

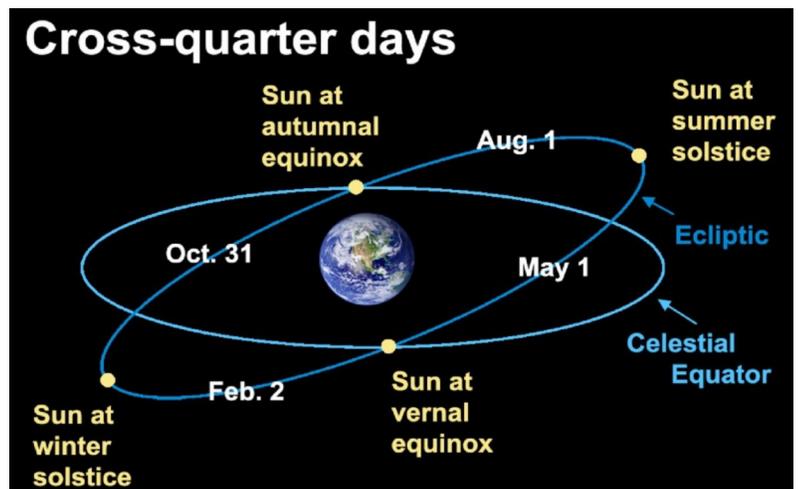


December, 2019

## January Meetings

In January we will resume our usual schedule. The next MAS meeting will be held on **Friday, January 17<sup>th</sup>**, from 7 PM at the Observatory. This is going to be a combined Board/Membership meeting. During the first hour (the official Board meeting) organizational and Observatory related issues will be discussed. Every member is welcome to attend. During the second half, starting at 8 PM **Lee Keith** will give a presentation entitled: *Halloween and other Seasonal Festivals: Cross Quarter Days and the Calendar.*

Astronomy is more than just looking through telescopes and taking pretty pictures. Astronomy started by using the sky as a clock and calendar. We still celebrate many seasonal festivals. Find out what these traditional festivals are, how they fit into the calendar, why they are celebrated and what are their significance.



We will skip the First Wednesday How To Meeting this month since January 1<sup>st</sup> is a holiday. The next one will be in February.

The **PixInsight Focus Group** will meet on Wednesday, January 8<sup>th</sup> at 7 PM. The specific topic of the meeting will be announced on the Google Group.

As always, the Observatory is open on Saturday nights, and also when posted on the Google Group.

## Membership Renewal

It is still not late to renew your membership if you have not already done so. If you prefer to do it online just follow this link: <http://www.milwaukeeastro.org/sendmsg/onlineRenew.asp>. The form can also be printed out and sent back along with a check made payable to the MAS.

If you are wondering whether you need to renew your MAS membership, simply look for your name on this list:

<http://www.milwaukeeastro.org/membership/membersRenewed.asp>. If your name is there, your membership is active through the end of 2020.

Thank you for being a member of the Milwaukee Astronomical Society.

### Inside this issue:

January Meetings	1
Renewal	1
The Year 2019	2
Reports	3
Christmas Party	4
PixInsight group	5
In the News	6
Adopt a Scope	7
Officers/Staff	7
Keyholders	7



As we approach the new year let's take a moment and summarize all the events and achievements of 2019, the year which we are about to leave behind.

We continued upgrading the Club's infrastructure and equipment during the summer maintenance activities. The main project was the re-building of the Ray Zit Observatory. It received a new roof, front wall, door, and siding. The Z building's siding and entrance door were repaired, and the dome floor was painted. The parking lot sign was replaced. Now a professional looking new sign welcomes our visitors. The A-scope's slow-motion drive was fixed, and a new switch was wired to allow lunar tracking. A Bosch Electric Mini-Tank water heater was installed that now serves both bathroom sinks.

We retired the older 14" Celestron with the HyperStar lens (aka F-scope) the use of which became limited due to the ever increasing light pollution in New Berlin. We replaced it with a Stellarvue SVQ 100 refractor astrograph on the AP 900GTO mount previously used on G-scope. DSLR cameras were substituted with a ZWO ASI1600MM Pro CMOS camera that uses a filter wheel with both RGB and narrow band filters. The SBIG CCD camera operating on the G-scope was overhauled by the manufacturer and is looking and working like new. Now we have two fully operational imaging systems available for our members.

