FOCAL POINT

February, 2021

March Meetings

The next **Membership Meeting** will be on Monday, March 15th from 8 PM via Zoom videoconference. We will be watching an online presentation by Michio Kaku entitled: The Universe in a Nutshell. Michio Kaku is an American theoretical physicist, futurist, and popularizer of science. He is the co-founder of string field theory, and is one of the most widely recognized scientists in the world today. In a profoundly informative and deeply optimistic discussion, Professor Kaku delivers a glimpse of where science will take us in the next hundred years, as warp drives, teleportation, inter-dimensional wormholes, and even time travel converge with our scientific understanding of physical reality. While firing up our imaginations about the future, he also presents a succinct history of physics to the present.

As always, the **Board Meeting** will be held right before the Membership Meeting, from 7 PM, and is open to every MAS member who is interested in organizational and Observatory related issues.

The **Astrophotography Interest Group** will meet on Wednesday, March 10th at 7 PM trough Zoom videoconference. Jim Bakic will give a presentation and lead a discussion about the his experiences with an Astrophotography Imaging Suite NINA.

The **First Wednesday (How to) Meeting** will be held through Zoom videoconference on March 3rd, from 7:30 PM. This is an informal meeting to discuss technical aspects of astronomy, however, any astronomy-related topic can be brought up. New members are especially encouraged to attend this meeting. It is a chance to receive tips on how to get started and/or get more involved in the Club's activities.

Invitations will be sent out prior to meetings.

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.

Inside this issue:

Observatory Director Report

There has been little use of the observatory do to really bad weather this last month. Conditions around the buildings is poor but has improved with Brian Ganiere's snow blowing paths.

Two member's nights were canceled due to the bad weather. Keyholders have been checking on the Observatory and all is in order.

Respectfully Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

$10,802.93	***Starting Balance as of 01/16/2021***
	Expenditures
$3.19	PayPal fees
-$148.99	Overpayment
$136.80	WE Energies
-$9.00	TOTAL Expenditures
	Revenue
$104.00	Membership dues
$50.00	Key deposit
$23.08	Other revenue
$177.08	TOTAL Revenue
$10,989.01	***Ending Balance as of 02/08/2021***

Respectfully Submitted,
Sue Timlin, Treasurer

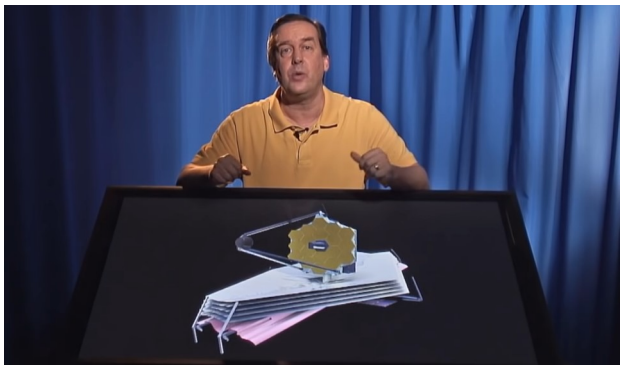
Membership Report

Since the last Report we received 1 renewal and 2 new membership applications. We welcome Scott Chang and Katie Akemann & Family. The total number of active members is 167.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Minutes

Due to the COVID-19 the February Board Meeting was held via Zoom videoconference on February 15th. The meeting was called to order at 7:04PM by Tamas Kriska President.
Minutes, **and Treasurer's Report** electronically submitted ahead of the meeting were approved. **Observatory Director's Report** electronically submitted ahead of the meeting was amended and approved. Amendment: The switch of the ceiling exhausting fan in the Quonset should be disabled for winter. WE trimmed the trees in the parking lot along the power line.
Membership Committee Report was submitted electronically ahead of the meeting. Membership applications of Lucy Steffers and Scott Chang were approved.
Old Business – *Display box*: Yet to be purchased. *Ottawa Lake SP permit*: The permit has been extended for 2021.
New Business – *Snow removal*: Only the parking lot is plowed after snow falls. Keyholders are encouraged to make the Observatories accessible by using the snowblower. The drive way should be salted.
Telescope donation: Steve Alexander, a former MAS member donated a 9 ¼" Celestron telescope with accessories.
New keyholders: Jill Roberts was reinstated. William Gottemoller applied for a full key. He will receive a training before the Board will be voting on his application.
Announcement – The next meeting will be on Monday, March 15th, 2021 via Zoom.



