MILWAUKEE ASTRONOMICAL SOCIETY

FOCAL POINT

September, 2017

Next Meeting on October 20th

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The Milwaukee Astronomical Society will hold its next meeting on **Friday, October 20th, from 8 PM at the Observatory.** The speaker of the night will be **Dr. Jean Creighton,** director of the Manfred Olson Planetarium at UWM. Dr. Creighton will share her awesome experience as Airborne Astronomy Ambassador aboard the SOFIA observatory in a talk entitled: **My Adventure in the Stratosphere**. The meeting will be preceded by a Board Meeting from 7 PM that is open for everybody who interested in organizational and Observatory related issues.

The Stratospheric Observatory for Infrared Astronomy (SOFIA) is an 80/20 joint project of NASA and the German Aerospace Center to construct and maintain an airborne observatory. It is based on a Boeing 747SP wide-body aircraft that has been modified to include a large door that can be opened in flight to allow a 2.5 m Cassegrain reflector telescope access to the sky. The equipment has four cameras covering 1,000-210,000 nm, an optical photometer, and an infrared spectrometer. The SOFIA's telescope is by far the largest ever placed in an aircraft. The SOFIA's objectives are to study the composition of planetary atmospheres, comets, interstellar medium, and formation of stars. SOFIA flies at altitudes 12-14 km. SOFIA was designed to support a robust public education and outreach. During the planned 20-year mission lifetime the Airborne Astronomy Ambassador Program directly involves more than thousand educators of all types to reach hundreds of thousands of people through them. Dr. Creighton was chosen by NASA to be one of the 24 Airborne Astronomy Ambassadors to fly in the stratosphere on the largest moving observatory in the world.

Observatory Report

Work is progressing on the leaky solar dome, the main problem which is a mismatch between the dome halves has been corrected but there is still a problem at the hinge point. The Astro Physics mount on G-scope now in testing of the guide performance since the DEC axis upgrade. So far performance has been good. Additional testing with long exposures will be done. The startup/shutdown guide will need to be updated. Members interested in learning G-scope should contact either Jeff Kraehnke or Tamas Kriska for training. The F-scope is looking great with the wire management on the scope having been brought under control. There are no longer multiple leads dangling from the scope waiting to catch on something. Electrical components that were on the floor are now mounted to the scope in a neat and logical order. The dew heaters now stay in place when shutting the scope down and placing the dust cover over the scope. Also, the guide scope has been relocated to the centerline of the DEC axis to avoid an imbalance/torque. Members wishing to use F-scope should get a quick 5-min update on how to attach/detach the camera given the new wire routings.

Respectfully Submitted
Paul Borchardt, Observatory Director

Treasurer's Report

$3,461.05	***Starting Balance as of 8/14/2017***
	Expenditures
$1.69	PayPal fees
$75.36	Mailing of survey
$159.00	DEC/RA motor F-scope
$39.25	WE Energies
$275.30	TOTAL Expenditures
	Revenue
$120.31	Donations
$146.00	Membership dues
$35.00	Donation (eclipse glasses)
$295.00	Public Night
$596.31	TOTAL Revenue
$3,782.06	***Ending Balance as of 8/14/2017***

Respectfully Submitted,
Sue Timlin, Treasurer

Meeting Minutes

The meeting was held on September11th at the MAS Observatory, New Berlin and was called to order at 7:02PM by Tamas Kriska President.

Minutes of the August Board Meeting electronically submitted by Agnes Keszler Secretary ahead the meeting were approved with one correction: Scott Erke did not pay membership fee, hence his application has not been approved.

Treasurer's Report submitted by Sue Timlin ahead of the meeting was approved.

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

Membership Committee Report was submitted by Jeff Kraehnke Committee Chair ahead the meeting. Membership application of Scott Carter and Judson & Sharon Chubbuck were approved.

Old Business – *Solar Eclipse*: After Jeff Kraehnke's introduction members shared their experiences and images. *Key holder duties*: Paul Borchardt will send the letter with information package next week. He will organize 2 meetings, one of which every keyholder must attend. *Preventing membership number drop*: Steve Volp sent out a questionnaire. Based on the feedback keyholders should encourage people with no intention of imaging to come out anyway, and offer to give them a tour of the sky.

New Business – *Membership renewal*: the renewal period will start from September. This will be announced in the newsletter and on the Google group. Individual emails will also be sent out. *September Campout*: Will be held on the September 15-17th weekend at Tom and Toni Maxwell's property, weather permitting.

Respectfully Submitted
Agnes Keszler, Secretary

Membership Report

Since the last Report we received five new membership applications and would like to welcome Thomas Nettesheim, Jeff Fitzsimmons & Family, John Schober & Family, and Brad Felber & Family, Michael Robinson & Family. We now have 161 active members.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Membership Renewal

This month we have kicked in the 2018 Membership renewal period. Thank you everybody who already responded and renewed their memberships.

