April, 2019

Inside this issue:

May Meeting

The Milwaukee Astronomical Society will hold its next Membership Meeting on Friday, **May 17th at 8 PM** at the Observatory. The first half is going to be a **Business Meeting** to elect an Observatory Director and at least two new Board Directors. The newly elected Board then will elect the Officers. The election will be followed by a presentation by **Lee Keith** entitled **"How to buy a telescope?"**.

Most amateur astronomers, sooner or later, will want to own a telescope to be able to conveniently observe from own backyard and/or take it to a dark sky location. However, buying a telescope, especially if you don't know much about them, can be a difficult thing. There are endless options to choose from but first of all you need to know what you intend to do with it. This presentation will provide you with some basic information and some basic facts that will help you make a good telescope buying decision.

The meeting will be preceded by a Board Meeting, which is open to the membership and starts at 7 PM. Everybody is welcome who is interested in organizational and Observatory related issues.

MAS Election

We will begin the May Membership Meeting with election of new Board Members and Officers. The second term of two Board members, and the first term of two other ones will be expired. **At least two Board positions will be open**. The three years term of the Observatory Director will be expired as well.

If you are interested in serving a three year term on the Board of Directors, a year as an Officer, or three years as Observatory Director, or would like to receive more information about those positions, please contact any Board Member or Officer.

Observatory Report

As noted in last month's report the toilet's shutoff valve in the north restroom appeared to be leaking. This was due to a crack in the shutoff valve, that valve has been replaced. Another problem with that toilet was it filling very slowly, On inspection small stones and sand in the toilet's intake valve were stopping water from refilling the tank. This valve was disassembled, cleaned, and now works fine.

F-Scope is up and running, images have been taken with the scope and are looking great! One problem that was discovered during the setup was that the guide camera left over from the old F -Scope would not run with the computer and software being used to run the scope now. The old camera, a QHY 5L-II-M, was sold for a net of $93 and replaced with a Starlight Xpress Lodestar which cost the club $115. For $22 we not only now have a camera that works with everything else on the scope but is also a much more sensitive camera able to find more guide stars to use. I would like to thank Jeff and Tamas for all their help getting the F-scope running and debugged.

The old platform ladder from the Z-Dome was sold for $450 last week due to Jeff's effort and persistence. Because we needed to hire a crane to place the new ladder in Z-Dome due to its size, the total cost ran over our expected budget. Selling the old ladder for a good price really helped offset that cost.

Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

$6,981.06	***Starting Balance as of 03/13/2019***
	Expenditures
$6.18	PayPal fees
$128.00	Annual expenses
$25.74	Observatory expenses
-$26.00	Other expenses
$106.47	WE Energies
$36.00	Water/Sewer
$276.39	TOTAL Expenditures
	Revenue
$207.00	Private donations
$258.00	Membership dues
$50.00	Key deposit
$515.00	TOTAL Revenue
$7,219.67	***Ending Balance as of 04/17/2019***

Respectfully Submitted,
Sue Timlin, Treasurer

Meeting Minutes

The meeting was held on April 19th at the MAS Observatory, New Berlin and was called to order at 7:02PM by Tamas Kriska President.

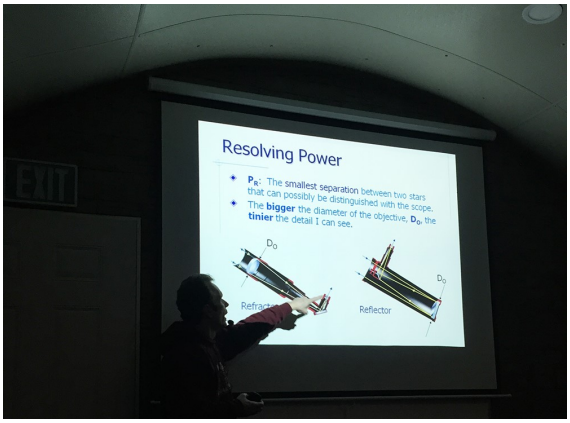
Minutes, **Treasurer's Report and Observatory Director's Report** electronically submitted ahead the meeting were approved.

Membership Committee Report was electronically ahead the meeting. Applications of Driton Rechi & Family, John Fleckenstein, David Fleckenstein & Family, Beverly Mamayek & Family, and Ryan Kujak & family were approved.