Program – Video viewing of Frank Sommers' presentation entitled Deep Universe: Hubble's Universe Unfiltered.

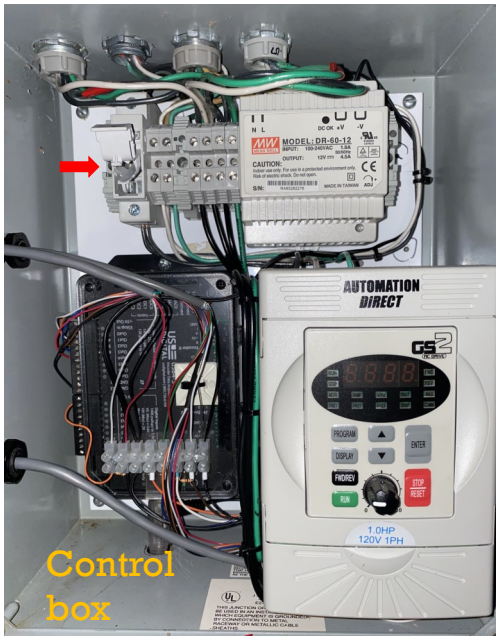
Respectfully Submitted,
Agnes Keszler, Secretary

Maintenance

The East parking lot was plowed after each major snow falls, and eventually a wide path around the hill. Then Brian Ganiere used the snow blower to clear a paths to each Observatory.

A huge amount of snow had to be shoveled from the Z dome roof to allow the motorized dome to move. A blown fuse had to be replaced in the control box as well.

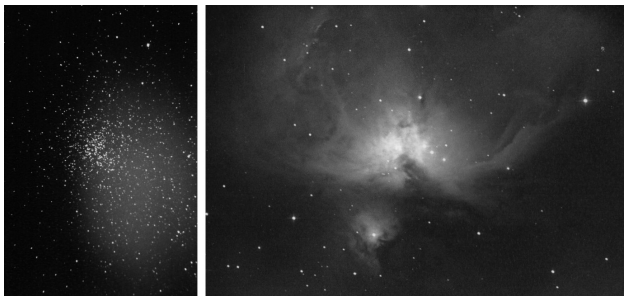
The switch of the big fan in the Quonset has been disabled for the winter.



The Bad Ol' Days of Film Imaging (part II)

To show you the benefit of digital imaging, I first want to share a few images of mine along with experiences and hassle acquiring and processing them. While I was not a big film imager, I dabbled in getting a few "good" images. I could do my own black & white (monochrome) film developing, processing and printing. I took only a few images worth saving as I was not thrilled with guiding my telescope manually for many minutes or hours.

All these were taken with a 10" f/4.5 telescope with hypersensitized (forming gas) 2415 (fine grained) film. Hypersensitization involved soaking the film in "forming gas" which was a combination of hydrogen (!) and nitrogen under pressure and high temperature for several days.



I had a great 10 minute guided image of M13 which I had to end early because the sprinklers on the golf course I was imaging on turned on. Fortunately, I was just out of range. Unfortunately, it was the las image on the roll and was partially on previously exposed film. Only ½ a picture but the stars were tight!

I also had a 10 minute unguided (!) image of the "Flame Nebula" NGC 2024 in Orion that was taken during a neighborhood power outage from the highly light polluted Riverwest area of Milwaukee that turned out perfect! Unfortunately, it was also the last image on the roll and was partially exposed during processing. Again, only ½ a picture.

