



December, 2020

January Meetings

The first Membership Meeting of 2021 will be on Monday, January 18th from 8 PM via Zoom videoconference. MAS member **Dennis Roscoe** will give a presentation entitled: *All Aboard - Destination Mars*. The talk will be about the development of SpaceX's Starship and its first uncrewed mission to Mars in 2024. A crewed mission could be as early as 2026.

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

The **Astrophotography Focus Group** will meet on Wednesday, January 13th at 7 PM through Zoom videoconference. The topic of the presentation/discussion will be announced later on the Google Group.

The **First Wednesday Meeting** will be held through Zoom videoconference on January 6th, from 7:30 PM. This is an informal meeting to discuss technical aspects of astronomy, however, any astronomy-related topic can be brought up. There will be a short presentation by Lee Keith entitled: *How to use your (new) Telescope* discussing some terminology, star atlases and star hopping. 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.

Zoom invitations will be sent out shortly before the 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:

January Meetings	1
Membership renewal	1
The Year 2020	2
Treasurer Report	3
Membership	3
Maintenance	3
120 th FP Issue	4
Conjunction	7
In the News	8
Adopt a Scope	9
Officers/Staff	9
Keyholders	9

Membership Renewal: LAST CALL

It is still not too late to renew your membership. There are several methods you can choose from. To do it online just follow this link: <http://milwaukeeastro.org/renew>. The renewal form can also be printed out and send it back along with a check made payable to The Milwaukee Astronomical Society.

Do I need to renew my MAS membership? Simply look for your name on this list: <http://milwaukeeastro.org/membership/membersRenewed.asp>. If your name is there, your membership is active through the end of 2021.

MAS depends on its members and their dues to help sustain one of the largest amateur astronomy club in the US that has been around for the past 88 years!

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

Treasurer's Report

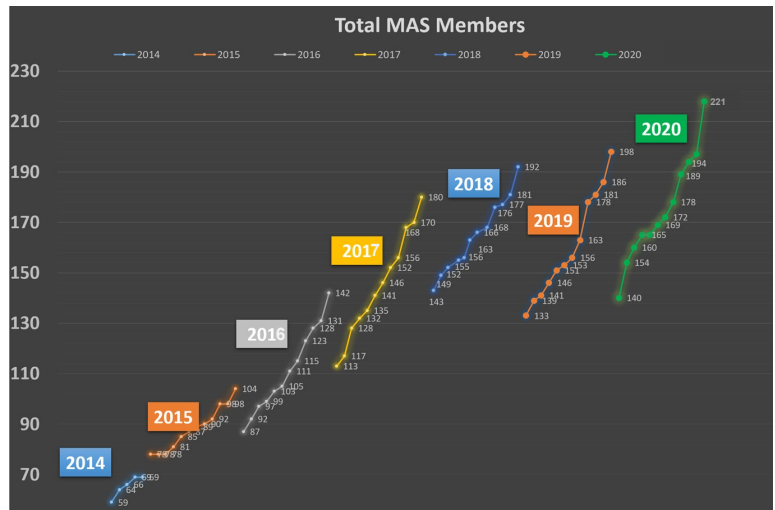
\$7,903.20	Starting Balance as of 11/14/2020
	Expenditures
\$59.86	PayPal fees
\$160.00	Taxes
\$80.55	WE Energies
\$300.41	TOTAL Expenditures
	Revenue
\$431.29	Equipment sale
\$2,290.00	Membership dues
\$3.00	Grants
\$2,724.29	TOTAL Revenue
\$10,327.08	Ending Balance as of 12/21/2020

Respectfully Submitted,
Sue Timlin, Treasurer

Membership Report

Since the last Report we received 19 new applications. We welcome Lisa Swaney, Eric Couto & Family, Galen Kelly, Keith Christ & Family, Thomas Best & Family, Carlos Valenzuela & Family, David Frana & Family, John Seymour & Family, Paul Swokowski & Family, Matthew Mattioli & Family, Tracie Asher & Family, Chris Wszalek & Family, Adam La Luzerne & Family, David Neyer & Family, Jessica Klein, Cameron Irwin, Rebecca Kubisiak & Family, Franklin Smith, and Joel Skoug & Family. The total number of active members is 221.