Old Business – *F-scope*: The equipment shuffle has been finished. First light images taken by both F- and G-scopes were posted. *E-mail voting*: Follow up will be coming on the next meeting. *NASA NSN recognition*: Russ Blankenburg, Gene Hanson, and Sue Timlin were awarded with Night Sky Network Star pins for their outstanding outreach work. *Tree stump removal*: Paul will follow up the possibilities. Summer maintenance work will be discussed on the next meeting.

New Business – *New microphone system*: Motion was made and carried to allocate $300 to purchase a Shure BLX14/PGA31 system to replace the old broken one. *Full Key*: Based on the Observatory Director's recommendation, Jim Bakic's keyholder application has been accepted.

Program – Lee Keith gave a presentation entitled "Top 10 telescope properties all amateur astronomers should know".



Respectfully Submitted
Agnes Keszler, Secretary

Membership Report

Since the last Report we received 4 applications. We welcome Driton Rechi & Family, John Fleckenstein, David Fleckenstein & Family, Beverly Mamayek & Family, Ryan Kujak & family, Sunny Murali, and Albert Gennari. The total number of active members is 148.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Observatory News

The New F-scope

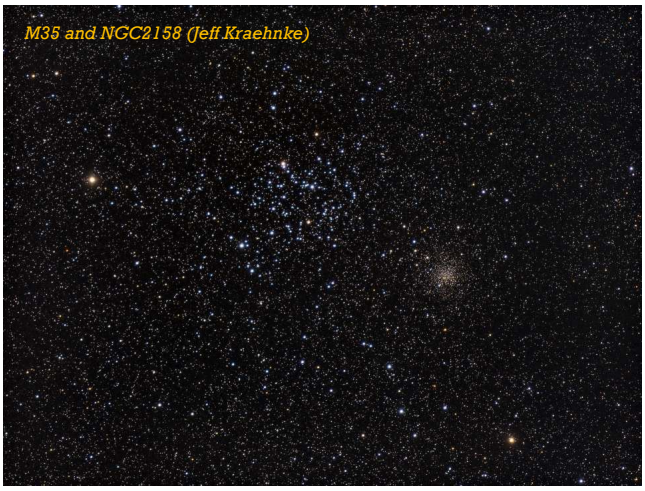
The Toeller Observatory, which housed a 14" Celestron Schmidt-Cassegrain reflector equipped with HyperStar optics (aka F-scope) now has a new occupant, a 100 mm Stellarvue SVQ refractor telescope. This is a considerable upgrade with improved imaging capabilities.

The old F-scope was a popular addition back in 2015 due to being fast (14" aperture at f/1.9), wide field of view, and easy operability by using a DSLR camera. However, as the New Berlin sky keeps getting brighter and brighter we had to experiment with specific filters to keep up with the increasing light pollution. Running the scope became more complicated, the imaging times increased. Moreover, frequent recollimation was necessary to maintain the image quality. It was clearly time to say good bye to that piece of equipment and look for an upgrade.

Donation from Gene Hanson, and selling the old parts enabled the Club to purchase a Stellarvue SVQ 100, a four element refractor designed for astrophotography. The DSLR camera was replaced by a ZWOASI1600M Pro cooled camera, and an eight position ZWO filter wheel with Astrodon LRGB and narrow band (Ha 5mm, OIII, SII, both 3 mm band-

NGC 2174 Monkey Head Nebula (Jeff Kraehnke)

width) filters. Other parts are a motorized focuser and a QHY off axis guider. The telescope sits on the AP900 mount, previously used with G-scoper. Although the imaging time will increase comparing to the old equipment (f/5.8 with narrowband filters), the field of view remained similar, and the achievable image quality has been immensely enhanced.



M35 and NGC2158 (Jeff Kraehnke)

The telescope is remotely operated from the Z building's control room via SkyX software. Though the control software is identical to that used for G-scope, operating the two telescopes requires slightly different training, which can be requested from Jeff Kraehnke or Tamas Kriska. Please don't be shy to contact either of them if you are interested in using these systems.

We hope that many Members will enjoy this new telescope and produce amazing images!