Next is an image of M37 taken at the same time as the above. Good round stars! I guess the scope was working great that night. This was an image on the same roll as the Flame image but fortunately, before it. So what about all the images before the good ones? They were streaked of course due to so many things it is had to know where to start.

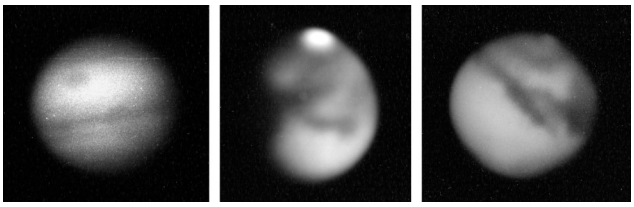
Lastly is an image of the Orion Nebula (M42/43) taken with the MAS "A" scope with Tri-X film for 10 minutes unguided on 12/21/1984 and "pushed" (overdeveloped) by 50% to show more faint details. It was a cold night and I went out intentionally because cold is another trick to make film "faster". The image turned out pretty good but what you don't see is all the chemicals, time and effort used to get this image. This image was my first & only attempt at a special advanced printing technique called "unsharp masking". I don't know of anyone in the MAS that has done this (forgive me if my info is mistaken). It involved making a second negative that was a copy of the first, resulting in a positive or the image. If I had placed both the positive & negative together, you would see a completely blank image. The trick was that when you printed the image, you would put the original negative in the enlarger and focus carefully, then place a piece of glass 1/16" thick over the negative then the positive oner the glass resulting in a negative, glass, positive sandwich. You do not touch the focus! What you see on the printing easel is a dim, ghostly image because the negative and positive are opposites but since the positive is slightly unfocused, it lets some light through. You have to expose for a long time but after some experimentation and lots of printer paper, you have a good image. It took me days of preparation to get to the entire afternoon where I printed the single image you see here. Oh, the chemical smell!

If I hadn't done all this, I would have had an image where the bright center would have burned out, obscuring most of the details and the outer, dim part would have been nearly invisible. I could have exposed for either the bright center or the dim periphery but not both.

Why do I tell you all this gory detail? To demonstrate how rare and how much effort could go into a good image with film. I never did anything like this again. Too much work.

And the worst is yet to come. Many people, more skilled, motivated and with bigger and better equipment than I, did get good images of deep sky objects. But it could be argued that that there were shockingly few, if any, good planetary images before space probes or digital cameras.

Here are my best images of Jupiter & Mars



from the 1980s. These were the only ones out of the 100s that I took that were worth printing. Lots of $$ in film with little to show for it.

Next time I will show what limited the quality of planetary images with film and what state of the art in planetary imaging looked like before digital cameras.

Lee Keith

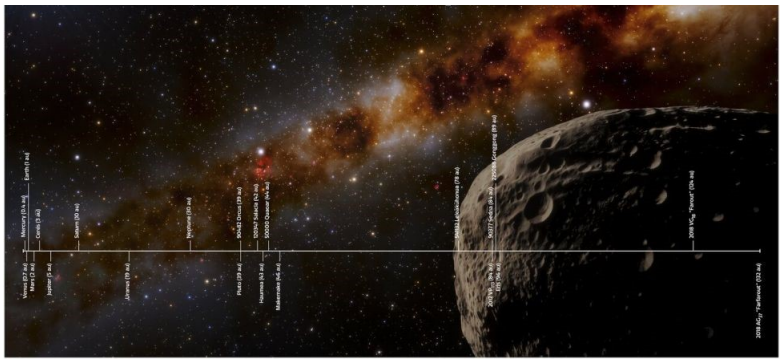
To be continued in the March issue

In the Astronomical News

'Farfarout' Is Officially the Most Distant Object in Our Solar System

The planetoid dubbed Farfarout was first detected in 2018, at an estimated distance of 140 astronomical units (AU) from the sun — farther away than any object had ever been observed. (One AU is the average Earth-sun distance — about 93 million miles, or 150 million kilometers. For perspective, Pluto orbits at an average distance of about 39 AU.)