Respectfully Submitted,
Jeff Kraehnke, Committee Chair



Maintenance



The outlet of the pressure tank (located in the dark room) has been damaged during the last winter and was leaking. We suspect, that even though the room is heated, during some subzero temperature nights the pipe froze. To avoid this from happening in the future Jeff installed a heating tape.

The Year 2020

2020 was a very unusual year. It has barely begun when in March the outbreak of COVID-19 pandemic forced us to shut down the Observatory. As we were trying to figure out how to navigate through this new situation all meetings were quickly moved onto the Zoom platform. The transition was successful, the Zoom meetings became well attended. The hands-on type First Wednesday how to meeting for beginners has transformed into an online informal conversation opportunity on any astronomy related topics, but mostly on how to get started and how to get more involved in the hobby of astronomy. The Imaging Focus Group has also been meeting monthly. The program was alternating between sharing personal image processing experiences and a brand new Deep Sky Imaging Acquisition Workshop series where certain aspects of imaging equipment are being discussed in great details. The Google group was very active throughout the year.

Unfortunately, all the public events such as Open Houses and Observatory tours were cancelled along with the always highly attended Summer Picnic and the Christmas Party.

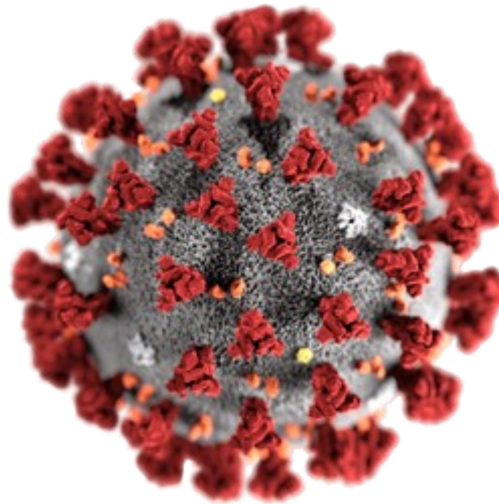
By June it has become obvious that the virus would stay with us for a longer period of time, so the Board of Directors decided to cautiously reopen the Observatory for Saturday Member nights. Disinfectants were distributed to all domes and sheds, wearing mask and social distancing were made mandatory, and observation activities were suggested to be limited to open-air locations.

Surprisingly, despite the pandemic the popularity of the Saturday Member's Nights did not decrease, on clear nights members still came out to use the Club's equipment. We also welcomed more new members than ever. The current 221 MAS memberships with 19 new membership applications in December alone is record breaking.

Among the astronomical events of the year meteor showers, the unexpected appearance of the Neowise comet, the enormous Sun activity,

close opposition of the Mars, and the Great Jupiter-Saturn conjunction sparked the biggest excitement and observing activity. We even managed to organize couple Star Parties at Harrington Beach and Ottawa Lake state parks.

During this year's election meeting in May the MAS membership re-elected one Board Director (Jason Doyle) to his second 3-year term, and elected Mike Bauer, Jill Roberts and Dennis Roscoe to their first 3-year term to serve on the Board of Directors. The new Board then re-elected all Officers for another one year term.



The maintenance work has not stopped during the pandemic. In fact more tasks were completed than in a normal year. The main entrance steps to A-building were replaced, the front garage was re-roofed, and A and Z domes were re-painted by professional contractors. We also organized several work parties to break the concrete in front of the Quonset entrance and then install hand-railing to the new

