



June, 2020

July Meetings

The Milwaukee Astronomical Society is on summer schedule. There will be no Membership Meeting. However, there will be a **Board Meeting** on the second Monday of the month, July 13th, starting at 7PM. Due to the COVID-19 pandemic the meeting again will be held through Zoom videoconference. The Board Meetings are open to the membership and everybody is welcome to attend who is interested in organizational and Observatory related issues. If you are not a Board member but would like to attend please contact Tamas Kriska to receive an invitation.

The **PixInsight Focus Group** will meet on Wednesday, July 8th at 7 PM through Zoom videoconference. The specific topic of the meeting will be announced on the Google Group.

The **First Wednesday** How to Meeting will be held through Zoom videoconference on July 1st, from 7:30 PM.

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.

Saturday Member Nights

The Board of Directors together with Keyholders had a discussion regarding reopening the Observatory for MAS members. The decision was made to resume Saturday's Member Nights under the following conditions:

- If you are experiencing any symptoms of COVID-19 or came in contact with an infected person stay home
- Everyone present at the Observatory have to wear a mask
- The keyholders have to disinfect the equipment between users and at the end of the night
- Everyone have to follow recommendations for social distancing
- Activities should be kept preferably on open air (e.g. in roll-off sheds instead of domes)
- The necessary disinfectants and masks have to be available for everyone
- The Observatory will be open for Members only, please don't bring guests

We understand there is still a risk of COVID-19 infection when gathering in public, but we are doing all that we can to minimize that risk. By sticking to these rules we try to ensure a safe environment for all our Members.

Keyholders will communicate the opening/closing times of the Observatory through Google Group. Stay tuned.

Public Nights

The May and June open houses of the 2020 season have been cancelled due to the current social distancing requirements. For later dates decisions will be made based on possible changes in CDC and State guidelines. Please check the MAS website for up to date information.

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Observatory Director Report

Several members with a rented jack hammer turned the steps to the A-building into rubble. The slab at the rear of the Quonset building was busted up and removed too. New steps were poured in concrete at the front door of A-building, two steps instead of the single step the old entrance had. A hand railing will also be installed on the steps. A small square slab was also poured around the outside water faucet that will support a new hut over the faucet. Cost for the concrete work is \$400, the railing will cost \$150, and the materials for the hut were \$200. Steps for the rear doorway will be installed later.

A-scope is out of service as work is being done to the mirror cell to move the mirror forward. This will allow the in-focus needed to use the Atmospheric Dispersion Corrector when doing planetary imaging. A-scope will be back in service by June 12th.

Respectfully Submitted,
Paul Borhardt, Observatory Director

Treasurer's Report

\$10,746.76	Starting Balance as of 05/12/2020
	Expenditures
\$5.73	PayPal fees
\$12.18	Pressure tank repair
\$595.02	Autoguider camera
\$56.59	WE Energies
\$669.52	TOTAL Expenditures
	Revenue
\$38.76	Private donations
\$198.00	Membership dues
\$7.50	Astronomical League
\$6.00	Grants
\$250.26	TOTAL Revenue
\$10,327.50	Ending Balance as of 06/06/2020

Respectfully Submitted,
Sue Timlin, Treasurer

Membership Report

Since the last Report we received 4 new applications. We welcome Heather Ramsey, Leah Raatz, Mitzi Keadle, and Guinevere Hicks. The total number of active members is 171.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Minutes

Due to the COVID-19 outbreak the meeting was held on June 8th via Zoom and was called to order at 7:03PM by Tamas Kriska President.

Minutes, Treasurer's Report and Observatory Director's Report electronically submitted ahead of the meeting were approved. **Membership Committee Report** was electronically ahead of the meeting. Membership applications of Heather Ramsey, Cameron Johnson, and Leah Raatz were approved.

Old Business – Public Nights: The June Public Night about the Sun is still cancelled. *Canon talk:* Cancelled by presenter. *Google Group overhaul:* The Board could not come up with a decision. Most Board members don't want change, but diversification is supported. The main problem is that the membership's opinion is unknown. Most members are not engaged in any discussion, don't answer questionnaires. The topic is tabled until somebody comes up with a new idea that causes no harm, solves the existing problem, and does not put a big workload to others.

New Business – Reopening the Club: The decision was made to resume Saturday's Member Nights under certain conditions: Persons experiencing any symptoms of COVID-19 or came in contact with an infected person stay home; everyone present at the Observatory have to wear a mask; keyholders must disinfect the equipment between users and at the end of the night; everyone must follow recommendations for social distancing; activities should be kept preferably on open air. These conditions will be posted on the website/Members section and on the Google group. Paul will notify the keyholders. Keyholders who feel uncomfortable meeting people can refrain, and should notify Paul. All keyholders should maintain their cleaning and general disinfecting duties.