To improve the visual observation as well as basic imaging capabilities we repurposed the 10" f/6.3 Meade telescope on the old CGEM mount as a replacement of the 8" Celestron in the new Zit Observatory. This scope also can be used to piggyback a DSLR camera for widefield shots. The 8" Celestron has been added to the list of loaner scopes.

The Club had a successful public outreach program by hosting five Public Nights, eight Observatory Tours to a variety of groups, and gave presentations to two public libraries. We organized a Summer Picnic, a Christmas Party, several Star Parties at Ottawa Lake and Harrington Beach State Parks. We had a privilege to host a talk by our honorary member, Jim Fanson, who is currently a project manager for the Giant Magellan Telescope.

The two major astronomical events of the year were the total lunar eclipse on January 21<sup>th</sup>, that many members watched at the Observatory in sub-zero temperatures, and the Mercury transit on November 11<sup>th</sup>. The chance to observe this latter event was unfortunately ruined by a snow storm.

Since growing number of MAS members are interested in deep sky imaging, this year we started a PixInsight Focus Group that meets monthly. The First Wednesday How to Meetings, specifically designed for beginners to answer any telescope- and astronomical related questions, are still running and popular.

Our Membership grew from 133 to 198 during the year. We welcomed a new Vice-President and two new Directors into the Board. The Google group remained very active throughout the year keeping the membership informed about the upcoming events, status of equipment, Observatory's schedule, and latest astrophotos.

*Thank you everyone for all the contributions and being a member of the Milwaukee Astronomical Society. We wish all of you a Happy New Year.*

## Treasurer's Report

<b>\$5,820.09</b>	<b>Starting Balance as of 11/13/2019</b>
	<b>Expenditures</b>
\$24.88	PayPal fees
\$6.82	Periodic expenses
\$364.07	Annual expenses
\$111.88	WE Energies
\$507.65	TOTAL Expenditures
	<b>Revenue</b>
\$1744.09	Private donations
\$1466.00	Membership dues
\$126.00	Public donations
\$1.00	Grants
\$209.00	Calendars & Christmas
\$3,546.09	TOTAL Revenue
<b>\$8,858.53</b>	<b>Ending Balance as of 12/20/2019</b>

## Membership Report

Since the last Report we received 33 renewals and 11 new applications. We welcome Scott Mingilinio, Cory Tcheng, Janelle Litos, Alicia Dendura & Family, Chaitra Chastry, Ricky Downs, Kevin Laurion & Family, Alexander Johnson, Dee and Don Birschel & Family, Mike McAlister, and Ravin Nirmalarajan & Family. The total number of active members is 198.

The graph below summarizes the monthly change in MAS membership numbers from 2014 thru December 31 of 2019. The membership number for this year was projected to grow to 183 but thanks to extraordinary months of August and December we reached a record setting number of 198. Our hope is that more members will choose to renew their membership for 2020 than in previous years resulting in a smaller drop by January of 2020.