Farfarout's inherent brightness suggests a world roughly 250 miles (400 kilometers) wide, barely enough to qualify for dwarf planet status. But the size estimate assumes the world is largely made of ice, and that assumption could change with more observations. And speaking of more observations: The detection team has now collected enough additional data to confirm the existence of Farfarout and nail down its orbit. As a result, the planetoid just received an official designation from the Minor Planet Center in Cambridge, Massachusetts, which identifies, designates and computes orbits for small objects in the solar system.



Along the bottom, various solar system objects are plotted according to their distance from the sun, with the planets and closest dwarf planet (Ceres) appearing at the far left and the most distant solar system objects known on the far right. (Image credit: NOIRLab/NSF/AURA/J. da Silva)

That designation, announced Wednesday (Feb. 10) in a Minor Planet Center electronic circular, is 2018 AG37. (Farfarout will also receive a catchier official moniker down the road.)

"A single orbit of Farfarout around the sun takes a millennium," discovery team member David Tholen, an astronomer at the University of Hawai'i, said in a university statement. "Because of this long orbital period, it moves very slowly across the sky, requiring several years of observations to precisely determine its trajectory."

Astronomers spotted Farfarout using the Subaru 8-meter (26.2 feet) telescope on Maunakea in Hawai'i and traced its orbit using the Gemini North and Magellan telescopes.

"Only with the advancements in the last few years of large digital cameras on very large telescopes has it been possible to efficiently discover very distant objects like Farfarout," co-discoverer Scott Sheppard, a solar system small bodies scientist at the Carnegie Institution for Science, said in the same university statement.

Farfarout is currently about 132 AU from the sun, the researchers determined. And its orbit is now known to be very elliptical, swinging between extremes of 27 AU and 175 AU, thanks to gravitational sculpting by Neptune.

"Farfarout was likely thrown into the outer solar system by getting too close to Neptune in the distant past. Farfarout will likely interact with Neptune again in the future, since their orbits still intersect," Chad Trujillo, an exoplanet astronomer at Northern Arizona University, said in a statement from the National Science Foundation's NOIRLab. (The laboratory's name reflects an acronym no longer used by NSF.)

Because Neptune plays such a large role in Farfarout's life, the planetoid likely cannot help astronomers in the hunt for Planet Nine, the big hypothetical world that some astronomers think lurks unseen in the far outer solar system.

Planet Nine's existence has been inferred from its putative gravitational influence on small bodies very far from the sun, whose orbits cluster in odd and interesting ways. But the small worlds that astronomers look to as bread crumbs in the Planet Nine search are free of Neptune's influence, unlike Farfarout, the researchers said.

The team that spotted Farfarout is well known for peering deep into the dark and frigid outer solar system. For example, in 2018, the researchers also found the distant object Farout and a faraway dwarf planet nicknamed "The Goblin." And just to be clear: Farfarout's distance record refers to its current location. There are a number of other objects, such as the dwarf planet Sedna, whose orbits take them much farther away from the sun at points than Farfarout will ever get. And scientists think there are trillions of comets in our solar system's Oort Cloud, which begins about 5,000 AU from the sun.

Elizabeth Howell space.com

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

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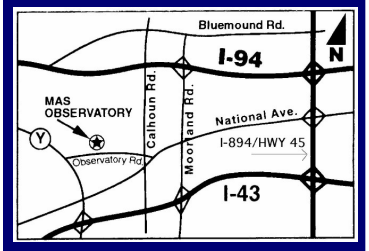
March Keyholders

03/06	Jill Roberts	262-765-7092
03/13	Jim Bakic	414-303-7765
03/20	Mike Bauer	262-894-1253
03/27	Russ Blankenburg	262-938-0752



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