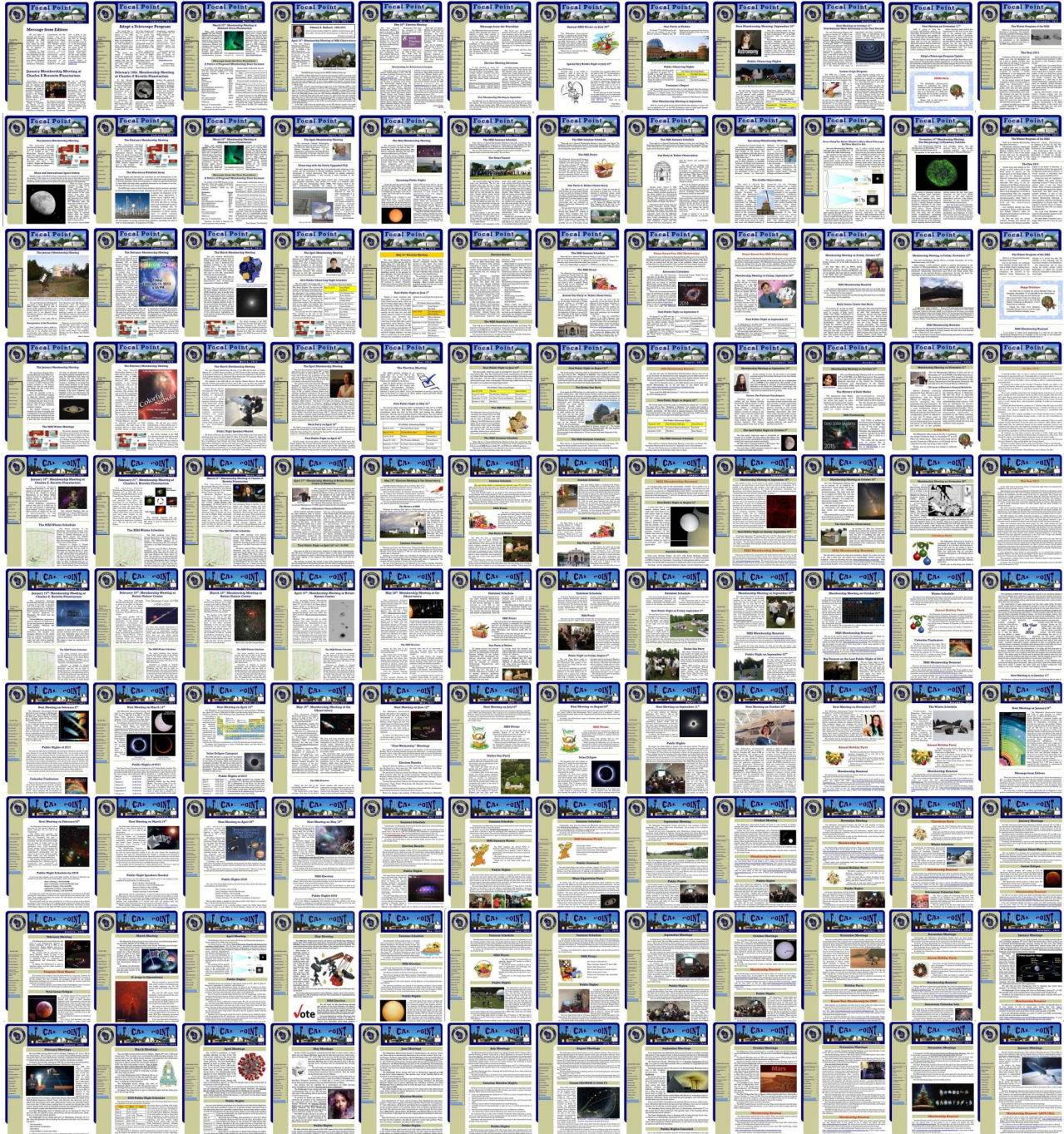
steps, to trim trees by the front garage, to replace the old entrance chain with a more user-friendly gate system, and to pour a concrete pad and install new PVC house around the yard hydrant. The B-dome entrance door's hinges had to be cut and replaced when the door got accidentally locked from inside. The septic tank was located, the entrance hole was dig out, a contractor was hired to clean it, after which a riser was installed to make the process easier in the future. The mouse-damaged underground power cables to the Tangney and Toeller Observatories were re-routed, a pile of branches and trees that accumulated during the past two years were burned, the torn A-dome slit was repaired, the broken slit-cables of B-dome was repaired. Other minor maintenance items included: fixing the J-trim on the Z building, reinforcing the drooping wall panels in the Quonset, installing a heat tape to avoid water pipe damage.

