



May, 2020

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## June Meetings

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. The first one is scheduled for Monday, June 8<sup>th</sup>. 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.

The **PixInsight Focus Group** will meet on Wednesday, June 10<sup>th</sup> at 7 PM through Zoom videoconference. The specific topic of the meeting will be announced on the Google Group.

To protect the health and safety of our members all activities at the Observatory are suspended until the CDC guidelines change. Therefore, the Saturday Member Nights and in person Meetings are cancelled. However, the **First Wednesday How to Meeting** will be held through Zoom videoconference on June 3<sup>rd</sup>, from 7:30PM.

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.

## Election Results

John Hammetter's 2<sup>nd</sup> term, and Scott Berg, Russ Blankenburg and Jason Doyle's 1<sup>st</sup> term have expired. Scott Berg indicated that he was not running for 2<sup>nd</sup> term. Mike Bauer, Jill Roberts and Dennis Roscoe applied for a Board of Directors position ahead of the meeting. There were no further candidates from the floor. The election was held via anonymous voting through the Zoom platform. **Mike Bauer, Jason Doyle, Jill Roberts, and Dennis Roscoe** were elected to the Board. A big thank you for the outgoing Board members for their service.

After the election, the new Board elected the Officers via anonymous voting through the Zoom platform. All officers applied to renew their position. There were no further candidates. All Officers were reelected.

## 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.

## Observatory Director Report

Due to continuing problems with the used guide scope the club has on the F-scope, a new Starlight Xpress Lodestar X2 Autoguider was purchased to replace the ailing guide camera. There has been use of the Observatory by members using equipment on their own. First Wednesday Meeting was held remotely this month and went smoothly. The keyholders are checking in on the day of their member's night to check on the site and make sure all is in order.

Respectfully Submitted,  
Paul Borchardt, Observatory Director

## Treasurer's Report

<b>\$11,165.23</b>	<b>Starting Balance as of 04/15/2020</b>
	<b><u>Expenditures</u></b>
\$21.14	Mower gas
\$20.99	Mower air filter
\$1.04	Mower lube
\$296.00	UVenus filter
\$83.30	WE Energies
\$422.47	TOTAL Expenditures
	<b><u>Revenue</u></b>
\$4.00	Grants
\$4.00	TOTAL Revenue
<b>\$10,746.76</b>	<b>Ending Balance as of 05/12/2020</b>

Respectfully Submitted,  
Sue Timlin, Treasurer

## Membership Report

Since the last Report we received 2 new applications. We welcome Cameron Johnson and David Thornburg. The total number of active members is 167.

Respectfully Submitted,  
Jeff Kraehnke, Committee Chair

## Minutes

Due to the COVID-19 outbreak the meeting was held on May 15<sup>th</sup> via Zoom videoconference.

The meeting was called to order at 7:07 PM by Tamas Kriska President. The following Board Members were present: Jim Bakic, Scott Berg, Russ Blankenburg, Paul Borchardt, Clark Brizendine, Jason Doyle, John Hammetter, Lee Keith, Gabe Shaughnessy, Sue Timlin, Steve Volp, Mike Wagner, and Agnes Keszler. Gene Hanson (FM), Mike Bauer, Randy Culp, Jill Roberts, and Dennis Roscoe were also present.

**Minutes** of the previous Board Meeting electronically submitted by Agnes Keszler Secretary ahead of the meeting were approved.

**Treasurer's Report** electronically submitted by Sue Timlin Treasurer was approved.

**Observatory Director's Report** electronically submitted by Paul Borchardt Observatory Director ahead of the meeting was approved.

**Membership Committee Report** was electronically submitted by Jeff Kraehnke Committee Chair ahead of the meeting. There was no new membership application.

**Old Business** – Public Nights: The June Public Night about the Sun is still cancelled. Possible Face Book live presentation and demonstration will be arranged au lieu the public event.

Observatory use: Member's Nights are cancelled, keyholders still can go out with proper PPE. Equipment and contacted surfaces should be disinfected after use. The keyholders' duty is to check the property, clean Quonset and bathrooms, and disinfect frequently used surfaces.