Observatory News

Recognition by NASA Night Sky Network

The NASA Night Sky Network awarded the MAS with three Night Sky Network Star Pins established honoring the 50th anniversary of Apollo 11. The Board of Directors of the MAS recognized the work of:

Russ Blankenburg
Gene Hanson, Webmaster
Sue Timlin, Open House Chair

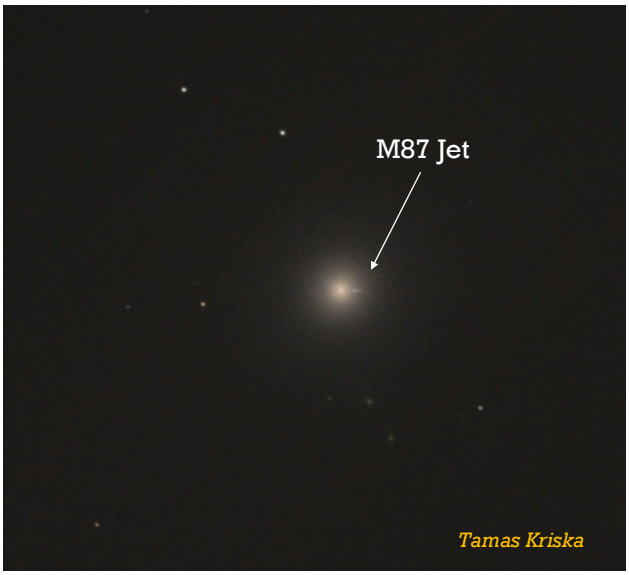
in promoting the Club's outreach programs.

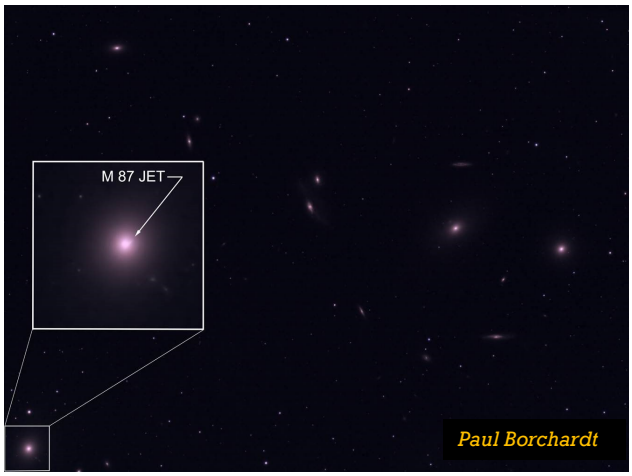
Congratulations to the Awardees!

Member's Project

The most sensational astronomical news of the month was the first picture taken of a black hole. The black hole in question is at the center of Messier 87 galaxy, which is a member of the Virgo Cluster. It is three orders of magnitude (i.e., over a 1000 times) larger than Sagittarius A, the supermassive black hole at the center of our own galaxy. Messier 87 itself is massive - about 200 times the mass of the Milky Way!

Couple MAS members managed to capture the relativistic jet coming out from the active galactic nucleus energized by a a supermassive black hole.





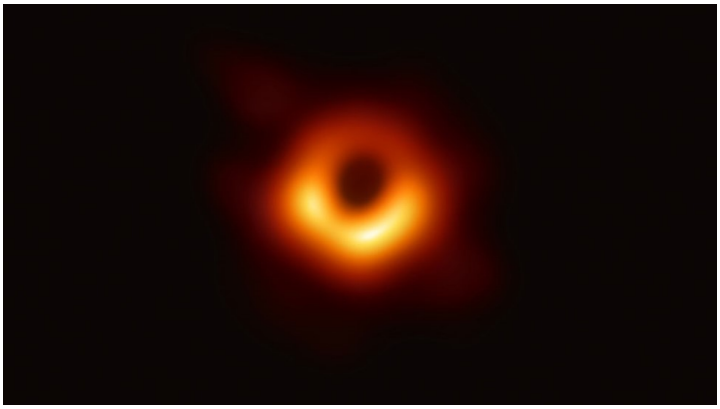
In the Astronomical News

First Picture of a Black Hole Opens a New Era of Astrophysics

A world-spanning network of telescopes called the Event Horizon Telescope zoomed in on the supermassive monster in the galaxy M87 to create this first-ever picture of a black hole.

"We have seen what we thought was useable. We have seen and taken a picture of a black hole," Sheperd Doeleman, EHT Director and astrophysicist at the Harvard-Smithsonian Center for Astrophysics in Cambridge, MA.

The image aligns with expectations of what a black hole should look like based on Einstein's general theory of relativity, which predicts how spacetime is warped by the extreme mass of a black hole. The picture is "one more strong piece of evidence supporting the existence of black holes. And that, of course, helps verify general relativity," says physicist Clifford Will of the University of Florida in Gainesville who is not on the EHT team. "Being able to actually see this shadow and to detect it is a tremendous first step."



