



May, 2021

June Meetings

The next **Membership Meeting** will be on Monday, June 21st from 8 PM via Zoom videoconference. We will be watching a video presentation by Toni Tyson, chief scientist at the Vera C. Rubin Observatory entitled: **Satellite Constellations and Astronomy, Satellite interference with Astronomical Observations and Potential Remedies.**

A number of companies and governments are in various stages of planning or deploying bright satellites in low-Earth orbit in unprecedentedly large numbers. These “mega constellations” will fundamentally change astronomical observing at visible wavelengths. Night-time images will be contaminated by streaks due to the passage of sun-illuminated satellites, and radio astronomy will experience significant interference. If the proposals for the most serious constellations are realized, no combination of mitigations will be able to fully avoid the negative impacts that the over 50,000 satellites will have on many science programs of current and planned ground-based and space-based astronomy facilities. This lecture will discuss the Rubin Observatory’s planned Legacy Survey of Space and Time, satellite streak simulations, lab tests of the Rubin’s CCD sensors, and work with SpaceX on mitigation.



As always, the **Board Meeting** will be held right before the Membership Meeting, from 7 PM, and is open to every MAS member who is interested in organizational and Observatory related issues.

The **Astrophotography Interest Group** will meet on Wednesday, June 9th at 7 PM through Zoom videoconference.

The **First Wednesday (How to) Meeting** will be held through Zoom videoconference on May 2nd, from 7:30 PM. This is an informal meeting to discuss technical aspects of astronomy, however, any astronomy-related topic can be brought up. New members are especially encouraged to attend this meeting. It is a chance to receive tips on how to get started and/or get more involved in the Club’s activities.

Invitations will be sent out prior to 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.

MAS Election

During the annual Business Meeting on May 17th Jim Bakic, Lee Keith, and James Schroeter were elected to the Board of Directors. A big thank you goes to Jeff Kraehnke outgoing Board Member for his six years of service.

The new Board of Directors then elected the Officers. The new Vice President is Jeff Kraehnke. All other Officers were reelected.

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Observatory Director Report

Let us start with the oil tank. After years, make that decades of abandonment, the fuel oil tank that was used for an old furnace was emptied, which was about a third full, the oil disposed of, and the tank cut in half with the inside cleaned using detergent. Already to be taken to a metal scrap yard. Thank you Tamas, Agnes, and Russ!

The missing power supply for the Canon T5 DLSR has been replaced and is working. It should be noted that the power supplies for the Canon T5 and Canon T3i are different and are not interchangeable.

Great strides have been taken on the refurbishing of the 12 Meade Telescope. The GOTO system on the mount is working well. Russ has posted some quick and easy images taken with the scope and a club camera to help encourage member to come out to the Observatory and give the scope a try.

The B-dome has a maintenance issue on the lower slit door. The chain on the dome's left side is broken and needs repairing.

Had our first tour in over a year last week on 5/13. The astronomy class from Marquette High made their usual trip out to the Observatory. Every semester for the past several years this class has been to the club. Thursday's tour was 12 people, including students, parents, and their instructor Chris Lese.

Respectfully Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

\$11,418.78	Starting Balance as of 04/17/2021
	<u>Expenditures</u>
\$7.45	PayPal fees
\$120.00	Website
\$129.08	Observatory expenses
\$80.23	WE Energies
\$336.76	TOTAL Expenditures
	<u>Revenue</u>
\$120.00	Private donations
\$270.00	Membership dues
\$1895.00	Equipment sale
\$2.00	Grants
\$2,287.00	TOTAL Revenue
\$13,369.02	Ending Balance as of 05/15/2021

Respectfully Submitted,
Sue Timlin, Treasurer

Minutes

Due to the COVID-19 the May Board Meeting was held via Zoom videoconference on May 17th. The meeting was called to order at 7:04 PM by Tamas Kriska President.

Minutes, and Treasurer's Report electronically submitted ahead of the meeting were approved. **Observatory Director's Report** of April and May electronically submitted by Paul Borchardt Observatory Director ahead of the meeting was amended and approved. Amendment: Lee Keith cleaned the mirrors of both Obsession scopes.

Membership Committee Report was submitted electronically ahead of the meeting. Membership applications of Jordan Brown & family, William Henrickson & family, Kristopher Rowe & family, Joe Baumgarten & family, and Ashish and Sohum Udani & family were approved.