Google Group overhaul: The Board members' opinion was tested via online polling. The majority found the traffic on the group satisfactory, as well as the discussion about imaging, and would welcome more educational topic. However, other members, especially new ones might have different preferences. The discussion will be continued. The Google group may be divided into two or several sub-groups, or remain one, but daily digest alternative will be offered to members instead of receiving every single email.

**New Business** – Special presentation: MAS member Bill Goes suggested arranging a presentation about the new Canon full frame imaging camera. The presentation will be held via Zoom and will be announced later.

**Announcement** – The next meeting will be on Monday, June 8<sup>th</sup>, 2020 via Zoom videoconference.

The meeting was adjourned at 7:52 PM.

Respectfully Submitted,  
Agnes Keszler, Secretary

## Member's Story

### Imaging Galaxies with B-scope

We've seen the amazing images our expert members have posted. They have a tremendous amount of experience and equipment and time spent on astrophotography - and we love them for it. But for the vast majority of members, it seems an impossible task with careers and family and limited access to the club's equipment—especially now.

Well hopefully here's some encouragement and maybe even a starting point to try next time you're out there. The club has a 12.5 inch World War II surplus-looking cannon called B-scope. It tracks the stars well enough to take 30second exposures through a camera. I aimed it at that galaxy cluster in Leo that several members have shown us already. The scope magnifies pretty well, so only 2 of the 3 galaxies fit into the field. Just 40 frames (20minutes total exposure time) and some magic called digital processing gave this nice close-up of **M65 and M66**:



Not worth posting on any internet site, but very accessible to anyone in the club. And summer has the Milky Way and many nebulae well within reach of 20minutes of exposure time. So get ready...

M65 and M66 are part of the famous Leo Triplet a typical spring object. The Leo Triplet (also known as the M66 Group) is a small group of galaxies about 35 million light-years away in the constellation Leo. This galaxy group consists of the spiral galaxies M65, M66, and NGC 3628.

Another galaxy within easy reach of almost any scope and any camera. It's **M64 the Black Eye galaxy**. It's nice and high and South right now. It is fairly unusual in that the inner dust and stars are



rotating one direction, and the outer dust material is rotating the opposite direction and nearly in the same plane. The boundary between the two gives a lot of new forming stars showing off a lot of blue in professional images. You can read about the controversial theories of whether or not this is two colliding galaxies on-line. Here's 20 minutes of exposure time through the club's B-scope and all club equipment.

Russ Blankenburg

## In the Astronomical News

### Europa: New Evidence of Watery Plumes

A layered inner structure including a liquid iron core, a thin oxygen-rich atmosphere, an induced magnetic field - Jupiter's fourth largest moon, Europa, has greater resemblance with a planet than with a primitive moon. Another special feature: the up to 18-kilometer thick outer crust of frozen water covers a subsurface ocean of water. With the new calculations by a group of researchers led by the European Space Agency and MPS, there is now increasing evidence that the Jovian moon releases this water into space in cryovolcanic eruptions referred to as plumes. Saturn's moon Enceladus is known to display similar behavior. During NASA's Cassini mission, the onboard cameras took spectacular images of its plumes.

Comparable and conclusive proof that also Europa spouts water into space is still missing. "However, various theories, models, and sporadic observations suggest that Europa,

