



October, 2018

November Meeting

The Milwaukee Astronomical Society will hold its next meeting on **Friday, November 16th, from 7 PM at the Observatory**. This is going to be a combined Board / Membership Meeting.

During the first hour organizational and Observatory related issues will be discussed. Every Member is welcome. During the second hour will be a discussion on topics suggested by members.

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

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Membership Renewal

The Membership renewal period continues. 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 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 2018.

Please renew your membership today and remain a part of our Milwaukee Astronomical Society community.

Annual Holiday Party



The MAS is organizing the 2018 Christmas Party on Saturday, December 8th at 4:00 PM at the Observatory, New Berlin.

Pizza and soda will be served. Donations of \$5/person or \$8/family is appreciated. Please bring along a side dish or dessert to share.

Please join us with your family to celebrate the Winter Holidays and the New Year together.

Public Nights

On the last Open House of 2018 Jim Bakic gave a presentation about Constellations and Asterisms. Then our visitors, a Wauwatosa Girl Scout group among them, were given a tour of the Observatory and were shown planets and deep sky objects through various telescopes.

A big thank you to everybody who helped during the season to make the Public Nights successful.



Observatory Report

What started as a \$2000 project to have S&K Pump install a new hydrant outside of the A-building, ballooned into \$6000 project when the old pipes and the well's pressure tank were excavated and found to be rusting through and in need of replacement. We now have not only a new hydrant, but also a new lateral pipe between the well and the building and a low maintenance pressure tank located inside of the A-building.

A new staircase/platform was purchased for use in the Z-dome for accessing a now much higher G-scope. The new platform will fit through the slit, but will need to be subbed out to a firm with the proper equipment to safely lift in place the platform into the Z-dome. The old mount in the Z-dome that holds the G-scope has been painted to match the color of the powder coated bridge and mount riser. The new mount bridge and riser are assembled and in place on the existing mount and the mount itself has been placed on the riser.

On Saturday, 10/13, a work party cut down and removed the over grown evergreens that were obstructing the western sky from Z-dome from the west side of the Z-building. A dehumidifier was installed in the Quonset Building. It was very noticeable on the couple of remaining warm days how much nicer it felt with the lower humidity in the Quonset Building.

Respectfully Submitted,
Paul Borchardt, Observatory Director

Treasurer's Report

\$11,182.53	Starting Balance as of 09/19/2018
	Expenditures
\$22.67	PayPal fees
\$213.26	Fire extinguishers
\$10,321.67	Water line/donations
\$1,449.91	Observatory expenses
\$54.96	WE Energies
\$36.00	Water/sewer
\$12,098.47	TOTAL Expenditures
	Revenue
\$288.00	Private donations
\$1,674.00	Membership dues
\$3,900.00	Public donations
\$5,862.00	TOTAL Revenue
\$4,946.06	Ending Balance as of 10/17/2018

Respectfully Submitted,
Sue Timlin, Treasurer

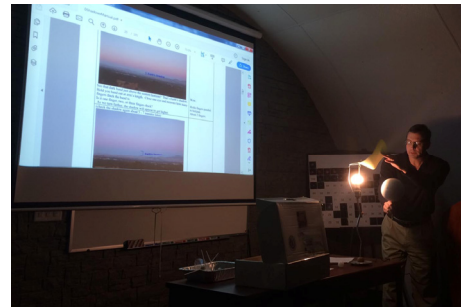
Meeting Minutes

The meeting was held on October 19th 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 were electronically submitted ahead of the meeting. Membership application of George Claudio and family was approved.

Old Business - G-scope: After welding and painting the fork the bridge, the riser, and the new mount were installed. Yard faucet: As the old pressure tank was rusting through, the whole system was completely replaced at a cost of \$6000 which was approved by the Board via on-line voting. Stump and tree removal: After extensive yard work there are numerous stumps to remove. Work platform: Arrived with a tax and shipping cost of \$385.74. A motion was made and carried to allocate \$700 for crane-lifting and placing it through the slit. Loaner scope: The Board discussed the loaner scope policy the Observatory Committee proposed.