There are several renewal methods you can choose from. If you prefer to do it online just follow this link: http://www.milwaukeeastro.org/sendmsg/onlineRenew.asp. The renewal form can also be printed out and send it back along with a check made payable to The Milwaukee Astronomical Society.

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 2018.

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

Renew Your Milwaukee Astronomical Society Membership

Do you have to renew your membership? If you are not sure you can check by reviewing the list of renewed members through the end of 2018. If your name is there, you have already renewed. If it is missing, you need to renew.

Members Renewed Through The End of 2018

If you need to renew, fill in the information and then hit "Submit" at the bottom of this form. You will be taken to the payment page where you can choose to pay online via PayPal or send a check. However, if you prefer to fill out a paper form, download this Renewal PDF.

Name:

Address:

City, State, Zip:

Phone number:

Your email address:

MAS Google Group: (•) Yes/Keep ( ) No/remove

Has any of the above information changed since last year? (•) No ( ) Yes

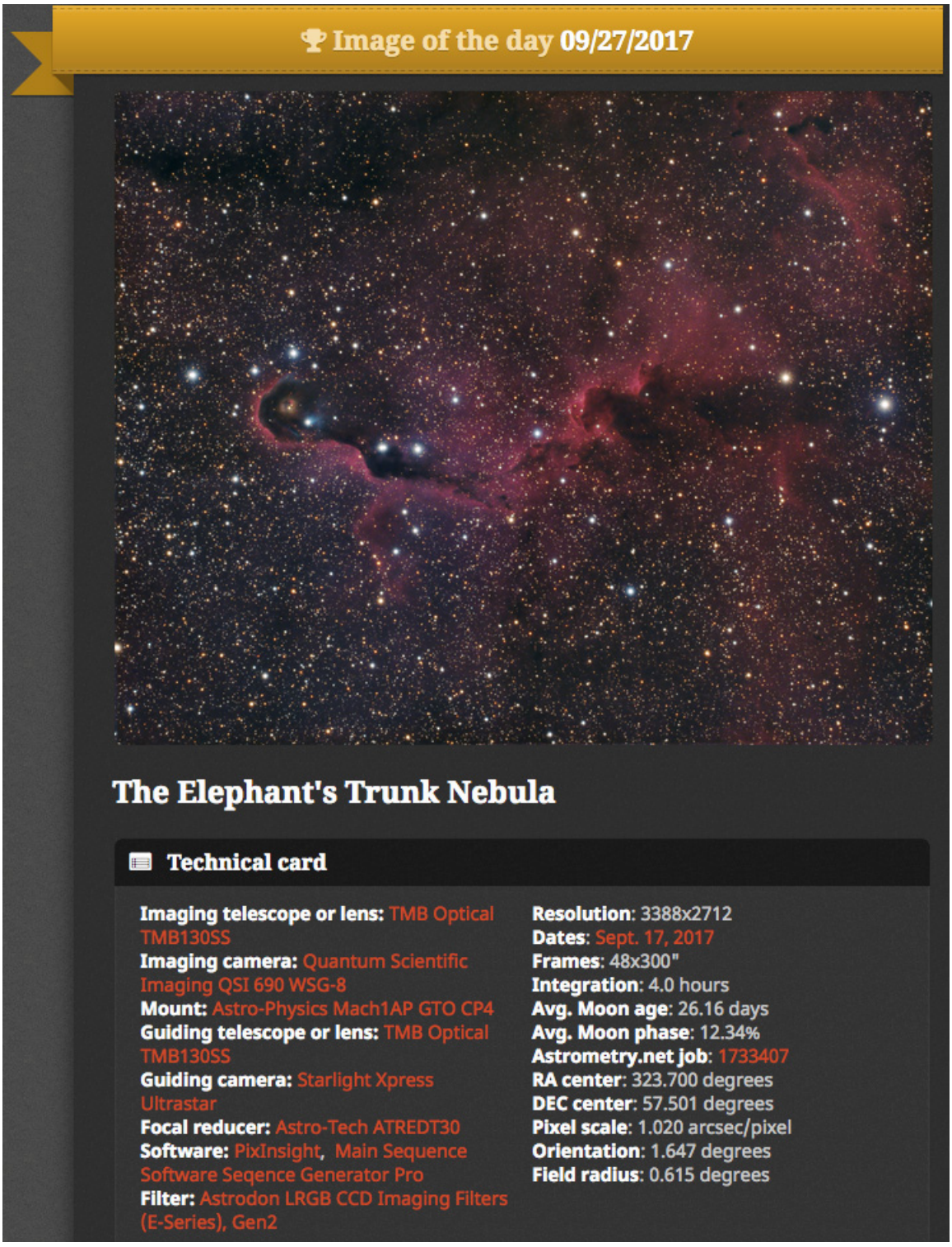
Membership Type - A Resident is defined as a person living in Milwaukee, Waukesha, Ozaukee, or Washington counties. Non-residents are all other locations. Keyholders must pay resident dues.