Credit: The Event Horizon Telescope

"Black hole environments are a likely place where general relativity would break down," says EHT team member Feryal Özel, an astrophysicist at the University of Arizona in Tucson. So testing general relativity in such extreme conditions could reveal deviations from Einstein's predictions. Just because this first image upholds general relativity "doesn't mean general relativity is completely fine," she says. Many physicists think that general relativity won't be the last word on gravity because it's incompatible with another essential physics theory, quantum mechanics, which describes physics on very small scales.

The image also provides a new measurement of the black hole's size and heft. "Our mass determination by just directly looking at the shadow has helped resolve a longstanding controversy," said Sera Markoff, a theoretical astrophysicist at the University of Amsterdam. Estimates made using different techniques have ranged between 3.5 billion and 7.22 billion times the mass of the sun. But the new EHT measurements show that its mass is about 6.5 billion solar masses. The team has also determined the behemoth's size — its diameter stretches 38 billion kilometers — and that the black hole spins clockwise. "M87 is a monster even by supermassive black hole standards," Markoff said.

EHT trained its sights on both M87's black hole and Sagittarius A*, the supermassive black hole at the center of the Milky Way. But, it turns out, it was easier to image M87's monster. That black hole is 55 million light-years from Earth in the constellation Virgo, about 2,000 times as far as Sgr A*. But it's also about 1,000 times as massive as the Milky Way's giant, which weighs the equivalent of roughly 4 million suns. That extra heft nearly balances out M87's distance. "During a single observation, Sgr A* doesn't sit still, whereas M87 does," says Özel, an astrophysicist at the University of Arizona in Tucson. "Just based on this 'Does the black hole sit still and pose for me?' point of view, we knew M87 would cooperate more."

After more data analysis, the team hopes to solve some long-standing mysteries about black holes, such as how M87's behemoth spews a bright jet of charged particles thousands of light-years into space. Hopes are still high for a much-anticipated glimpse of Sgr A*. The EHT team was able to collect some data on the Milky Way's behemoth and are continuing to analyze that data, in the hopes of adding its image to the new black hole portrait gallery.

Since the appearance of that black hole changes so quickly, the team is having to develop new techniques to analyze the data. The next look at the M87 and Milky Way behemoths will have to wait. The good news is that by 2020, there will be more observatories to work with. The Greenland Telescope joined the consortium in 2018, and the Kitt Peak National Observatory outside Tucson, Ariz., and the NOrthern Extended Millimeter Array (NOEMA) in the French Alps will join EHT in 2020.

Adding more telescopes could allow the team to extend the image, to better capture the jets that spew from the black hole. The researchers also plan to make observations using light of slightly higher frequency, which can further sharpen the image. These extra eyes may be just what's needed to bring black holes into even greater focus.

by Lisa Grossman and Emily Conover sciencenews.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

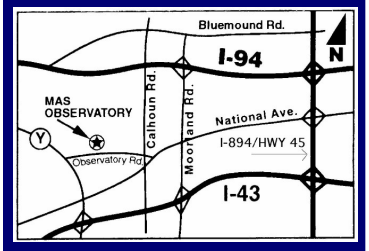
President	Tamas Kriska	414-581-3623
Vice President	Sue Timlin	414-460-4886
Treasurer	Sue Timlin	414-460-4886
Secretary	Agnes Keszler	414-581-7031
Observatory Director	Paul Borchardt	262-781-0169
Asst. Observatory Director	Jeff Kraehnke	414-333-4656
Newsletter Editor	Tamas Kriska	414-581-3623
Webmaster	Gene Hanson	262-269-9576

Board of Directors

Jim Bakic	414-303-7765
Scott Berg	262-893-7268
Russ Blankenburg	262-938-0752
Clark Brizendine	414-305-2605
Jason Doyle	414-678-9110
John Hammetter	414-519-1958
Lee Keith	414-425-2331
Jeff Kraehnke	414-333-4656
Jim Schroeter	414-333-3679
Sue Timlin	414-460-4886
Steve Volp	414-751-8334

May Keyholders

05/04	Steve Volp	414-751-8334
05/11	Gene Hanson	262-269-9576
05/18	Lee Keith	414-425-2331
05/25	Jeff Kraehnke	414-333-4656



MAS Observatory

18850 Observatory Rd
New Berlin, WI 53146

www.milwaukeeastro.org