



May, 2019

Summer Schedule

The Milwaukee Astronomical Society is transitioning to the summer schedule. There will be no Membership Meetings in the summer months of June, July, and August. However, there will be a Board Meeting on the second Monday of each month starting at 7PM at the Observatory. The first one is scheduled for **Monday, June 10th**. The Board Meetings are open to the membership and everybody is welcome who is interested in organizational and Observatory related issues.



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

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MAS Election

During the annual Business Meeting on May 17th two new Board Directors were elected: **Gabe Shaughnessy** and **Mike Wagner**.

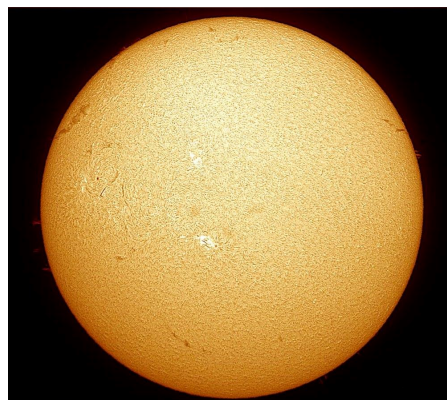
Lee Keith was elected as the new Vice President of the MAS.

There was no change in other officer positions. Tamas Kriska continues to serve as President, Sue Timlin as Treasurer, Agnes Keszler as Secretary, and Paul Borchardt as Observatory Director.

Congratulations to the newly elected, and big thank you to the outgoing Directors and Officers!

The standing committees are chaired by the following members: Tamas Kriska (Observatory), Jeff Kraehnke (Membership), Sue Timlin (Open House). The Program and the Publicity & Outreach chair positions are vacant. If you are interested in filling one of these positions or join a committee please contact any chairs or officers.

Public Nights



The 2019 Open House season is kicking off on June 22nd with the topic of the Sun. This will be a Saturday program with daytime observation, between 1:00 PM and 4:00 PM, starting with a presentation by Sue Timlin followed by viewing the sun with the solar scopes and also with regular telescope equipped with solar filter. The telescope viewing will be based on printed maps that was very popular during the past two years. As always, we need members willing to man a telescope, give a tour of the Observatory, or direct the traffic in the parking lot. Your kind help is appreciated!

Observatory Report

There was an electrical problem with the slow-motion control on A-scope that caused the RA slow-motion from working. I asked Mike Wagner to investigate the problem, he not only found the cause of the outage, but added some new circuitry to keep the problem from recurring. Thanks Mike!

The RGB filters on F-Scope's camera were given a badly needed cleaning recently keeping this scope in good running order.

The Observatory Committee met to tour the grounds and develop a list of needed maintenance and repairs to tackle this summer:

A-dome:

Put two coats of roofing paint on the dome

Add a step or replace the concrete steps in front of the main entrance, and install hand railing

Pour a concrete pad for the Quonset back door

Yard faucet and area:

Pour a cement pad around the faucet, build a plywood or plastic house

Remove the rocks from the surface, cover the area with topsoil and grass seed

Observatory sign in the parking lot:

Replace the plywood, install a frame and pre-made letters and paint it

C-shed door:

Shave off the ground where the door opens and fix the hinges

Z-dome:

Fix the door frame and paint it

Front garage:

Trim the trees around it and re-roof the garage.

Respectfully Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

\$7,219.67	Starting Balance as of 04/17/2019
	<u>Expenditures</u>
\$4.34	PayPal fees
\$262.75	Microphone system
-\$450.00	Platform ladder
\$66.05	WE Energies
-\$116.86	TOTAL Expenditures
	<u>Revenue</u>
\$25.26	Private donations
\$254.00	Membership dues
\$279.26	TOTAL Revenue
\$7,615.79	Ending Balance as of 05/15/2019

Respectfully Submitted,
Sue Timlin, Treasurer

Meeting Minutes

The meeting was held on May 17th at the MAS Observatory, New Berlin and was called to order at 7:02PM by Tamas Kriska President.

Minutes, Treasurer's Report, Observatory Director's Report, and Membership Committee Report electronically submitted ahead of the meeting were approved. Applications of Nancy Lendabarker & family, Raimondo Albarelli & family, Richard Mowad & family, Albert Gennari, and Sunny Murali were approved.

