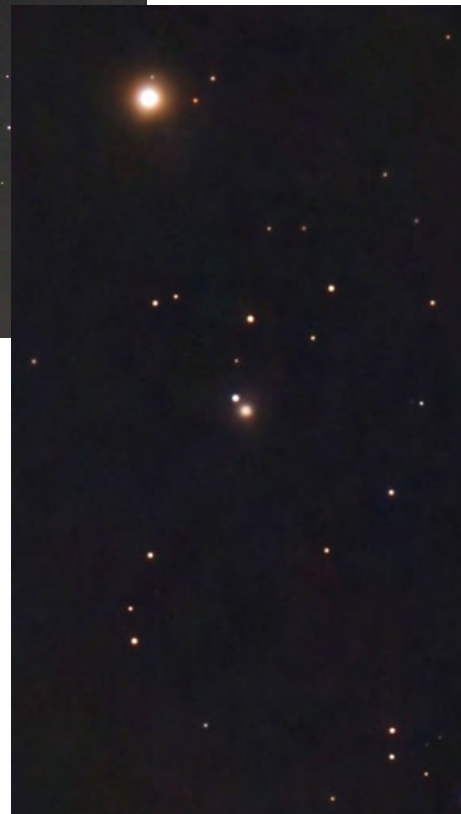
In the image there are three stars above it that have a similar brightness to the supernova. Their license plates and magnitudes (as gathered from Sky Safari) are listed below, from left to right:

GAIA 850101300645654272 - +13.27

TYC 3816-0149-1 - +12.39

GAIA 850101811745985408 - +12.87

The faint star that the Seestar picked up, just above the supernova, was not shown in Sky Safari (!). But another



nearby star, under the third listing above, also showed up and is in Sky Safari. So its license plate reads:
GAIA
8501009914080110
08 - +14.56

SN2026SQF is visibly brighter in the image than this star, so the apparent magnitudes make sense.

It wouldn't be a stretch to say that the actual magnitude of the supernova as it sits now is somewhere between +12 and +13th magnitude. But, with my sky conditions, the +11.6 is likely correct. Maybe it averages to around +12th magnitude.

Images below show the full screen SeeStar image, a cropped image showing a closer in look at the galaxy 'smudge', the supernova that appears next to the smudge, and a few of the stars in the starfield to compare magnitudes with. If you look at images of this galaxy in star charts/maps/apps, you will be able to verify that this extra 'star' does not show up in any of them. □

AAS Public Policy Experts Available to Comment on FCC Approval of Reflect Orbital's Earendil-1 Mission

On Thursday, 9 July, the Federal Communications Commission (FCC) granted Reflect Orbital permission to deploy and operate its proposed Earendil-1 demonstration satellite in low-Earth orbit using the requested radio spectrum. Earendil-1 would use an 18 m x 18 m mirror to reflect sunlight onto Earth's surface, creating a 5-km-wide beam on the ground. This satellite would test Reflect Orbital's technology for the company's long-term goal of delivering sunlight on demand using a constellation of tens of thousands of in-space mirrors.

The American Astronomical Society (AAS) has long raised concerns about the cumulative impact of reflective, bright satellites on optical astronomy and the natural nighttime environment, in addition to potential harmful radio frequency interference impacting radio astronomy.

The AAS has released the following statement in response to the FCC's ruling:

The American Astronomical Society (AAS) is dismayed by the Federal Communications Commission (FCC) decision on 9 July to grant a license to Reflect Orbital. As the AAS expressed to the FCC, Reflect Orbital's proposed satellite, which would reflect sunlight back to Earth at night, carries the potential for significant harm to our members and the broader community of those who depend on a dark night sky. This harm could include damage to sensitive research telescope equipment, potential flash-blinding of pilots and drivers, and — as Reflect Orbital stated in its own FCC filings — potential permanent eye damage to anyone looking through a mid-sized telescope.

The AAS is also deeply concerned by the statement from the FCC that the deployment of a solar reflector is beyond the scope of the Commission's authority to regulate. While the current license is for a single satellite, this logic implies that the Commission would also have no ability to consider the severe implications of a constellation of 50,000 solar reflectors like that envisioned by Reflect Orbital. In the absence of another licensing agency that could take these considerations into account, we believe that it is critical for the FCC to consider all of the impacts of the satellite's use case.

Historically, we have greatly appreciated the FCC's practice of requiring satellite operators to execute coordination agreements with the National Science Foundation. We are thus further dismayed to see no requirement for a formal coordination agreement to protect federally funded astronomical facilities in the FCC Order and Authorization. While we fully support American technical innovation in space, this innovation cannot come at the cost of imperiling scientific research, which has been at the forefront of American innovation and global leadership for decades.