Select one of the following:

- (•) $46.00 - Resident Individual
- ( ) $52.00 - Resident Family
- ( ) $23.00 - Resident Student
- ( ) $28.00 - Non-resident Individual
- ( ) $32.00 - Non-resident Family
- ( ) $20.00 - Non-resident Student

MAS Member Achievement

We would like to congratulate to our fellow MAS member **Gabe Shaughnessy** for getting the prestigious Image Of The Day from Astrobin for his beautiful Elephant Trunk Nebula image. The Elephant's Trunk Nebula, IC1396A, is a combination of dark and emission nebulae in the constellation Cepheus and lies around 2400 light-years away. The trunk itself spans 20 light years shrouds many young protostars that are in the process of forming. Take a look here if you haven't already: http://astrob.in/312866/0/



Member's Story

Where Hobbies Cross By Paul Borchardt

After I retired, I found astronomy could fill much of the time I now had, but I still needed something else to do on those pesky cloudy nights. Another hobby, one that I could use my hands and imagination to build things. I remembered when I was in high school dabbling in model railroads before the astronomy bug had bitten me consuming my time and extra cash.

So it was back to the trains again, and I joined a local train club to help gain the knowledge I'd need to build a scaled down piece of the world in my basement. The layout, circa early 60s done in N scale, which is 160 times smaller than the real world, began to take shape. I built the normal items you'd find, a small rural town, factories, homes, farms, a river and hills. Yes hills, a nice high hill where an observatory could be found. I thought how cool it would be to have the MAS observatory on my layout, but none of the companies that make N scale replicas offer observatory domes, or the other structures found on our hill top.

A few years went by, I continued to fill my little world with other scenes but always keeping in the back of my mind how I could come up with what I needed to build an observatory. Then last winter a friend of mine, Craig Johnson, who runs a business that makes custom motorcycle parts told me he had bought a 3D

printer to make prototype parts for his business. My idea light bulb lit up when he told me about this printer and what it could do. I asked if he could print a few small buildings for me and he said no problem, just supply the scaled 3D files of the buildings I needed and he could print them out in plastic, (the deal also required several 12 packs of Spotted Cow). I have access to Solidworks, a program used for CAD designing in manufacturing which I used to design the buildings and domes. Measurements of the Observatory were made and used to construct a tiny MAS observatory in my computer. My files were loaded into the printer and after about 8 hours of hot plastic oozing out in all the right places I finally had what I've been wanting for so long.

There was still more work to do. The buildings were printed in several pieces and needed to be assembled and painted. Space had to be made on the layout so the observatory could be fitted in, it was turning out to be more work than I thought, but that was O.K., it hadn't been all that clear lately. As I noted earlier my layout is 1963, all the trains, vehicles, buildings, and even the billboards are from this era. So, the observatory needed to be too. From photos and written history of the MAS I found there were no restrooms on A-building, the C and D sheds were much different structures back then, and the Z-building didn't exist at all. I arranged the buildings as they really are to each other given the space I had to work with. The real observatory was in a cornfield back then, not on the edge of a cliff in a pine forest. But that what I thought would be great, so in my world that is where it's perched.

The layout is a fun project that I enjoy working on, the fact that I could cross over my two hobbies a little makes my imaginary world much more special.

What makes this even more special is that this is how the observatory looked when I made my first visit to the site in August of 1971 minus the restrooms and darkroom section of the Armfield Observatory which were added in 1964. I joined at that time and the board approved my membership in October of that year. So I have now been a member of the club for 47 years!

In the Astronomical News

Kepler Discovers Pulsations in the Pleiades

The winking stars of the Pleiades are easy targets for backyard observers. They're also frequent targets for professional ground-based telescopes, polarimeters, and interferometers. So it's ironic that they're some of the most difficult targets for sophisticated space-based telescopes.