Old Business – *Equipment shuffle*: Steve Volp coordinates the projects of turning the 8" Celestron EdgeHD into a usable scope. *F-scope*: The latest image taken with the new scope just came out. *New microphone system*: With the help of new member Ryan Kujak we spent only \$262.35 to purchase a Shure BLX14/PGA31 microphone system, which has already been installed and is working fine.

New Business – The *Spring Cleanup* work party is scheduled for Saturday, June 1st. *Maintenance budget*: Motion was made and carried to allocate \$2,500 to complete this project. *Founding Member*: Motion was made and carried to elect Paul Borchardt a Founding Member as a recognition of the valuable work he done for the MAS during the past 48 years.

Announcement – Jason Doyle's company, Wago Corp. generously donated two desk top computers and a laptop to the MAS.

Election – New Board of Director members and Officers were elected.

Program – Lee Keith gave a presentation entitled "Zen of telescope buying".



Respectfully Submitted
Agnes Keszler, Secretary

Membership Report

Since the last Report we received 4 applications. We welcome Nancy Lendabarker & family, Raimondo Albarelli & family, Robert Mowad & family, and Albert Gennari, The total number of active members is 152.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Observatory News

MAS Articles of Organization

Though it is assumed that many in our membership (and hopefully all of the Board of Directors) know that our operation and meetings are guided by our Bylaws, we suspect that very few are aware of the Articles of Organization. These are often referred to as the Articles of Incorporation because it is the document that must be submitted when any organization incorporates.

The MAS was incorporated in 1934 with articles filed with the State of Wisconsin in March of that year. They spelled out the basic purpose of the club and basic information on the Board of Directors, the Officers, and their terms. They have only been amended once in the 85 years that have followed and that was in 1992.

The Bylaws are an entirely separate document and really provide the detailed information on how the organization is managed. The differences between the two documents is as follows:

- (1) The Articles are a public document whereas the Bylaws can be private. However, the MAS Bylaws have always been public, which is not unusual for a non-profit.
- (2) The Articles have precedent over the Bylaws. This means the Bylaws cannot contradict the Articles.
- (3) Though both documents specify how they can be amended, they can be different. In our case the Articles it is at least half of all regular members. For our Bylaws it is a majority vote of all members present at a regular meeting.

Copies of the Articles and the one Amendment follow. I have the eleven Articles rendered on the website as they are now in effect. They are currently not linked so the only way to get to them is to specifically use this URL: http://www.milwaukeeastro.org/articles/Articles_of_Organization.asp

Gene Hanson
Webmaster

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VERIFIED COPY

Know All Men By these presents, that the undersigned, adult residents of the State of Wisconsin, do hereby make, sign and agree to the following.

ARTICLES OF ORGANIZATION

ARTICLE FIRST.—The undersigned have associated, and do hereby associate themselves together for the purpose of forming a corporation under Chapter 180 of the Wisconsin Statutes the business and purposes of which corporation shall be:

(If not room below use a rider.)
To promote the study of Astronomy and allied sciences and foster a public interest in astronomical subjects; give and sponsor public lectures; subscribe for and publish literature calculated and intended to diffuse information regarding astronomy and astronomical discoveries; purchase, lease and otherwise acquire real estate for the purpose of erecting one or more astronomical observatories; erect, construct, and maintain one or more astronomical observatories and all necessary auxiliaries thereto; conduct astronomical researches; cooperate with other educational institutions; conduct private meetings and public forums for scientific study and discussions; receive and accept gifts of lands, goods, funds, and materials in order to advance the general purposes of the corporation, and to foster a spirit of fellowship among the members.

ARTICLE SECOND.—The name of said corporation shall be Milwaukee
Astronomical Society and its location shall be in
City of Milwaukee, County of Milwaukee, Wisconsin.

ARTICLE THIRD.—The corporation shall be non-stock and no dividends or pecuniary profits shall be declared to the members thereof.

Observatory News

MAS Founder Member

The Board of Directors of the Milwaukee Astronomical Society has elected Paul Borchardt a Founder Member based on his contribution to our Club during the past 48 years he has been a member of.



