



May Meetings

The next **Membership Meeting** will be held on May 16th, 2022 from 8 PM via Zoom videoconference. The first part will be the annual Business/Election Meeting. The required quorum for this meeting is 20 members. After the election Celeste Keith, graduate student at the University of Chicago will give a presentation entitled - Black Holes: From tiny to Supermassive

We've heard of black holes- mysterious regions in space where gravity is so strong that not even light can escape! But where did they come from? How big are they? How many are they? Should we worry about them? And what do they tell us about our universe?

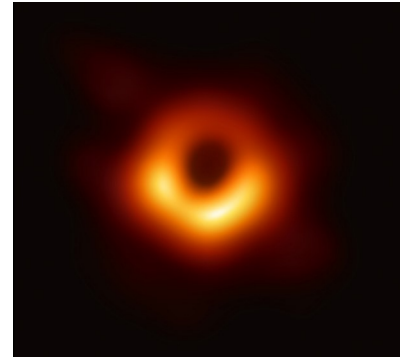
As always, the **Board Meeting** will take place right before the membership meeting, starting at 7 PM, and will be open to every MAS member who is interested in organizational and Observatory related issues.

The **First Wednesday** meeting will be held in person at the Observatory on May 4th from 7:30. New members are especially encouraged to attend this meeting. It is a chance to gain hands-on experience, receive tips on how to get started and/or get more involved in the Club's activities.

The **Astrophotography Interest Group** will meet on Wednesday, May 11th at 7 PM through Zoom videoconference.

Invitations will be sent out prior to Zoom meetings.

The MAS Google Group is as active as ever. Learn about the astronomical news, follow equipment related discussions, or just check out the latest images taken by fellow Club members.



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Election

Four Board of Director positions and the Observatory Director position will be open. These are all three year long terms. Any MAS member is eligible to run for these positions. Candidates can be nominated by other members or by self-nomination from the floor. The new Board of Directors then will elect the four Officers (President, Vice-president, Secretary, and Treasurer) for one year. Non Board members are also eligible to run for Officer positions.

If you are interested in serving in the Board of Directors, or as an Officer or Observatory Director, please contact any current Board Member or Officer.

Editor's Message

After 136 issues published since January of 2011, the current editorial team is stepping down. It was a privilege to serve the MAS by providing important up to date information as well as archiving the activities of the past decade. We hope you all enjoyed reading the newsletter during these years.

A new editorial team is ready to continue the work. We are wishing them good luck.

Observatory Director Report

Donation: Ben Tesch, former MAS member donated two pairs of binoculars. A regular Sky-Master 8x56 and a solar EclipSmart 10x42. They are now kept on the shelf of the back control room.

As to the selling of the equipment from the upgrading of the G and F scope. The follow has been sold:

The off-axis guider, \$183

Guide camera, \$400

OIII 3nm filter \$385

SII 5nm filter \$185

ZWO 1600 camera, pending sale

Quotes for the concrete back steps to the Quonset building are now being sought. Jill is helping in these efforts.

This lock on the door to the B dome has been adjusted so it now locks easily and firmly.

Lee Keith has built a new box on a domes ladder to hold eyepieces, filter wheel, the ADC and installed it. Lee is now working on a new box for the B scope. Thanks, Lee!

Respectfully Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

| \$11,316.03 | <i>Starting Balance as of 03/20/2022</i> |
|-------------|--|
| | <u>Expenditures</u> |
| \$8.91 | PayPal fees |
| \$8.00 | Burn permit |
| \$36.00 | Water/Sewer |
| \$162.00 | WE Energies |
| \$214.91 | TOTAL Expenditures |
| | <u>Revenue</u> |
| \$2.00 | Private Donations |
| \$375.00 | Membership dues |
| \$20.00 | Equipment sale |
| \$24.00 | Astronomical League |
| \$4.00 | Grants |
| \$425.00 | TOTAL Revenue |
| \$11,526.12 | <i>Ending Balance as of 04/16/2022</i> |

Respectfully Submitted,
Sue Timlin, Treasurer

Minutes

The last Board Meeting was held via Zoom videoconference on April 18th. Meeting was called to order at 7:05 PM by Tamas Kriska President.

Minutes and Treasurer Reports electronically submitted ahead of the meeting were approved.

Observatory Director Report electronically submitted by Paul Borchardt Observatory Director ahead of the meeting was approved. **Membership Committee Report** was electronically submitted by Matt Ryno Committee Chair ahead of the meeting. The membership applications of Jordan Reese, Alexander Harkin & family, Byron Skillings & family, David Krueger, David Sturgill, Sean Burke, and Heidi Hoefler were approved.

Old Business – *Display box for the sputnik replica:* A motion was made and carried to close this project and move the remaining \$45 to the general fund. *Public Nights:* A speaker for June 18 is needed. Flyers will be printed. A committee meeting will be held this week. *Old equipment selling:* Some parts have been already sold. *Website:* The SSL certificate was secured, and the SSL was established. *F-scope mount:* the malfunction and potential repair are still under investigation. *Spring cleanup:* The tentative date is May 20th.