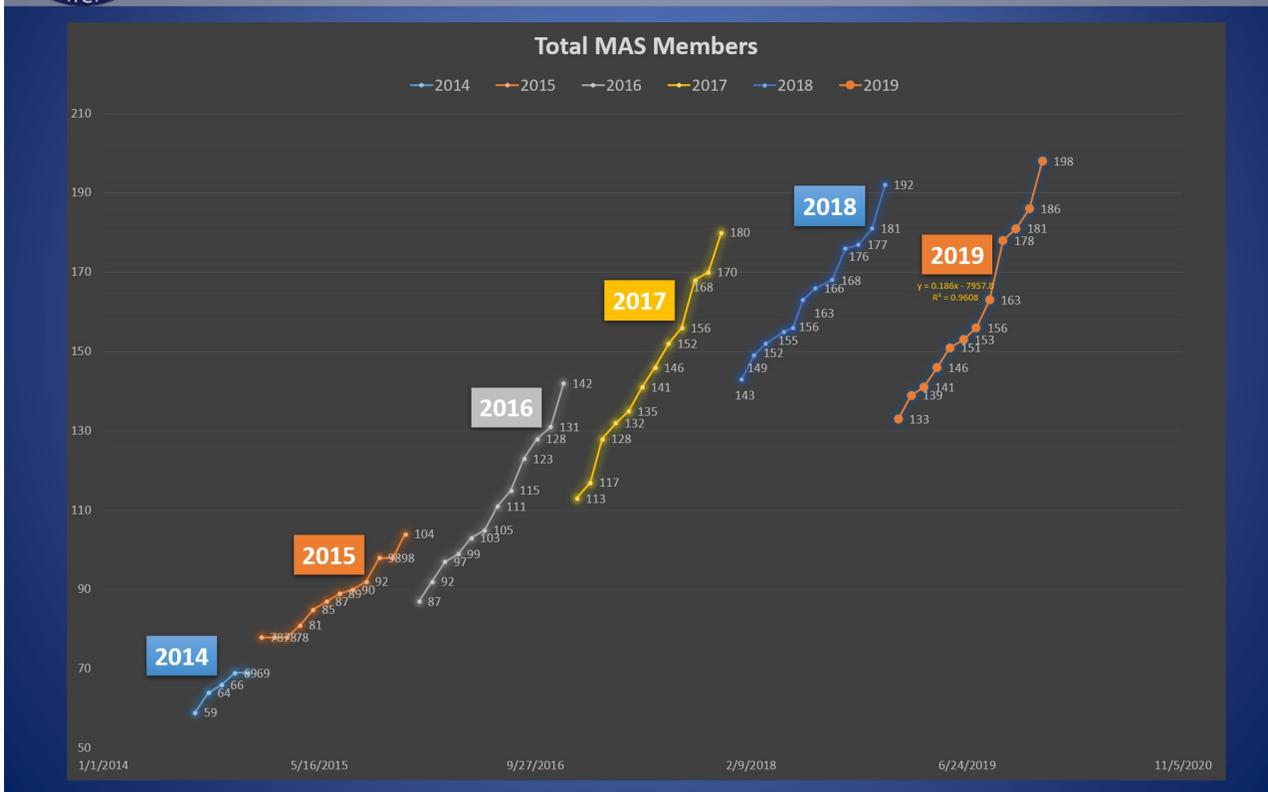
Respectfully Submitted,  
Sue Timlin, Treasurer

Respectfully Submitted,  
Jeff Kraehnke, Committee Chair



## MAS Membership Report

Period: (Nov 13, 2019 – Dec 31, 2019)



## ChristMAS Party

We celebrated the holiday season on Saturday, December 7<sup>th</sup>. About 24 people gathered in the nicely decorated Quonset. The early comers shared the fun hanging the ornaments on the Christmas tree. The main course was pizza, and everybody brought a delicious side dish or sweet. As usual, all of us had a good time socializing while enjoying the excellent food.



## PixInsight Focus Group



No doubt that PixInsight is the most powerful and thus the most popular image processing tool available to deep sky imagers. A growing number of MAS members uses it.

There are immense number of processes to choose from. It makes the software quite intimidating for novices but even seasoned users have hard time learning all the processing tricks. So everybody greeted the initiative to form a focus group where members can share their experiences, and introduce new ideas. The meetings were started in August and since then have been held on

every second Wednesday of the month. They are frequented, the feedbacks are very positive so far, the participants seem to be able to learn from each other, regardless the experience levels.

The topic of the December meeting was "Starting from scratch" – well, almost from scratch. Dennis Roscoe offered to navigate a non-PI user through the process all the way to the final image. Dennis provided the narrowband data of the Pelican Nebula (IC 5070 and IC 5067) he had collected in his personal observatory. He provided the master SII and OII files, and let Jill Roberts who kindly volunteered to be the student-driver, to build a master Ha. Jill then made a color image and post processed it. The whole project was completed within two hours (see below).



*130mm TAK f/5.7/Paramount MX, SBIG STF-8300M camera, SII, Ha, OIII: 9x15 min each*

*Acquisition: Dennis Roscoe, Processing: Jill Roberts during the PixInsight Focus Group meeting*

## In the Astronomical News

### This Newfound Monster Black Hole Is Too Big for Theories to Handle

Stellar-mass black holes aren't supposed to be so hefty.