AAS public policy experts are available to comment on the FCC's approval of Earendil-1 and the impact of Reflect Orbital's proposed mission on ground-based astronomy, the night sky, and the broader orbital environment. To schedule an interview, please contact AAS Deputy Director of Public Policy Roohi Dalal at roohi.dalal@aaas.org, with CC to press@aaas.org.

THE LONG WAY ROUND: MOVING TWENTY YEARS OF LOGS INTO SKYSAFARI WITH AI: PART 2

BY ROBERT WADE

SkySafari 8 Pro does not store its data in a conventional relational database. What it uses instead is a Parse Local Datastore: a mobile-first cloud-synchronisation framework whose offline cache happens to live inside a SQLite file. The discovery that this was what we were dealing with reframed the project entirely.

Parse was a cloud database platform that became popular with mobile app developers in the early 2010s. Its appeal was that it handled the parts of building a connected mobile application that most developers find tedious: create an object on the device, and Parse would automatically sync it to the cloud when connectivity allowed, cache it locally for offline use, and resolve conflicts on reconnection. Simulation Curriculum built SkySafari around this architecture. The observations, sessions, equipment, and sites you create in the app are all Parse objects. When the app has cloud access, they live in the LiveSky cloud. When it does not, Parse keeps a local copy in its offline store, which is a SQLite file buried in the application's sandboxed container.

That last detail proved immediately relevant. SkySafari on the Mac runs as an iPad application under Apple's compatibility layer, which means it is sandboxed: isolated in a private container directory that other applications cannot ordinarily access. The database does not sit where a conventional Mac application's data would be found. It lives at a path inside `~/Library/Containers` that you would not know to look for without some investigation, under the app's bundle identifier, several directory levels down, in a file named `ParseOfflineStore`. Whether the Android version of SkySafari uses the same internal structure is an open question; the work described here was conducted entirely on the iOS/macOS version, and I cannot speak to what an Android installation looks like under the hood.

Opening `ParseOfflineStore` in a SQLite browser, you might initially feel reassured. It is a genuine SQLite file with genuine SQL tables. That reassurance evaporates quickly. The database has exactly two tables: `ParseObjects` and `Dependencies`. `ParseObjects` contains essentially every record in the application: observations, sessions, equipment definitions, observing sites. Its column structure is: a local identifier, a class name, and a blob of JSON text. Every real piece of information is encoded inside the JSON. There are no columns for date, telescope, or object name. You cannot write a simple



SQL query asking for all observations of M13, because the database was not designed for direct human access. What you are looking at is a serialised queue of cloud objects, stored for offline use in a format designed for a cloud framework.

AstroPlanner's database sits at the opposite end of this spectrum. It is a clean, conventional SQLite file with named tables (Observations, Sessions, XRef, and a handful of supporting tables), typed columns, and a schema that makes sense on inspection. I have built simple SQL databases, and AstroPlanner's was readily legible. Date and time occupy one column, telescope another, object identifier a third. The coordinate data is in decimal hours and degrees. You can write a SQL query that reads like a sentence and get back something immediately useful. The contrast between the two databases said a great deal about their origins: one built by a developer writing dedicated software for desktop use, the other built on a mobile cloud platform and adapted for a desktop context only later.

Reverse-engineering a closed application's data format requires a specific approach: make a controlled change inside the application, snapshot the database before and after, and study what changed. Log a single observation manually in SkySafari. Quit the app. Copy the database file to a safe location. Ask Claude to compare the two versions: what was added, what changed, in what format. I found deciphering this structure was very tedious, with Claude writing Python scripts for me to run and paste back. I was even starting to pick up some Python. This sounds laborious, but it is rigorous. It shows exactly what the application writes, with no guesswork about what ought to be there, and it can be repeated for different object types, equipment combinations, or edge cases.

What we found in the JSON was, once decoded, not entirely unexpected for an astronomy application. Times are stored as Julian Dates, which will be familiar to anyone who has worked with telescope control software, written variable-star logs, or consulted an ephemeris. The Julian Date is the standard continuous day-count used in positional astronomy, free from the complications of calendar systems, and SkySafari uses it for both the start and end time of each observation. Converting from AstroPlanner's internal time representation required a calculation with well-known constants. Similarly, celestial coordinates are stored in radians rather than the degrees or hours that observers and most logging software use. This is standard practice for software that performs spherical trigonometry on the sky, and the conversion is a single multiplication. These two findings were mildly elegant: the

THE LONG WAY ROUND continues, p.9

THE LONG WAY ROUND continues...

application thinks the way an astronomer or a mathematician thinks. and where it led, is where Part 3 picks up.