New Business – *Front gate lock malfunction:* Since a proper replacement lock has not been found, the gate will be closed but not locked in the future. *MAS courses:* Matt Ryno suggested to participate in the Waukesha Activity Guide for a charge of 80% after each registrant. Further discussion will be followed. *Election:* MAS election will be held in the May Business Meeting. In the Board two Director's second term and two other's first term will be expiring. All officers' and the Observatory Director's position are up for election. The current President, Vice-President, and Secretary are not seeking another term.

Announcement – The next meeting will be on May 16th, 2022, via Zoom videoconference.

Respectfully Submitted,
Agnes Keszler, Secretary

Membership Report

Since the last Report we received 6 new membership applications and welcome Byron Skillings & Family, David Krueger, David Sturgill, Sean J. Burke, Jackson Waite & Family, Kathy Brehmer & Richard Brehmer, and Abhinay Pachhapur & Family. The total number of active members is 202.

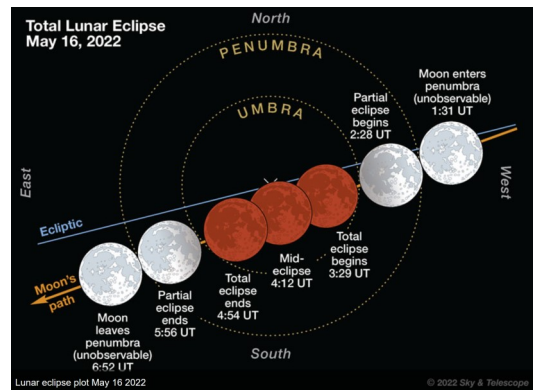
Respectfully Submitted,
Matt Ryno, Committee Chair

Astronomical Events of the Month

May 6,7: Eta Aquariids meteor shower: This is an above average shower, capable of producing up to 60 meteors per hour at its peak. Most of the activity is seen in the Southern Hemisphere. In the Northern Hemisphere, the rate can reach about 30 meteors per hour. It is produced by dust particles left behind by comet Halley, which has been observed since ancient times. The shower runs annually from April 19 to May 28. It peaks this year on the night of May 6 and the morning of the May 7. The waxing crescent moon will set early in the evening, leaving dark skies for what should be an excellent show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Aquarius, but can appear anywhere in the sky.

May 16: Full moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This full moon was known by early Native American tribes as the Flower Moon because this was the time of year when spring flowers appeared in abundance. This moon has also been known as the Corn Planting Moon and the Milk Moon.

May 16: Total Lunar eclipse: A total lunar eclipse occurs when the Moon passes completely through the Earth's dark shadow, or umbra. During this type of eclipse, the Moon will gradually get darker and then take on a rusty or blood red color. The eclipse will be visible throughout all of North America, Greenland, the Atlantic Ocean, and parts of western Europe and western Africa. Will last from 10:28 till 11:54 CDT.



May 30: New moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

Public Observing Nights

The 2022 Public Nights season will start on Saturday, June 18th at 1 PM with viewing of the Sun. This is an unusual day and time, all other events will be held on Friday nights. Since during the summer months the astronomical twilight starts very late, we will skip the July and resume in August. In October we will have two public observing: one will be on the 14th, and we will close the season on the 28th with a very popular Halloween themed event "Scary Sky" when Club members are encouraged to dress up in costume. Dates and times can be found on the MAS website.



The Public Nights are held even under cloudy skies or rain, and generally start with a presentation on a chosen astronomical topic. When it is dark enough and the weather cooperates, the telescope viewing begins. To avoid every scope looking at the same object, each of them will be assigned to a specific target. Our guests will receive a map to find out what can be seen at each location.

To ensure everything goes smoothly we will need help from members. If you would like to direct the traffic at the gate, show the guests around, manning a telescope, or just hanging around and interact with the audience, please join the team. All help is appreciated! It is also a great opportunity to get know your fellow MAS members. See you there.

In the Astronomical News

Differences Between the Moon's Near and Far Sides Linked to Colossal Ancient Impact

New research shows how the impact that created the Moon's South Pole–Aitken basin is linked to the stark contrast in composition and appearance between the two sides of the Moon.

The face that the Moon shows to Earth looks far different from the one it hides on its far side. The nearside is dominated by the lunar mare — the vast, dark-colored remnants of ancient lava flows. The crater-pocked far side, on the other hand, is virtually devoid of large-scale mare features. Why the two sides are so different is one of the Moon's most enduring mysteries.

Now, researchers have a new explanation for the two-faced Moon — one that relates to a giant impact billions of years ago near the Moon's south pole. A new study shows that the impact that formed the Moon's giant South Pole–Aitken (SPA) basin would have created a massive plume of heat that propagated through the lunar interior. That plume would have carried certain materials — a suite of rare-Earth and heat-producing elements — to the Moon's nearside. That concentration of elements would have contributed to the volcanism that created the nearside volcanic plains.