Old Business – *Display box*: Yet to be purchased. *Public Night*: The possibility of holding presentations and mask advisory will be discussed and decided according to the current CDC guidelines before the first event in September.

New Business – *Clean-up work party*: The annual clean-up work party will take place prior the Public Nights, TBD during the summer months.

Book donation: Astronomy books have been donated and up to sell for the membership. Members are encouraged to bring unwanted astronomy books to be available for others. Not sold books will be donated to the New Berlin Library.

Announcement – The next meeting will be on Monday, June 21st, 2021 via Zoom.

Election: Outgoing Board Member: Jeff Kraehnke. New Board Member: Lei Keith. Jeff Kraehnke was elected for Vice President. All other Officers were reelected.

Program – Lee Keith gave a presentation entitled Discovering impacts of small objects on Jupiter and Saturn.

Respectfully Submitted,
Agnes Keszler, Secretary

Membership Report

Since the last Report we received one renewal and three new membership applications. We welcome William Henrickson & Family, Kristopher Rowe & family, and Ashish and Sohum Udani & Family. The total number of active members is 184.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Maintenance

The annual maintenance season has started with draining the remaining 75 gallons of oil from a tank that was used to store fuel for the old furnace decades ago. It has been sitting behind the Quonset ever since. The tank was cut in half, cleaned with detergent and is ready to be taken to a metal scrap yard. The project took about four hours and several runs to the Brookfield dump station to dispose the oil.

The B-dome's lower slit door has been fixed by Paul Borchardt. The broken chain on the dome's left side was re-attached to the door.



Observatory News

Imaging Observers

As we continue to try to bring life back to an older club scope, I'm encouraged at how the 12-inch Meade is coming along. If you point it to one known star, it's really well aligned the rest of the night. It has a goto computer, so you can find any reasonable object with almost center-of-eyepiece precision. And it has a little better tracking than the popular B-scope in that you can take images up to 60 seconds before stars start to streak. It can theoretically be guided to 5 minutes with a few pixels of accuracy. But for those starting out in astrophotography, you can keep it very simple and just quickly set up the scope and a camera.

Here to the right is globular cluster M3 with a single unguided 60 second exposure:



I left some streaky images in just to show how things turn out even with a very quick and easy beginner setup. These can be obtained by any member when the observatory is open and the stars are out. Come on out and try it sometime



Russ Blankenburg

Visual Observers

The latest meeting of the MAS Visual Observers Group was held at the very dark White Mound County Park starting at sunset (8:15PM) and was adjourned at 3AM. Only two members attended, myself and Frank Smith. The sky was crystal clear but cool and the owls were out in force! We even met two families of Amish with their horse & buggies!

Many objects were viewed through 14" & 16" telescopes, including the Whale & Hockey Stick Galaxies (<https://apod.nasa.gov/apod/ap210513.html>). Since Frank is a new member with a new telescope, we toured the major Messier objects: galaxies in Virgo & Coma, many globular clusters (Frank's favorite), the Ring & Dumbbell Nebulae and many of the major nebulae in the summer Milky Way using various light pollution filters. It was a whirlwind night and I did not want to leave!

Too bad if you couldn't attend because it was during the week. Clear nights without a Moon (too bright & blocks out the dim objects) cannot be scheduled so the amateur astronomer has to be flexible. Maybe next month!

Lee Keith

In the Astronomical News

First X-rays from Uranus Discovered

Astronomers have detected X-rays from Uranus for the first time, using NASA's Chandra X-ray Observatory. This result may help scientists learn more about this enigmatic ice giant planet in our solar system.

Uranus is the seventh planet from the Sun and has two sets of rings around its equator. The planet, which has four times the diameter of Earth, rotates on its side, making it different from all other planets in the solar system. Since Voyager 2 was the only spacecraft to ever fly by Uranus, astronomers currently rely on telescopes much closer to Earth, like Chandra and the Hubble Space Telescope, to learn about this distant and cold planet that is made up almost entirely of hydrogen and helium.

In the new study, researchers used Chandra observations taken in Uranus in 2002 and then again in 2017. They saw a clear detection of X-rays from the first observation, just analyzed recently, and a possible flare of X-rays in those obtained fifteen years later. The main graphic shows a Chandra X-ray image of Uranus from 2002 (in pink) superimposed on an optical image from the Keck-I Telescope obtained in a separate study in 2004. The latter shows the planet at approximately the same orientation as it was during the 2002 Chandra observations.