Maintenance: We are not doing work parties this summer. Quotation from contractors will be asked for fixing the front garage roof, painting Z and A domes outside, and installing entrance gate.

Announcement – The next meeting will be on Monday, July 13th, 2020 via Zoom videoconference.

Second meeting was held on June 10th via Zoom to discuss the idea of disclaimer statement. A potential disclaimer was formulated and discussed among key holders and Board members via email. During the Zoom meeting, the topic was further discussed and the idea was rejected. We will follow the CDC guidelines and do our best to minimize the risk of infection among MAS members.

Respectfully Submitted,
Agnes Keszler, Secretary

Maintenance

Due to the COVID-19 situation we don't organize official work parties this summer. However, we keep doing the necessary maintenance work to keep the Observatory in good shape.

The outlet of the pressure tank has been damaged during the winter and was leaking. The broken part was replaced.

The front steps of the Quonset entrance were also replaced. We removed the old concrete, and invited a contractor to pour new steps.



MAS Observatory Log Books

Earlier this month I finished a long-term goal: scanning the MAS Observatory log books. My primary desire was to simply get them copied so we have all the information in case something happens to the books. By itself this was a big job because the 3 books I had went from 1938 thru 1993 entailed 1379 pages! Though I could spend months and months laying these pages on a flat-bed scanner, I decided I'd just invest in a document scanner.



But I desired a greater goal: get them in a location where everyone could conveniently peruse them. Obviously as I am the webmaster putting it on website would be the logical place. But there I faced two hurdles: space requirements and convenient accessibility. PDF format would have been my first choice, but the included software made each page between 1 and 2 megabytes. Instead I went for JPGs as they were much smaller. But still it was over 800 megabytes so too big for our website. But last year member Steve Volp offered a great solution of having almost unlimited space on his server and having it accessible by an alias: docs.milwaukeeastro.org. The next step was to convert the JPGs to PDFs using software that added little to the file size.

For the website, I decided for ease of navigation that I would split the files by year. It was a logical boundary and for the most part resulted in file sizes that could be readily downloaded. For a handful of years, however, the page count was excessive so I split the year roughly in half.

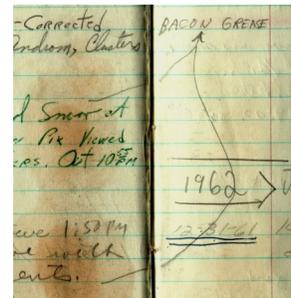
Part of the MAS History

You can find these log books in the MAS History section of the website and the specific URL is:

www.milwaukeeastro.org/history/Log_Books.asp

I found the books to be in surprisingly good condition given their history. The first entry was

written on July 5, 1938 – 82 years ago! I expected there might be some missing pages, but I only found one book that had 3 sheets (6 pages) tore out. However, it wasn't without an explanation: bacon grease had fallen onto the pages.



What I've learned

- Some people's handwriting is illegible! Reading these entries can be very difficult.
- The A-Dome slit has always been difficult to open and close.
- Doors were left open with disturbing regularity, even dome slits! This is particularly bad because for many years there were basically just 3 doors that needed to be locked.
- The safe was left open on several occasions. One time left open with the combination right there.

But the greatest thing I got from the log books is the MAS history. As I have gathered information to fill in various historical gaps, I have also found instances where accounts were contradictory. So the log book has become my tiebreaker.



One final note is the story about the building of the B-Scope and installation of the B-Scope has been horribly sanitized. In various accounts all went well. The building was started in 1949 and by 1951 it was completed with the B-Scope installed and went into operation. But the logs actually show the B-Scope was problematic for over 20 years! There are very few entries for its use. And the B-Dome slit was problematic for at least 12 years.

Gene Hanson

In the Astronomical News

NASA's TESS (Transiting Exoplanet Survey Satellite), Spitzer Missions Discover a World Orbiting a Unique Young Star

The system, known as AU Mic for short, provides a one-of-a-kind laboratory for studying how planets and their atmospheres form, evolve and interact with their stars.

AU Mic is a cool red dwarf star with an age estimated at 20 million to 30 million years, making it a stellar infant compared to our Sun, which is at least 150 times older. The star is so young that it primarily shines from the heat generated as its own gravity pulls it inward and compresses it. Less than 10% of the star's energy comes from the fusion of hydrogen into helium in its core, the process that powers stars like our Sun.