"We know that big impacts like the one that formed SPA would create a lot of heat," said Matt Jones, a Ph.D. candidate at Brown University. "The question is how that heat affects the Moon's interior dynamics. What we show is that under any plausible conditions at the time that SPA formed, it ends up concentrating these heat-producing elements on the nearside. We expect that this contributed to the mantle melting that produced the lava flows we see on the surface." The study was a collaboration between Jones and his advisor Alexander Evans, an assistant professor at Brown, along with researchers from Purdue University, the Lunar and Planetary Science Laboratory in Arizona, Stanford University and NASA's Jet Propulsion Laboratory.

The differences between the near and far sides of the Moon were first revealed in the 1960s by the Soviet Luna missions and the U.S. Apollo program. While the differences in volcanic deposits are plain to see, future missions would reveal differences in the geochemical composition as well. The nearside is home to a compositional anomaly known as the Procellarum KREEP terrane (PKT) — a concentration

of potassium (K), rare earth elements (REE), phosphorus (P), along with heat-producing elements like thorium. KREEP seems to be concentrated in and around Oceanus Procellarum, the largest of the nearside volcanic plains, but is sparse elsewhere on the Moon. Some scientists have suspected a connection between the PKT and the nearside lava flows, but the question of why that suite of elements was concentrated on the nearside remained. This new study provides an explanation that is connected to the South Pole–Aitken basin, the second largest known impact crater in the solar system.

For the study, the researchers conducted computer simulations of how heat generated by a giant impact would alter patterns of convection in the Moon's interior, and how that might redistribute KREEP material in the lunar mantle. KREEP is thought to represent the last part of the mantle to solidify after the Moon's formation. As such, it likely formed the outermost layer of mantle, just beneath the lunar crust. Models of the lunar interior suggest that it should have been more or less evenly distributed beneath the surface. But this new model shows that the uniform distribution would be disrupted by the heat plume from the SPA impact.

According to the model, the KREEP material would have ridden the wave of heat emanating from the SPA impact zone like a surfer. As the heat plume spread beneath the Moon's crust, that material was eventually delivered en masse to the nearside. The team ran simulations for a number of different impact scenarios, from dead-on hit to a glancing blow. While each produced differing heat patterns and mobilized KREEP to varying degrees, all created KREEP concentrations on the nearside, consistent with the PKT anomaly.

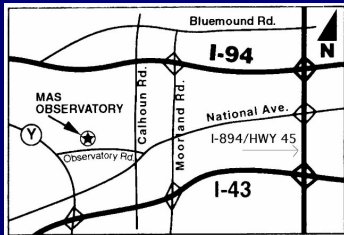
The researchers say the work provides a credible explanation for one of the Moon's most enduring mysteries. "How the PKT formed is arguably the most significant open question in lunar science," Jones said. "And the South Pole–Aitken impact is one of the most significant events in lunar history. This work brings those two things together, and I think our results are really exciting."

brown.edu



Adopt a Telescope Program - Signup Sheet

| Adopter | Scope | Location |
|------------------------------------|--------------------------|-------------------------|
| 1 Sue Timlin/John Hammetter | 18" F/4.5 Obsession | Wiesen Observatory |
| 2 Steve Volp | 12.5" F/7.4 Buckstaff | B Dome |
| 3 Robert Burgess | 12.5" F/9 Halbach | A Dome (Armfield) |
| 4 Russ Blankenburg | 9-1/4" F/10 Celestron | Albrecht Observatory |
| 5 Jeff Kraehnke | 14" F/7.4 G-scope | Z Dome |
| 6 Lee Keith/Tom Kraus | 12" F/10 LX200 EMC | Tangney Observatory |
| 7 Colin Boynton | 10" F/6.3 LX200 | Ray Zit Observatory |
| 8 Tamas Kriska | Stellarvue SVQ 100 F/5.8 | Jim Toeller Observatory |
| 9 Paul Borchardt | Solar scope | SkyShed POD |



MAS Observatory

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New Berlin, WI 53146

www.milwaukeeastro.org

At Your Service

Officers / Staff

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| Secretary | Agnes Keszler | 414-581-7031 |
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| Asst. Observatory Director | Lee Keith | 262-875-9103 |
| Newsletter Editor | Tamas Kriska | 414-581-3623 |
| Webmaster | Gene Hanson | 262-269-9576 |

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| Jason Doyle | 414-678-9110 |
| Dennis Roscoe | 608-206-0909 |
| Lee Keith | 414-425-2331 |
| Jim Schroeter | 414-333-3679 |
| Gabe Shaughnessy | 262-893-4169 |
| Steve Volp | 414-751-8334 |
| Mike Wagner | 262-547-3321 |

May Keyholders

| | | |
|-------|---------------------|--------------|
| 05/07 | Brian Ganiere | 414-961-8745 |
| 05/14 | Paul Borchardt | 262-202-8029 |
| 05/21 | Gene Hanson | 262-269-9576 |
| 05/28 | William Gottemoller | 262-442-3686 |