New Business - Equipment shuffle: The Observatory Committee proposed a plan to shuffle and repurpose existing equipment to maximize usage. Christmas party: The event is scheduled for December 8th at 4 PM at the Observatory.



Program - Russ Blankenburg gave a presentation on the Shadows and Silhouettes Toolkit provided by the Night Sky Network.

Respectfully Submitted
Agnes Keszler, Secretary

Membership Report

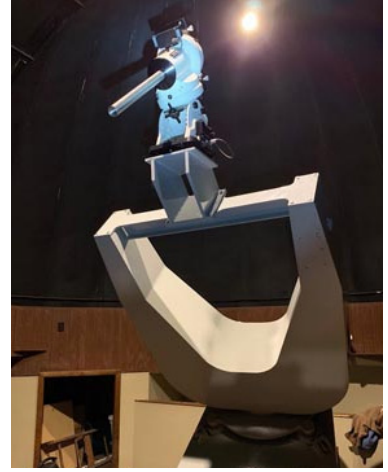
Since the last Report we received 5 new membership applications and would like to welcome Anna Warwik, and George Claudio & Family, Jen Dexter, Ertan Ornek & Family, and Raafat Kashlan. We have 180 active members.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair

Observatory Maintenance

The right ascension axes of the old Z-scope mount was permanently immobilized, turning it into a pier for G-scope. The fork was painted to matching color to the bridge and riser, and finally the new AP mount was installed.

We also did some landscaping around the Z-building. The trees that obscured the western sky from the Z-dome were cut along with the shrubs at the back garage. The back garage was cleaned and reorganized.



In the Astronomical News

Astronomers Find Another Clue That Planet X Is Lurking Out There

Scientists have discovered yet another marker on the trail toward the putative Planet Nine. That clue is 2015 TG387, a newfound object in the far outer solar system, way beyond Pluto. The orbit of 2015 TG387 shares peculiarities with those of other extremely far-flung bodies, which appear to have been shaped by the gravity of a very large object in that distant, frigid realm — the hypothesized Planet Nine, also known as Planet X.

"These distant objects are like breadcrumbs leading us to Planet X," study leader Scott Sheppard, of the Carnegie Institution for Science in Washington, D.C., said in a statement.

"The more of them we can find, the better we can understand the outer solar system and the possible planet that we think is shaping their orbits — a discovery that would redefine our knowledge of the solar system's evolution," he added. And 2015 TG387 is special among these breadcrumb crumbs, because it was found during a relatively uniform survey of the northern and southern skies rather than a targeted hunt for clustered objects in certain parts of the sky, Sheppard said. Targeted hunts can produce biased results.

2015 TG387 has two dwarf-planet companions in the low-bias class, Sheppard said: 2012 VP113, which he and his colleague Chadwick Trujillo spotted in 2014 as part of the same, ongoing long-term survey; and the relatively bright Sedna.

"And then if you bring in some of the other extreme objects — several of them were found in our survey as well," Sheppard told Space.com. "The statistics get better and better that this planet is likely out there."

Sheppard and his colleagues first spotted 2015 TG387 in October 2015, using Japan's 8 meters Subaru telescope atop the volcanic peak Mauna Kea in Hawaii. The researchers nicknamed the object "The Goblin". It took the team three additional years to nail down The Goblin's orbit, which they did with the aid of observations by the Las Campanas Observatory in Chile and the Discovery Channel Telescope in Arizona.

2015 TG387 loops around the sun on an extremely elliptical path, coming within about 65 AU of the sun at its closest point (known as perihelion) and getting about 2,300 AU away at its most distant (aphelion). It takes about 40,000 Earth years for the newfound object to complete one lap around the Sun.