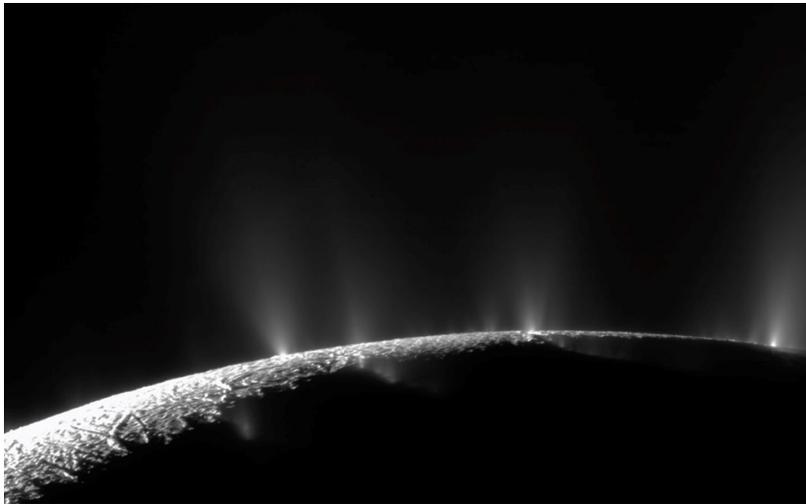
too, can exhibit plumes", says MPS scientist Dr. Elias Roussos. In recent years, researchers from several institutes in Europe and the USA have independently found evidence of a specific plume. Some of these groups evaluated data from the magnetometer on board NASA's Galileo spacecraft, which from 1995 onwards spent eight years exploring the Jovian system. During a fly-by of Europa in 2000, the measured data showed deviations in Jupiter's magnetic field near the moon. These could be due to a plume that occurred at the same time.

ESA scientist Dr. Hans Huybrighs and his colleagues also revisited data from the flyby in 2000. They took another look at measurements performed by the Energetic Particles Detector (EPD). This instrument was developed and built at the Applied Physics Laboratory of Johns Hopkins University and at MPS. Among other things, EPD recorded the distribution of high-energy protons trapped in Jupiter's magnetic field.

"Jupiter's magnetic field is up to twenty times stronger than Earth's and extends several million kilometers into space," MPS researcher Dr. Norbert Krupp describes the conditions within the Jovian system. Europa orbits Jupiter within this enormous magnetic protective shield. During the flyby, EPD recorded significantly fewer protons near the moon than expected. Previously, researchers had assumed the moon itself to have obstructed the detector's view.

However, the current results indicate another cause. In elaborate computer simulations, scientists led by ESA and MPS modelled the move-

ments of high-energy protons during the flyby attempting to reproduce the measurement data from EPD. This was only successful under the assumption that a plume had influenced Europa's environment. When high-energy protons collide with uncharged particles from the moon's at-



*With its impressive water fountains, Saturn's moon Enceladus is probably the best known representative of cryovolcanism in the solar system. Credit: NASA/JPL/Space Science Institute*

mosphere or plume, they incorporate electrons from them thus becoming uncharged particles themselves. "This means they are no longer trapped in Jupiter's magnetic field and can leave the system at high speed," explains first author Dr. Hans Huybrighs from ESA.

For future missions to the Jovian system, Europa's plumes would offer the possibility of coming into direct contact with the moon's subsurface water reservoir and characterizing it. In 2022, ESA's JUICE mission (Jupiter Icy Moon Explorer) will embark on its its journey. MPS will contribute the Submillimeter Wave Instrument (SWI) and the Jupiter Electron and Ion Spectrometer (JEI), one of six sensors from the Particle Environment Package (PEP), to this endeavor. NASA is also preparing the Europa-Clipper mission, which is to be launched in 2023 to the Jovian system. MPS is involved in the mission's science team.

## 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



### MAS Observatory

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New Berlin, WI 53146

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

## At Your Service

### Officers / Staff

President	Tamas Kriska	414-581-3623
Vice President	Lee Keith	414-425-2331
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
Mike Bauer	262-894-0752
Clark Brizendine	414-305-2605
Jason Doyle	414-678-9110
Jeff Kraehnke	414-333-4656
Jill Roberts	414-587-9422
Dennis Roscoe	608-206-0909
Jim Schroeter	414-333-3679
Gabe Shaughnessy	262-893-4169
Steve Volp	414-751-8334
Mike Wagner	262-547-3321

### June Keyholders

06/06	Mike Bauer	262-894-1253
06/13	Russ Blankenburg	262-938-0752
06/20	Brian Ganiere	414-745-5134
06/27	Arun Hegde	414-429-1548