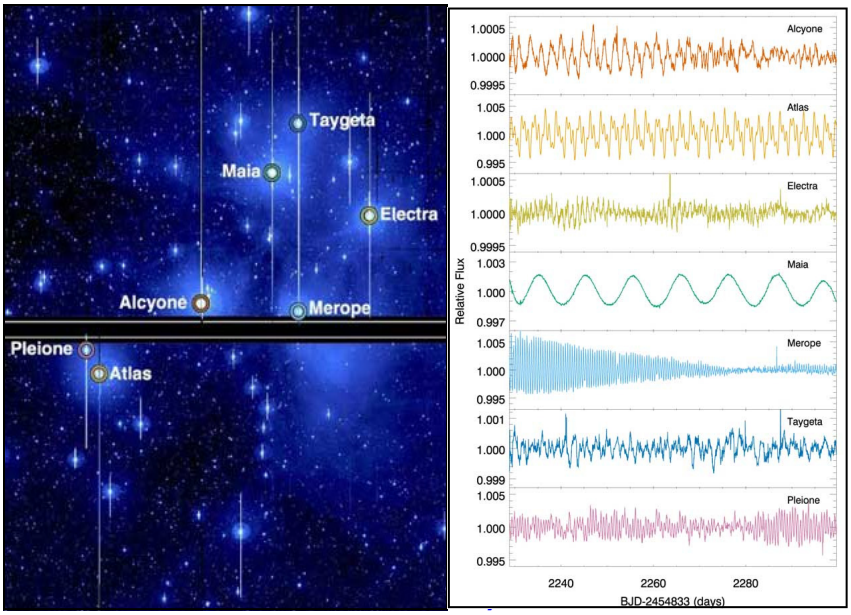
Engineers designed Kepler's sensitive CCD cameras to catch minute changes in faint stars, in order to detect the tiny blips in light that indicate a planet transiting its sun. But that exquisite sensitivity means that Kepler has difficulty measuring brilliant stars such as Alcyone, Atlas, Electra, Maia, Merope, Taygeta, and Pleione — the "seven sisters" of the Pleiades.

CCD cameras work by capturing photons in "wells," with each well corresponding to a single pixel in the resulting image. If a plethora of photons come in, the well may overflow, "bleeding" into neighboring wells.

Such bleed trails make it difficult to measure the brightness of a star, because the recorded photons aren't all in one place.

In the November issue of the *Monthly Notices of the Royal Astronomical Society*, Timothy White and colleagues have come up with a way around Kepler's limitations: an innovative method called *halo photometry*.

Rather than looking at the saturated pixel that represents the star itself, the method measures brightness using the scattered light around this central pixel. From this "halo," the astronomers could reliably measure how bright stars varied over time.



Light curves show how the "seven sisters" of the Pleiades open star cluster vary in brightness over time.
White, T. et al. Monthly Notices of the Royal Astronomical Society, *2017 November 1*

The brilliant stars we see in the Pleiades cluster are blue giant stars — they're all brighter and more massive than the Sun, and nearing the end of their short lives. And the Kepler observations reveal that they all pulsate, slowly varying in brightness by less than 1%.

But one of these stars is not like the others. Maia was already known as a *mercury-manganese star*: its slow rotation and calm atmosphere allow unusual concentrations of heavy elements to circulate near its surface. The Kepler observations revealed that Maia varies on an unusually long period, brightening and fading over a period of 10 days. Combined with ground-based spectroscopy and interferometry, the Kepler data also show that we likely see Maia equator-on. White and colleagues determined that the variability must come from large spots enriched with chemicals on the star's surface. If the spot is fixed on the stellar surface, then it probably has some relation to the magnetic field present, but more data is needed to learn why and how these chemical spots would exist. Maia should be further investigated using Doppler imaging techniques over several years to better characterize the spots.

Witnessing these small surface changes is crucial to understanding stars, especially the interiors that are otherwise out of observational reach, Gulliver adds. The sloshing plasma that leads to the brightness pulsations that Kepler detects can tell astronomers what's happening inside stars. There is much that we have yet to understand about the physics of stellar cores.

by Monica Young, Sky & Telescope

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/Matt Mattioli	8" F/11 Celestron EdgeHD	Ray Zit Observatory
8	Tamas Kriska	14" F/1.9 F-scope	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
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Observatory Director	Paul Borchardt	262-781-0169
Asst. Observatory Director	Jeff Kraehnke	414-333-4656
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Webmaster	Gene Hanson	262-269-9576

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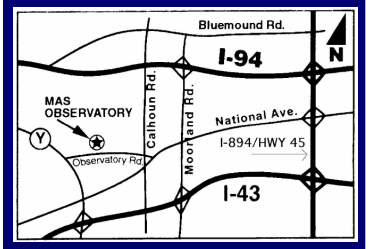
Robert Burgess	920-559-7472
Jason Doyle	414-678-9110
John Hammetter	414-519-1958
Lee Keith	414-425-2331
Frank Kenney	414-510-3507
Jeff Kraehnke	414-333-4656
Sue Timlin	414-460-4886
Steve Volp	414-751-8334

October/November Keyholders

10/7	Steve Volp	414-751-8334
10/14	Sue Timlin	414-460-4886
10/21	Tamas Kriska	414-581-3623
10/28	Steve Volp	414-751-8334
11/4	Herman Restrepo	414-702-2842



MAS Observatory

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