

All You Want to Know about Quasars

Dave Minerath

When looking up at the sky on a dark, cloudless, moonless night, have you ever considered what's at the center of those galaxies? One possibility is a quasar. Quasars are a form of an "active galactic nuclei," or AGN. A quasar is a supermassive black hole that is consuming tremendous amounts of matter—so much matter that it all can't fall into the black hole at once, so the matter forms a cloud that swirls around the black hole like a galactic whirlpool called the accretion disk. The gases are swirling so fast that the friction amongst the molecules causes the gases to glow at temperatures



*Image credit:
NASA/ESA/CSA/Joseph
Olmsted (STScI)*

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May 2025 Meeting Minutes

Don Woelz, NCSF Secretary

Jeff Setzer, NCSF President, opened the May 2025 Member Meeting of the Northern Cross Science Foundation at 7:00 pm on Thursday, April 3, 2025, at the Jackson Community Center. Jeff presented the program for the evening: "An Outline of the NCRAL 2025 Convention in Minneapolis, MN." His experience there included a tour of the Eagle Lake Observatory. His presentation slides had numerous pictures of the telescopes and observing areas. There were many presentations and events too numerous to mention in these notes.

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April Events

All general meetings are held at the Jackson Community Center, N165 W20330 Hickory Lane in Jackson, starting at 6 pm unless otherwise noted.

5 – General meeting.

Presentation topic: "The Sun" by Sean Fischer-Rohde

27, 28 – Telescope viewing at Harrington Beach, 9 pm

28 – Telescope viewing at Pike Lake, 8 pm



*May 2025 Meeting Minutes
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Jeff continued by showing and discussion the slides from Greg Bragg's NCRAL 2025 presentation "State of the Astronomy Industry." The basic take-away from the presentation was that China tariffs will have a slowdown effect on this booming industry because of the uncertainty of the cost of international trade.

After the program, some announcements were made:

- The first Public Viewing Nights at Harrington Beach are on May 30 and 31. At Pike Lake State Park, the first night is May 24.
- The June 3 Member Meeting program will be on Solar observing and will include viewing.
- The July 3 meeting will be the rescheduled discussion panel on Observing Tricks. 🪐

A KEY MOMENT IN ASTRONOMICAL HISTORY...

STARTOONS by ADAM MAUND 2019



in the millions of degrees. The closest visible quasar is 3C 273, in the constellation of Virgo with a magnitude of 12.9. An 8-inch telescope should be large enough to make it visible here on Earth. The quasar is so bright that it washes out the host galaxy from view. This quasar has a luminosity of 2.5×10^{40} watts—25 trillion times as bright as our own Sun. Quasars can glow anywhere between 10 and 100,000 times as bright as our entire Milky Way galaxy.

Further reading:

<https://www.worldatlas.com/space/what-is-at-the-center-of-the-milky-way.html>

<https://www.space.com/17262-quasar-definition.html>

<https://en.wikipedia.org/wiki/Quasar> 🪐

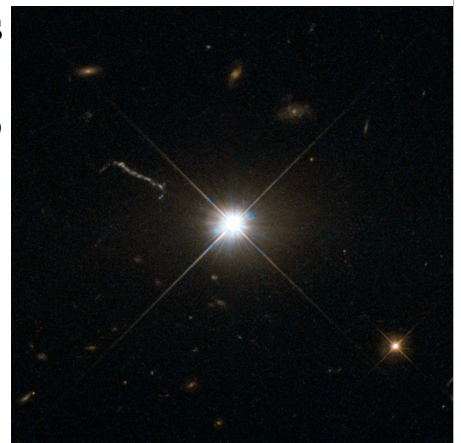


Figure 1: 3C 273 as seen by the Hubble Space Telescope. Image credit: ESA/Hubble & NASA



Johannes Hevelius, *Selenographia*, 1647. Artist: Hevelius, Johannes (1611-1687) (<https://www.arkg-images.com/archive/-2UMEBMYNBZ6PD.html>)

Notes from the Board

Jeff Setzer, NCSF President

The observatory is now fully operational. Special thanks to Kevin Bert for repairing the Panarusky Telescope, Gene DuPree, and especially Steve Schowalter for amazing work repairing the roll-off roof.

June meeting topic is Solar Astronomy, presented in-person by visiting NASA Solar System Ambassador Seth Fisher-Rohde. NCSF members will have solar telescopes on-hand for viewing, weather permitting. 🪐

Outreach Programs

Joyce Jentges, NCSF Vice President

(Via Slack) Northern Cross was invited to participate in Cops and Kids at the Ozaukee County Fairgrounds on Sunday, May 4th. The people in charge think there was not as many people as previous years. We estimated approximately 100 people visited our exhibit. Temperatures were around 60 with mostly clear skies. We were battling 20 mph winds from the northeast, which made it hard to have display stuff set up. But we persevered and occasionally had to go running after flyers that went sailing on the wind. Huge thank you to Gene & Charlotte Dupree, Jim Hahn and Rick Dusenberry for coming out with telescopes. 🪐



In the Sky This Month



1 – Venus at greatest elongation west

11 – Strawberry Full Moon, named from Native American traditions marking the start of the strawberry harvest

21 – Summer Solstice

23 – Moon passes near Pleiades

25 – New Moon

29 – Close approach between the moon and Mars

Further reading:

<https://vaonis.com>

www.timeanddate.com 🪐





Pike Lake Observing

Gene Dupree via Slack

About 40 guests joined the Duprees, Al Steinberg, Jim Hahn, James Neal, and Joe Barboza at the Pike Lake

Observing on May 24. The guests in the sky included Jupiter, Mars, M81 and M82, M44, M3, and other sky sights. Thanks to everybody who attended! 🪐



Public Viewing at Harrington

James Neal, via Slack

NCSF hosted the May public viewing night at Harrington Beach on May 30th and 31st. Friday night's weather behaved enough to show off a few sights to 13 guests in the book.