Thank you everyone for all the contributions and being a member of the Milwaukee Astronomical Society. We wish all of you a Happy New Year!

A Special Focal Point Anniversary

This edition of the MAS Focal Point marks a special anniversary. Our editors, Tamas Kriska and Agnes Keszler, has held this position for the last 10 years so this is their 120th issue! And it's 120 because they have published an issue *every* month!

I created this first page collage of Focal Points from their first in January, 2011 until the current because I could think of no better way to showcase the effort.



I cannot stress enough that our newsletter is one of the best when compared to other astronomy clubs. Our newsletter is never overly long and it is a concise document. Many club newsletters I've seen have too much peripheral info so the important news often gets buried. Ours always has the really important info right up front.

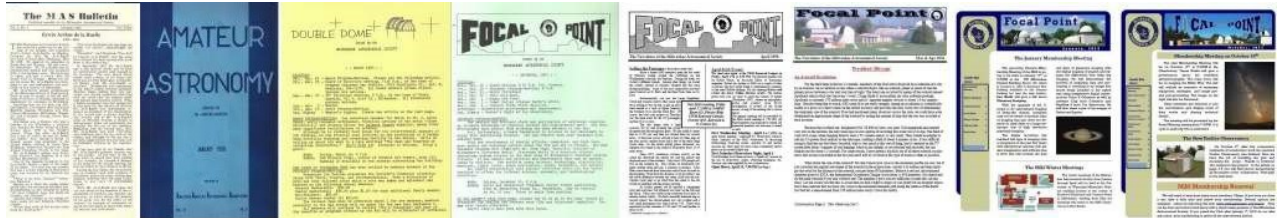
I hope all MAS members join with me in congratulations for 10 fantastic years. And I wish Tamas and Agnes find it in them to keep it going as long as possible.

A Special Focal Point Anniversary

Newsletters Throughout Club History

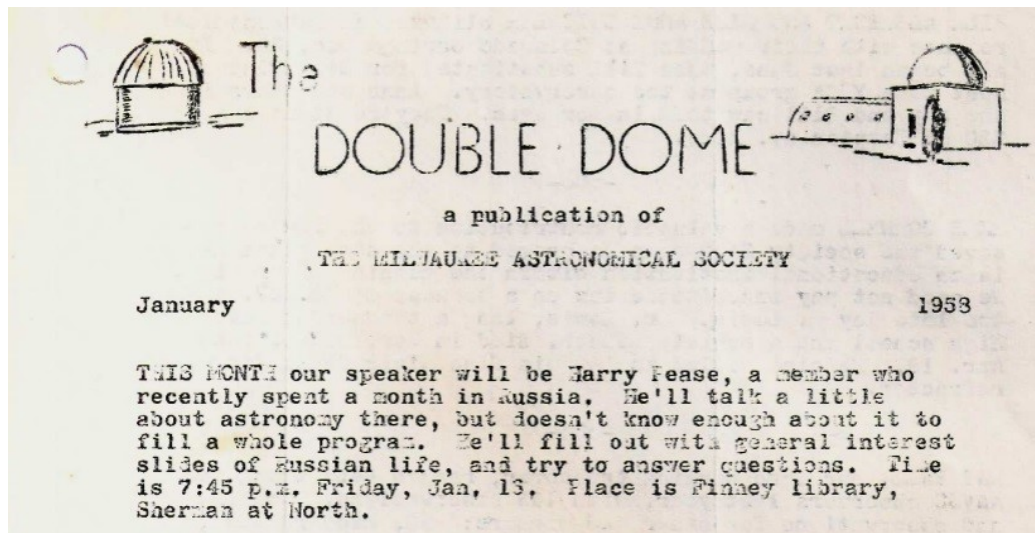
It may surprise you (it certainly surprised me) that we haven't always had a newsletter. From August 1938 thru December 1958 (a 20 year span) there was *no* newsletter for the MAS. And there was another period: from September 1932 when the club was formed through January of 1934 and a few holes starting in 1995 thru 2010.