Only two known solar system bodies have more-distant perihelia than The Goblin does (2012 VP113 and Sedna), and only one (2014 FE72) has a greater aphelion

distance. (For perspective: Pluto never gets closer to the Sun than 29.7 AU, or farther away than 49.3 AU.)

Sheppard and his colleagues think 2015 TG387 is about 186 miles wide and probably spherical, in which case it would qualify as a dwarf planet. "It's pretty faint, so we can really just see that it's there," Sheppard told.

But going back to the orbit: The Goblin's is similar in key ways to those of some other extremely distant bodies — particularly in an element called "longitude of perihelion." Basically, the elongated parts of their elliptical orbits are clustered in the same part of the sky, which is consistent with gravitational shepherding by Planet X. The existence of Planet X was first

seriously proposed in 2014 by Sheppard and Trujillo, to potentially explain oddities in the orbits of 2012 VP113, Sedna and a few other trans-Neptunian objects. In 2016, astronomers Konstantin Batygin and Mike Brown presented more evidence for such an unseen "perturber", which they called Planet Nine. Batygin and Brown

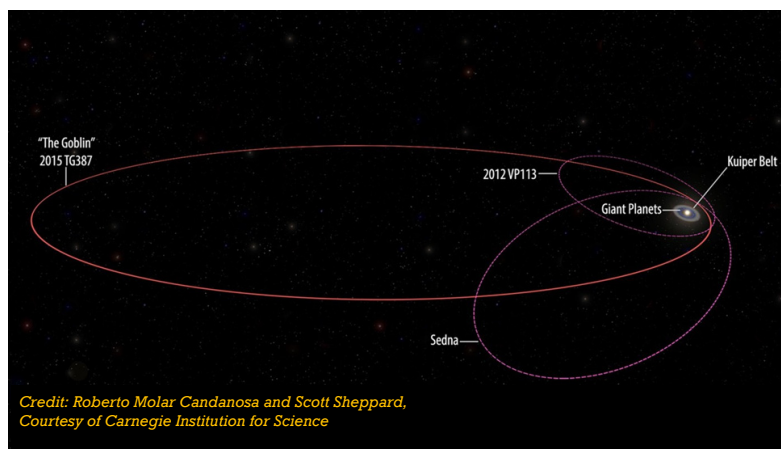
have suggested that this world may be about 10 times more massive than Earth and orbit about 600 AU from the Sun on average.

In the new study, the researchers also performed computer simulations to test how Planet X's gravitational tug might influence the orbit of The Goblin. They found significant shepherding akin to that inferred for other distant objects — and determined that 2015 TG387's orbit remains stable for the age of the solar system nonetheless. "What makes this result really interesting is that Planet X seems to affect 2015 TG387 the same way as all the other extremely distant solar system objects," Trujillo, who's based at Northern Arizona University, said in the same statement. "These simulations do not prove that there's another massive planet in our solar system, but they are further evidence that something big could be out there."

Sheppard puts the odds of Planet X's existence at around 85 percent. And he says it's not at all surprising that astronomers haven't spotted it yet.

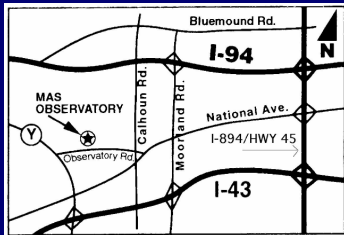
"Where we think the planet is — hundreds of AU away, if not 1,000 AU — something even as big as Neptune would be fainter than most telescopes could see," Sheppard told. "And most of our surveys to date do not go that faint, do not go that deep. We've covered very little of the sky to the depth that's needed to be covered to find something this faint," he added. "You can hide a very big thing in the outer solar system very easily."

by Mike Wall, 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	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



MAS Observatory

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November Keyholders

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11/17	Steve Volp	414-751-8334
11/24	Paul Borchardt	262-781-0169