The system is located 31.9 light-years away in the southern constellation Microscopium. It's part of a nearby collection of stars called the Beta Pictoris Moving Group, which takes its name from a bigger, hotter A-type star that harbors two planets and is surrounded by a debris disk.

Although the systems have the same age, their planets are markedly different. The planet AU Mic b almost hugs its star, completing an orbit every 8.5 days. It weighs less than 58 times Earth's mass, placing it in the category of Neptune-like worlds. Beta Pictoris b and c, however, are both at least 50 times more massive than AU Mic b and take 21 and 3.3 years, respectively, to orbit their star.

"We think AU Mic b formed far from the star and migrated inward to its current orbit, something that can happen as planets interact gravitationally with a gas disk or with other planets," said Thomas Barclay, an associate research scientist at the University of Maryland, Baltimore County and an associate project scientist for TESS at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "By contrast, Beta Pictoris b's orbit doesn't appear to have migrated much at all. The differences between these similarly aged systems can tell us a lot about how planets form and migrate."

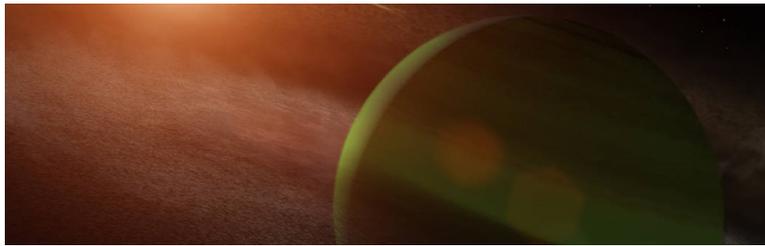
Detecting planets around stars like AU Mic poses a particular challenge. These stormy stars possess strong magnetic fields and can be covered with starspots — cooler, darker and highly magnetic regions akin to sunspots — that frequently erupt powerful stellar flares. Both the spots and their flares contribute to the star's

brightness changes.

In July and August 2018, when TESS was observing AU Mic, the star produced numerous flares, some of which were more powerful than the strongest flares ever recorded on the Sun. The team performed a detailed analysis to remove these effects from the TESS data.

"As luck would have it, the second of three TESS transits occurred when the spacecraft was near its closest point to Earth. At such times, TESS is not observing because it is busy downlinking all of the stored data," said co-author Diana Dragomir, a research assistant professor at the University of New Mexico in Albuquerque.

"To fill the gap, our team was granted observing time on Spitzer, which caught two additional transits in 2019 and enabled us to confirm the orbital period of AU Mic b". Because the amount



One interpretation of the planet AU Mic b and its young red dwarf host star. Credit: NASA's Goddard Space Flight Center/Chris Smith (USRA)

of light blocked by a transit depends on the planet's size and orbital distance, the TESS and Spitzer transits provide a direct measure of AU Mic b's size. Analysis of these measurements show that the planet is about 8% larger than Neptune.

Observations from instruments on ground-based telescopes provide upper limits for the planet's mass. As a planet orbits, its gravity tugs on its host star, which moves slightly in response. Sensitive instruments on large telescopes can detect the star's radial velocity, its motion to-and-fro along our line of sight. Combining observations from the W. M. Keck Observatory and NASA's InfraRed Telescope Facility in Hawaii and the European Southern Observatory in Chile, the team concluded that AU Mic b has a mass smaller than 58 Earths.

This discovery shows the power of TESS to provide new insights into well-studied stars like AU Mic, where more planets may be waiting to be found. "There is an additional candidate transit event seen in the TESS data, and TESS will hopefully revisit AU Mic later this year in its extended mission," Plavchan said. "We are continuing to monitor the star with precise radial velocity measurements, so stay tuned."

by Francis Reddy, nasa.org

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	18" F/4.5 Obsession	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	Herman Restrepo/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

At Your Service

Officers / Staff

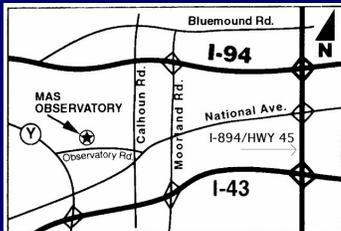
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Jim Schroeter	414-333-3679
Gabe Shaughnessy	262-893-4169
Steve Volp	414-751-8334
Mike Wagner	262-547-3321

July Keyholders

07/04	Lee Keith	414-425-2331
07/11	Jeff Kraehnke	414-333-4656
07/18	Tamas Kriska	414-581-3623
07/25	Tom Schmidtkunz	414-352-1674



MAS Observatory

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