On Saturday, 41 visitors came out to observe despite smokey skies. Many thanks to Jim for driving the Panarusky on Saturday, and to Joyce for helping in the observatory on Sunday. 🪐



This Month in Astronomy History



Edward White II on the first American spacewalk during the Gemini IV mission. Photo credit: NASA

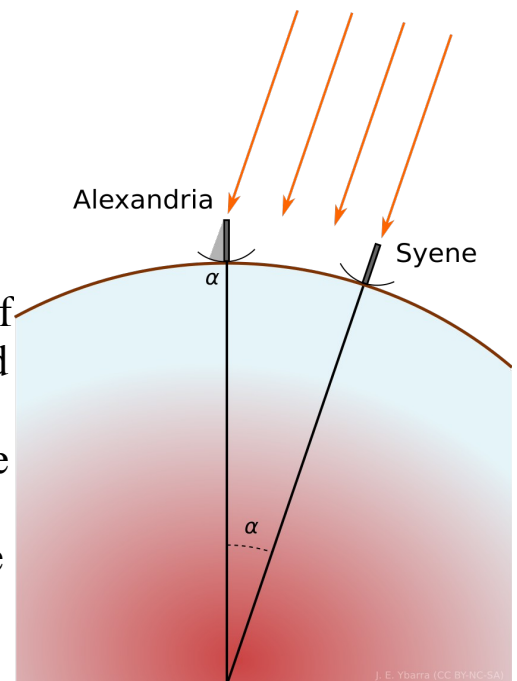
1965 – Gemini IV carrying astronauts James McDivitt (Command Pilot) and Edward White II (Pilot) blasts off on a mission to test human endurance in space. While in orbit, White became the first American to execute a space walk. There was one small glitch in the mission, when White couldn't get the hatch open at first; more importantly, the astronauts initially couldn't get the hatch closed following the space walk. Fortunately, the same situation came up during testing on the ground.

McDivitt, having worked with the engineer on the ground to get the hatch closed after the testing, was able to work the latch shut while in orbit.

Further reading: <https://appel.nasa.gov/2022/06/09/this-month-in-nasa-history-engineering-the-first-american-spacewalk/>

Sometime between 276-194 BCE – The Greek astronomer Eratosthenes calculates the circumference of the Earth based on the angle of shadows cast by gnomons (shadow-casting feature of a sundial) located in the Egyptian cities of Syene and Alexandria. On the solstice, the gnomon in Syene cast no shadow, as the sun was directly overhead; the gnomon in Alexandria cast a shadow. Using these measurements and the known arc length between the two cities, Eratosthenes calculated the Earth's circumference to be 46000 kilometers, or about 29,000 miles. This differs from the modern calculations by about 15%.

Further reading: <https://aas.org/posts/news/2019/05/month-astronomical-history-june> 🪐



The geometry behind the first calculation of Earth's circumference. (Image credit: Jason Ybarra, West Virginia University)

The Universe

Word Search

DIRECTIONS: Find and circle the vocabulary words in the grid. Look for them in all directions including backwards and diagonally.



ANDROMEDA
BARRED SPIRAL
BIG BANG
BILLIONS
BIRTH
BLACK HOLE
COLLAPSE
DARK MATTER
ELLIPTICAL
EMPTY SPACE

EXPANDING
FUSION
GALAXY
GRAVITY
HELIUM
HYDROGEN
IRREGULAR
LIGHT YEARS
LOCAL GROUP
MAIN SEQUENCE

MILKY WAY
NEBULAE
NEUTRON STAR
RED GIANT
SPIRAL
STARS
SUPERNOVA
TRILLIONS
UNIVERSE
WHITE DWARF

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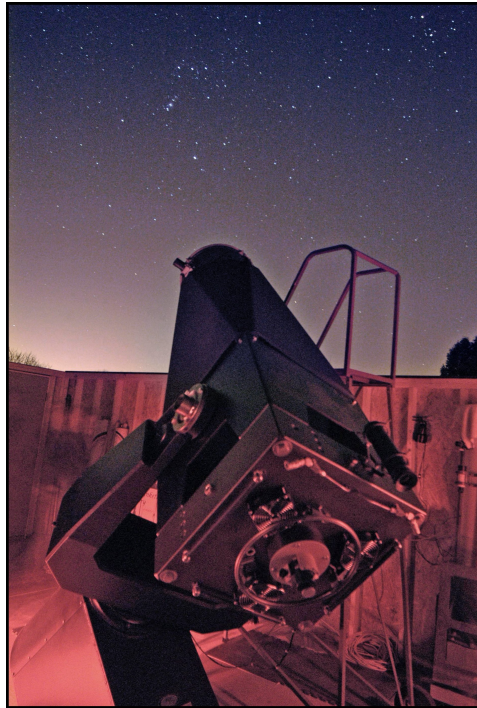
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The Pillars of Creation as seen by the Hubble Space Telescope using the Wide Field Camera #3. The streamers coming from the clouds are being blown into space by the radiation coming from a group of young, massive stars that are located off-screen.

Image Credit: NASA, ESA, and the Hubble Heritage Team [STScI/AURA])



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