What could cause Uranus to emit X-rays? The answer: mainly the Sun. Astronomers have observed that both Jupiter and Saturn scatter X-ray light given off by the Sun, similar to how Earth's atmosphere scatters the Sun's light. While the authors of the new Uranus study initially expected that most of the X-rays detected would also be from scattering, there are tantalizing hints that at least one other source of X-rays is present. If further observations confirm this, it could have intriguing implications for understanding Uranus.

One possibility is that the rings of Uranus are producing X-rays themselves, which is the case for Saturn's rings. Uranus is surrounded by charged particles such as electrons and protons in its nearby space environment. If these energetic

particles collide with the rings, they could cause the rings to glow in X-rays. Another possibility is that at least some of the X-rays come from auroras on Uranus, a phenomenon that has previously been observed on this planet at other wavelengths.

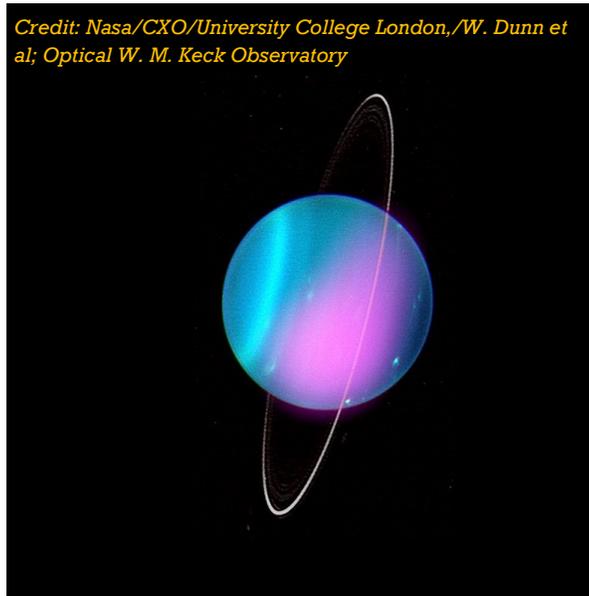
On Earth, we can see colorful light shows in the sky called auroras, which happen when high-energy particles interact with the atmosphere. X-rays are emitted in Earth's auroras, produced by energetic electrons after they travel down the planet's magnetic field lines to its poles and are slowed down by the atmosphere. Jupiter has auroras, too. The X-rays from auroras on Jupiter come from two sources: electrons traveling down magnetic field lines, as on Earth, and positively charged atoms and molecules raining down at Jupiter's polar regions. However, scientists are less certain about what causes auroras on Uranus. Chandra's observations may help figure out this mystery.

Uranus is an especially interesting target for X-ray observations because of the unusual orientations of its spin axis and its magnetic field. While the rotation and magnetic field axes of the other planets of the solar system are almost perpendicular to the plane of their orbit, the rotation axis of Uranus is nearly parallel to its path around the Sun. Furthermore, while Uranus is tilted on its side, its magnetic field is tilted by a different amount, and offset from the planet's center. This may cause its auroras to be unusually complex and variable. Determining the sources of the X-rays from Uranus could help astronomers better understand how more exotic objects in space, such as growing black holes and neutron stars, emit X-rays

NASA's Marshall Space Flight Center manages the Chandra program. The Smithsonian Astrophysical Observatory's Chandra X-ray Center controls science from Cambridge Massachusetts and flight operations from Burlington, Massachusetts.

Lee Mohon nasa.gov

Credit: Nasa/CXO/University College London, W. Dunn et al; Optical W. M. Keck Observatory



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

At Your Service

Officers / Staff

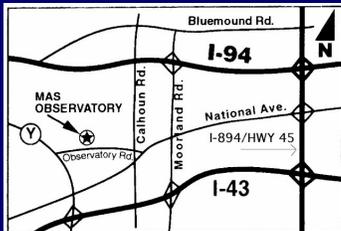
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Steve Volp	414-751-8334
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June Keyholders

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06/19	Brian Ganiere	414-961-8745
06/26	Gene Hanson	262-269-9576



MAS Observatory

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