Paul was President in 2005, Assistant Observatory Director: 1990-2004, Board Member 1987-1992, 2000-2005, 2015-2016, Observatory Director: 2016-present, Tour Director: 1982-present, MAS Campout organizer: 1991-2000.

He machined various parts for the Z-scope and mount between 1982-1986, made modifications to the A-Scope making it a much better planetary imaging scope, and machined parts for several other telescopes at the Observatory.

Paul is joining the long and still growing list of Founders starting with Luverne Armfield in 1932.

Congratulations Paul!

Name
Luverne Armfield (1932)
Edward Halbach (1965)
Ralph Buckstaff (1948)
Herbert Cornell (1961)
Walter Zinn (1968)
Ray Ball (1971)
William Albrecht (1978)
Harvey Lindemann (1980)
Darrell Moore (1986)
Milton Lange (1988)
Jim Toeller (1993)
Scott Jamieson (2004)
Gerry Samolyk (2004)
Thomas Schmidtkunz (2004)
Brian Ganiere (2015)
Gene Hanson (2015)
Paul Borchardt (2019)

Member's Project

The new F-scope is up and running. We hope that it will become popular among MAS members due to its user-friendly controls, fast imaging capability and excellent performance.

The latest image captured with it is the **Markarian's Chain**, a spectacular set of galaxies in the constellation Virgo. The image is a composite of 16x5 min luminance, and 8x5 min RGB each. Total exposure time is 115 min, post processed with Pixinsight and Photoshop.

If you would like to schedule a training either on this telescope or on the G-scope, which is very similar in operation, please see Jeff Kraehnke or Tamas Kriska.



by Tamas Kriska and Jeff Kraehnke

In the Astronomical News

The Universe's First Type of Molecule Is Found at Last

The first type of molecule that ever formed in the universe has been detected in space for the first time, after decades of searching. Scientists discovered its signature in our own galaxy using the world's largest airborne observatory, NASA's Stratospheric Observatory for Infrared Astronomy, or SOFIA, as the aircraft flew high above the Earth's surface and pointed its sensitive instruments out into the cosmos.

When the universe was still very young, only a few kinds of atoms existed. Scientists believe that around 100,000 years after the big bang, helium and hydrogen combined to make a molecule called helium hydride for the first time. Helium hydride should be present in some parts of the modern universe, but it has never been detected in space — until now.

SOFIA found modern helium hydride in a planetary nebula, a remnant of what was once a Sun-like star. Located 3,000 light-years away near the constellation Cygnus, this planetary nebula, called NGC 7027, has conditions that allow this mystery molecule to form. The discovery serves as proof that helium hydride can, in fact, exist in space. This confirms a key part of our basic understanding of the chemistry of the early universe and how it evolved over billions of

years into the complex chemistry of today. The results are published in this week's issue of *Nature*.

"This molecule was lurking out there, but we needed the right instruments making observations in the right position — and SOFIA was able to do that perfectly," said Harold Yorke, director of the SOFIA Science Center, in California's Silicon Valley.

Today, the universe is filled with large, complex structures such as planets, stars and galaxies. But more than 13 billion years ago, following the big bang, the early universe was hot, and all that existed were a few types of atoms, mostly helium and hydrogen. As atoms combined to form the first molecules, the universe was finally able to cool and began to take shape. Scientists have inferred that helium hydride was this first, primordial molecule.

Once cooling began, hydrogen atoms could interact with helium hydride, leading to the creation of molecular hydrogen — the molecule primarily responsible for the formation of the first stars. Stars went on to forge all the elements that make up our rich, chemical cosmos of today. The problem, though, is that scientists could not find helium hydride in space. This first step in the birth of chemistry was unproven, until now.

"The lack of evidence of the very existence of helium hydride in interstellar space was a dilemma for astronomy for decades," said Rolf Guesten of the Max Planck Institute for Radio Astronomy, in Bonn, Germany, and lead author of the paper.

Helium hydride is a finicky molecule. Helium itself is a noble gas making it very unlikely to combine with any other kind of atom. But in 1925, scientists were able to create the molecule in a laboratory by coaxing the helium to share one of its electrons with a hydrogen ion.