Equipment references were less intuitive. In AstroPlanner, the telescope field in an observation is free text: it says something like "Obsession 20-inch" or "Coulter Odyssey 13.1". In SkySafari's Parse world, equipment objects are first-class cloud entities, each with a ten-character alphanumeric identifier assigned when the object was first created. An observation does not name the telescope used. It references the Equipment object by its identifier, a string such as Fz1TbNEDfg. To inject an observation correctly, you need the right identifier for every telescope, every eyepiece, every observing site, and the user account itself. These identifiers are not documented anywhere. They are unique to each installation. Reading them out of the database was a prerequisite to writing anything useful into it, and it was one of the tasks Claude handled by parsing the existing ParseObjects rows.

The proof came once the encoding was understood well enough to attempt a write, and it came in three stages, not one, because a single test observation could only ever tell us about a single kind of object. Claude built the first as a deep-sky observation: M22, the correct Julian Date, coordinates in radians, the Obsession 20-inch referenced by its objectId, a seeing value, a placeholder comment. Written into a copy of the database and swapped in for the live file, it appeared in SkySafari, attached to the right object, rendered without complaint. Part 1 of this series described that moment; what it left out is that M22 was only the first of three fabricated tests we ran before trusting the method at all.

The second test was a planet, because planets are stored nothing like deep-sky objects. Mars carries no coordinates whatsoever: a planet is addressed by a file/index lookup into SkySafari's own ephemeris engine, which computes the sky position itself, live, for whatever date the observation carries. Fabricating a Mars observation with a guessed index, and separately setting a specific seeing rating on it, confirmed both the addressing scheme and that SkySafari's Antoniadi scale runs the same direction as AstroPlanner's: "I" is the best seeing, not the worst,

settling a question that would otherwise have gone into the database backwards. The third test was a comet. A fabricated observation of 10P/Tempel came back not as our submitted coordinates but as SkySafari's own object, "10P/Tempel 2", its position computed live for the observation date, proof that comets carry orbital elements rather than a static point the way a galaxy or a cluster does. Three fabricated observations, three different structures uncovered. By the third one, the shape of SkySafari's data model was clear enough to stop decoding single objects and start asking whether the same recipe would hold for thousands of real ones.

Understanding one object of each kind was not the same as moving 3,108 observations across more than sixty astronomical catalogues. The next test was different in kind: not decoding one more object, but asking whether the recipe held at scale. That question, and where it led, is where Part 3 picks up. □

**LOOK FOR PART 3 IN THE
NEXT ISSUE OF REFLECTIONS!**

UPCOMING SPEAKER SCHEDULE

August 21: Club Potluck Picnic!

September 18: canceled (conflict with AATB)