Scientists recently found a black hole so big that theory strains explain it, a new study reports.

A Chinese-led team discovered a stellar-mass black hole that appears to be 68 times heftier than Earth's sun — nearly three times bigger than the heaviest such objects should be, according to current thinking.

Calculations suggest that the Milky Way galaxy's stellar-mass black holes — which form after the violent deaths of giant stars — should top out at only 25 times the mass of the sun, the researchers said. (Supermassive black holes that lurk at the hearts of galaxies are much bigger, of course, containing millions or billions of solar masses.)

What's more, the huge black hole is also relatively close to Earth in cosmic terms. It sits at 13,800 light-years from our planet — a small fraction of the Milky Way's estimated diameter of 200,000 light-years.

"Black holes of such mass should not even

exist in our galaxy, according to most of the current models of stellar evolution," lead author Jifeng Liu, deputy director-general of the National Astronomical Observatories of China at the Chinese Academy of Sciences, said in a statement.

"We thought that very massive stars with the chemical composition typical of our galaxy must shed most of their gas in powerful stellar winds, as they approach the end of their life. Therefore, they should not leave behind such a massive remnant," Liu added. "Now, theorists will have to take up the challenge of explaining its formation."

Liu's team discovered the black hole using gravitational observations from China's Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST).

Most black holes are found via their dramatic activity in X-rays or gamma rays, which are emit-

ted as the behemoths gobble up nearby gas and dust. Liu's team, however, sought out stars that are orbiting inactive black holes, which are apparent only by their gravitational pull. They discovered a star called LB-1, which is eight times the mass of the sun and that appears to orbit a black hole every 79 days, even though the black hole isn't visible. The scientists backed up their observations with data from two other telescopes.

The discovery of LB-1 fits nicely with another breakthrough in astrophysics," academy representatives added in the same statement. "Recently, the Laser Interferometer Gravitational-Wave Observatory (LIGO) and Virgo gravitational-wave detectors have begun to catch ripples in space-time caused by collisions of black holes in distant galaxies. Intriguingly, the black holes involved in such collisions are also much bigger than what was previously considered typical."

The researchers do acknowledge some caveats with the study, according to Science News. For example, the mass of the black hole depends on

its calculated distance. Europe's Gaia space telescope, which precisely measures the movements of a billion stars, has suggested that the distance to this black hole might be only about 7,000 light-years, or roughly half the distance the Chinese team calculated. If that's true, the black hole would be only 10 times the mass of the sun.

That said, the Chinese-led team noted that, if LB-1 were closer, it would be less luminous and less massive — and its observed temperature cannot be explained with less luminosity. Also, the discrepancy with Gaia's data could be explained if the star were excessively wobbling around the black hole, Science News noted.

by Elizabeth Howell

at space.com



*A massive galaxy cluster, about 4.6 billion ly away. Along its borders 4 bright arcs are visible; these are copies of the same distant galaxy, nicknamed the Sunburst Arc. Credit: ESA/Hubble, NASA, Rivera-Thorsen et al*

## Adopt a Telescope Program - Signup Sheet

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

### At Your Service

#### Officers / Staff

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Vice President	Lee Keith	414-425-2331
Treasurer	Sue Timlin	414-460-4886
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Asst. Observatory Director	Jeff Kraehnke	414-333-4656
Newsletter Editor	Tamas Kriska	414-581-3623
Webmaster	Gene Hanson	262-269-9576

#### Board of Directors

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Jeff Kraehnke	414-333-4656
Jim Schroeter	414-333-3679
Gabe Shaughnessy	262-893-4169
Steve Volp	414-751-8334
Mike Wagner	262-547-3321

#### January Keyholders

01/04 Arun Hegde	414-429-1548
01/11 Lee Keith	414-425-2331
01/18 Jeff Kraehnke	414-333-4656
01/25 Tamas Kriska	414-581-3623



### MAS Observatory

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[www.milwaukeeastro.org](http://www.milwaukeeastro.org)