Then, in the late 1970s, scientists studying the planetary nebula called NGC 7027 thought that this environment might be just right to form helium hydride. Ultraviolet radiation and heat from the aging star create conditions suitable for helium hydride to form. But their observations were inconclusive. Subsequent efforts hinted it could be there, but the mystery molecule continued to elude detection. The space telescopes used did not have the specific technology to pick out the signal of helium hydride from the medley of other molecules in the nebula.

In 2016, scientists turned to SOFIA for help. Flying up to 45,000 feet, SOFIA makes observations above the interfering layers of Earth's atmosphere.

But it has a benefit space telescopes don't — it returns after every flight.

"We're able to change instruments and install the latest technology," said Naseem Rangwala SOFIA deputy project scientist. "This flexibility allows us to improve observations and respond to the most pressing questions that scientists want answered."

A recent upgrade to one of SOFIA's instruments called the German Receiver at Terahertz Frequencies, or GREAT, added the specific channel for helium hydride that previous telescopes did not have. The instrument works like a radio receiver. Scientists tune to the frequency of the molecule they're searching for, similar to tuning an FM radio to the right station. When SOFIA took to the night skies, eager scientists were onboard reading the data from the instrument in real time. Helium hydride's signal finally came through loud and clear.

"It was so exciting to be there, seeing helium hydride for the first time in the data," said Guesten. "This brings a long search to a happy ending and eliminates doubts about our understanding of the underlying chemistry of the early universe."

by Cassandra Bell and Alison Hawkes, nasa.gov

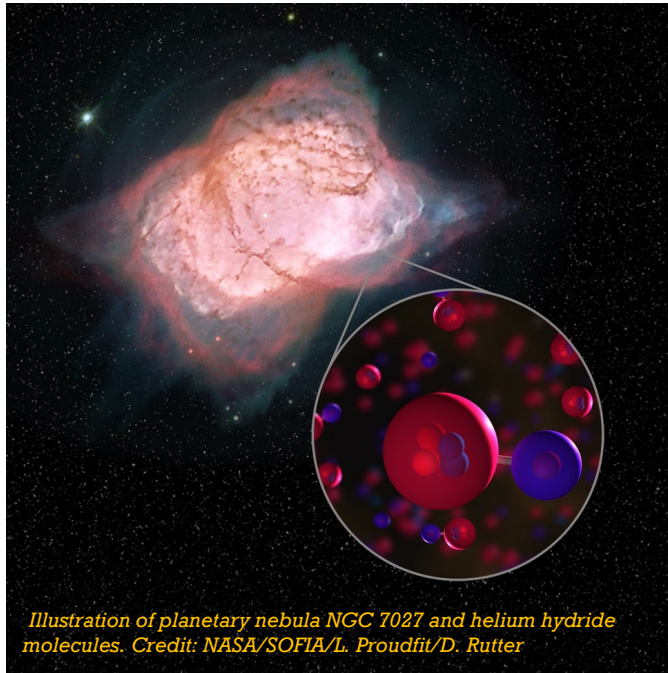


Illustration of planetary nebula NGC 7027 and helium hydride molecules. Credit: NASA/SOFIA/L. Proudfit/D. Rutter

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

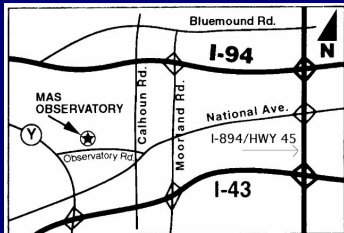
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Treasurer	Sue Timlin	414-460-4886
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Jason Doyle	414-678-9110
John Hammetter	414-519-1958
Jeff Kraehnke	414-333-4656
Jim Schroeter	414-333-3679
Gabe Shaughnessy	262-893-4169
Steve Volp	414-751-8334
Mike Wagner	262-547-3321

June Keyholders

06/01	Tamas Kriska	414-581-3623
06/08	Tom Schmidtkunz	414-352-1674
06/15	Sue Timlin	414-460-4886
06/22	Gene Hanson	262-269-9576
06/29	Russ Blankenburg	262-938-0752



MAS Observatory

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