October 16: Jim Shedlowski

Topic: Peenemunde: The Birthplace of Space Travel

November 20: Sebastian Garcia

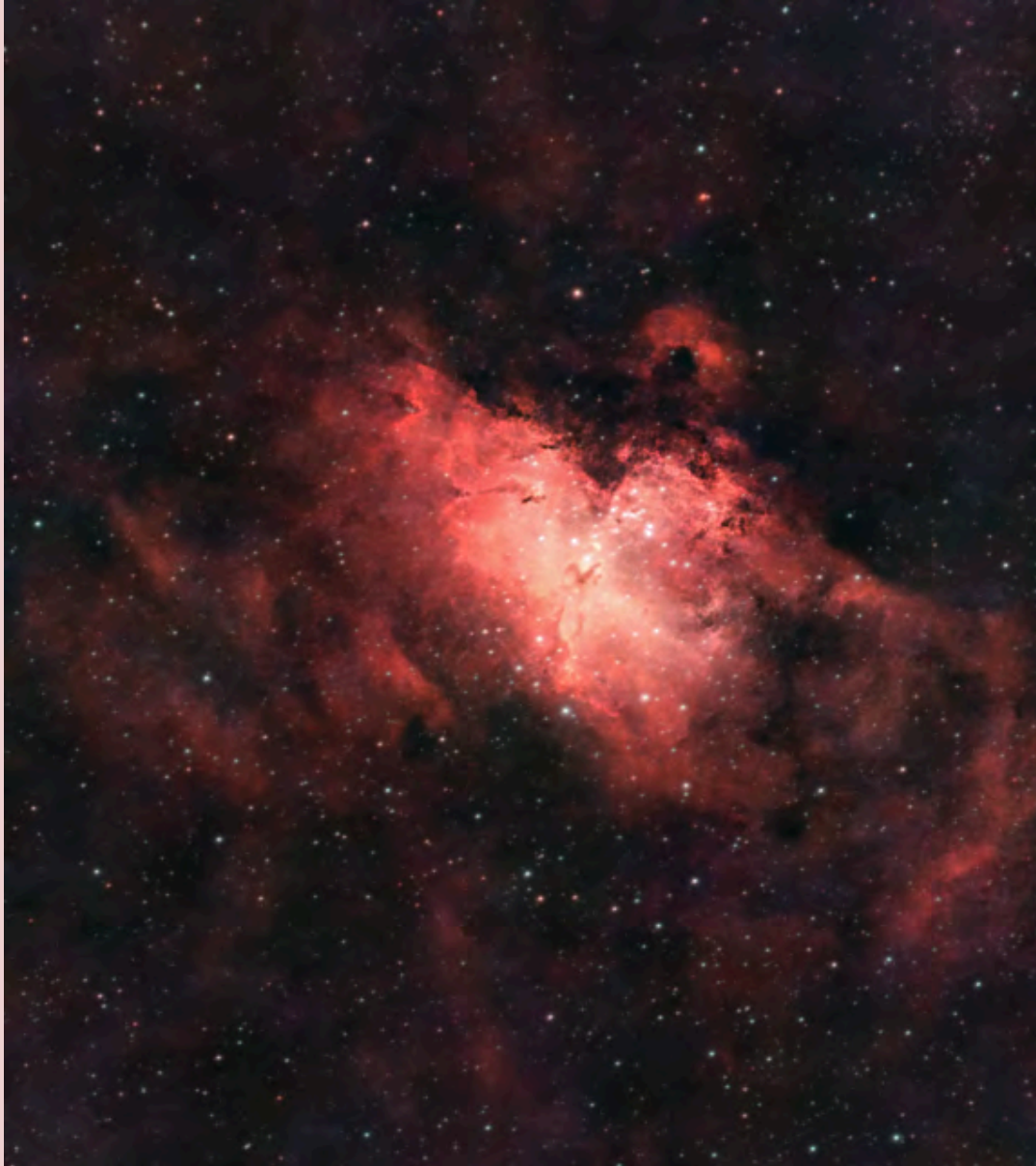
Topic: Telescopius Software Update

December 18: Jim Shedlowski

Topic: From Peenemunde to the Moon

January 15: Cayanne Matt

Topic: Evolution of scaling relations between galaxy properties and supermassive black hole mass



SEESTAR S30 EQ MODE & M16

BY JEFF KOPMANIS

From an email to the club: “Well, the tracking problems on the Seestar S30 with version 3.3.0 still persist. I managed to get 60s subs last night, but with some ovoid stars and only about 50% efficiency. 30s subs weren't any better. It was slightly smokey last night, but nothing like what I've become accustomed to the Seestars being able to poke through. I eagerly await v3.4.0.

Anyway, after completing the session, this morning, when I pulled the files off (which combines them with the collection of raws previously collected), I found some 852 frames since August of 2025 of M16, the Eagle Nebula, taken in both EQ and AA modes and with exposure times of 5s, 30s and 60s. I stacked using the Nazstromony SmartTelescope PP (pre-processor) stacking script (for Siril), which is actually quite nice and offers alot of flexibility. This is freely available, and I'm thinking of ditching my hacked stock script.

The other development is the discovery of Cosmic Clarity Native, which combines all of the Seti Astro Cosmic Clarity tools into a single package, which is painfully easy to install compared to the standalone tools and scripts that Siril offers. I've ditched those other scripts in favor of this single tool, which still calls upon the excellent Cosmic Clarity tools, but is much nicer to deal with.” □

Due to the Art Fairs in Ann Arbor, our July 2026 meeting was held in room 1180 of the Duderstadt Center on U of M North Campus and began at 7:35 PM with some zoom and audio technical difficulties. Dr Rudi Lindner, our guest speaker, gave a talk entitled The Rise and Fall of a Scientific Fact: The Campbell Kapteyn Effect. The story involved many 19th and 20th century experts in astronomy who could not explain the observed correlation between star spectra and proper motion velocities. Twenty-six people attended the talk: eighteen in person, and eight via zoom. Look for the recording on our YouTube channel.

At 8:45 PM Charlie Nielsen began our business meeting.

Last week a group of Michigan Math and Science Scholars (MMSS) visited Peach Mountain. The next MMSS group plans to attend on Tuesday 7/21/2026. This is a private event. Please let Charlie know if you can help with the group.

Jim Forrester mentioned that particulate counts over 100 are usually a reason to cancel an open house. With particulate counts over 400, the smoke may be an issue for the MMSS gathering. Shannon Murphy works with the MMSS and will ask about university policy regarding environmental conditions.

Our August meeting / picnic will be held at Brian Ottum's house on Friday August 21st, 2026. It will be a potluck dinner, there will be a sign up sheet sent out before the event. Look for an email with more details.

VP Don Fohey had no report.

Observatory Director Jack Brisbin reported the observatory is ready for the MMSS visit.

Online Coordinator Jeff Kopmanis reported we still have two RASC handbooks and four 2026 calendars. Please email Doug Scobel or Jeff Kopmanis if you are interested in purchasing either.

Jeff mentioned that Tim Miller and Barry Chapman made no changes to our website, but please let them know if there are issues.

Don asked if our list-serv based email groups hosted at U of M will need to be replaced. Jeff K. believes this service will remain operational past his impending retirement with several alumni having editor access to our groups.

Ken mentioned that Christine Cook submitted our event list to the Observer.

Jim Forrester sent out two options for eyepieces for the Watson Refractor. Our club scopes have dedicated eyepieces, the Watson scope has none. It is a very fine optical instrument and deserves TeleVue grade eyepieces. After email and in person discussions Ken Cook made a motion that we authorize the officers to purchase corrected option two:

One 17.3 mm Delos eyepiece, one 10 mm Delos eyepiece, and a 2.5x Powermate adapter.

The 17.3mm Delos has a 1.6 degree TFoV at 43x, increasing to 108x in a 2.5x Powermate.

The 10mm Delos has a 1.1 degree TFoV at 75x, increasing to 187x in a 2.5x Powermate.

These will provide magnifications of: 43x, 75x, 108x and 187x.

Estimated cost is \$1264 plus tax and shipping.

Kurt Hillig Seconded. The vote passed unanimously.

By email, Treasurer Doug Scobel submitted his report. We have 218 memberships.

Doug did the following:

- Made our usual monthly payment to AT&T for our Open House "hotline".
- Paid \$280.00 to the Astronomical League for 30 memberships plus their annual \$10.00 society fee. This covers us for July 1, 2026 to June 30, 2027.

As always, the records he keeps are open for any and all Lowbrow members to examine.

Meeting adjourned at 9:2, motion by Joe Archbold, support from Kurt Hillig.

REMINDER: MEMBERS PLEASE HELP!

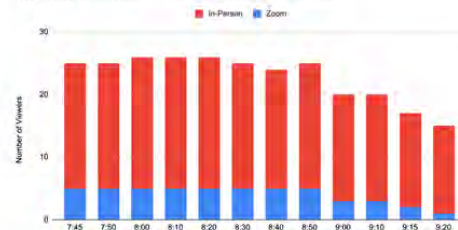
Plan on attending an open house this summer. Your presence with or without a scope is helpful. Come and share the night sky with the public, they appreciate learning about and seeing the stars that are fading away in our overly bright suburban nights.

Minutes respectfully submitted,
Ken Cook, VP

Max	5	21
Percent	19.23%	80.77%
Total	26	

Meeting Attendance

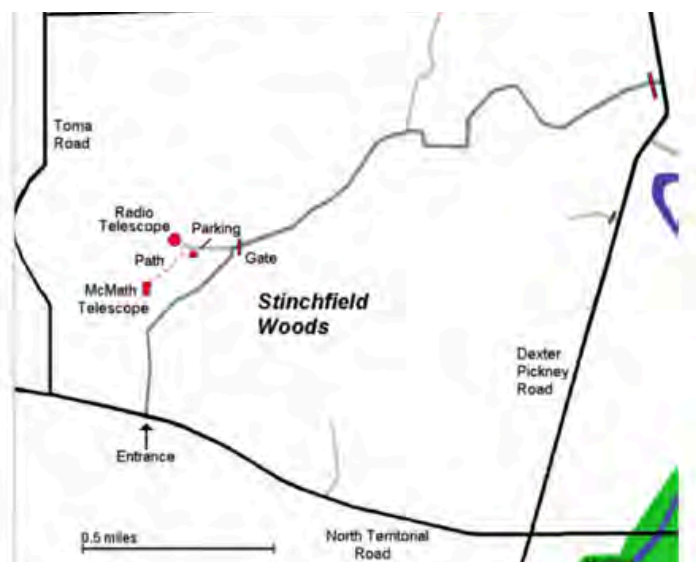
July 17, 2026 - Dr. Rudi Lindner - The Rise and Fall of a Scientific Fact



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