The society's first newsletter was published in February of 1934. It was unnamed initially, but by May was entitled the MAS Bulletin. These were amazingly thorough with many contributors and were offset printed by a professional publisher. This was distributed monthly until December 1935 when it was replaced by *Amateur Astronomy* which was the journal of the American Amateur Astronomical Association, where the MAS had its own section. This journal had photographs on occasion. That



monthly publication continued until the July 1938. The newsletter then went into sad hiatus until the end of 1958. It is unknown why.

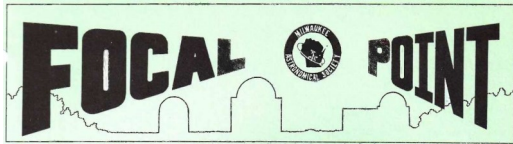
In January of 1959 the newsletter resumed with the name *Double Dome*, a reflection of our observatory site being dominated by the A and B Domes. Incredibly, there was a typo and the date actually says 1958. The quality of the newsletter was pretty low, but it sure beat nothing. And there didn't seem to be a lot of pride in it because we don't know who the editors were for the first several years. It was then taken over by Joe Sara, but still the issues were not signed and almost all were just a single page.



This would change in November 1967 when the *Double Dome* editor became LeRoy Simandl. After his first issue, all would be multi-page documents and the quality of the newsletter improved dramatically. And there was some pride because from the start he signed (literally!) the issues. Simandl would continue as our editor until the October 1989 issue. He holds the record as editing the most newsletters – 225 over a 23 year reign.

The last issue of the *Double Dome* was June 1983. Apparently someone noticed that the name was no longer accurate as the Z-Dome was now there. But the change started in April 1982 with this note in the *Double Dome*: "PUT ON YOUR THINKING CAP! Now that the 26" telescope building has a brand new dome, the name of this newsletter is no longer appropriate. A contest has begun to rename the *Double Dome*, and while we're at it, re-design the nameplate."

A Special Focal Point Anniversary



With the September 1983 issue, the name changed to the Focal Point and it displayed the new nameplate, which we still use to this day. However, even with the name gone, notice that they still had a rendering, now of the 3 domes. That would remain until the roll-off observatories were built.



January, 2000. The new C-Shed (Albrecht Observatory) is completed.



March 2001. The new D-Shed is completed.



March 2002. We now have a photo of the observatory on the cover.



The era of Tamas Kriska begins with a new rendering.



The current header started in January 2015 when it was realized that the name Focal Point was used in the context of a telescope. Tamas designed this creative header.

In Praise of the Newsletter

Historically, the club newsletter has been the lifeblood of our organization. Of course we have meetings (general, board, elections) and other events and they are announced here. And because not everyone could attend, important information coming out of those meetings got reported. For many years while I lived in Arizona the Double Dome and Focal Point were my lifelines of information to keep me up with what's going on in the club.

Why do we still have a newsletter? I'm hoping most of you think that's either a ridiculous or rhetorical question. But it deserves addressing because I fear too many ignore this publication or only minimally scan it. After all, we have a website and a vibrant Google Group. Messages can go out immediately. But the newsletter puts everything together in one concise document. Most if not all of the immediate important information is there. It can be found in our other platforms, but it gets buried in a sea of other info. With electronic information, it's hard to be sure people are receiving and absorbing the "important" stuff.

Finally, it has one attribute missing from all of the other communication platforms: it's an historical snapshot in time. To this end I have scanned nearly all the past newsletters and you can read them on our website.

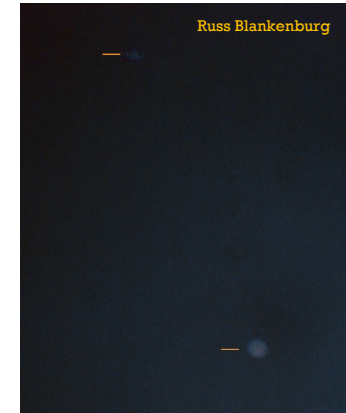
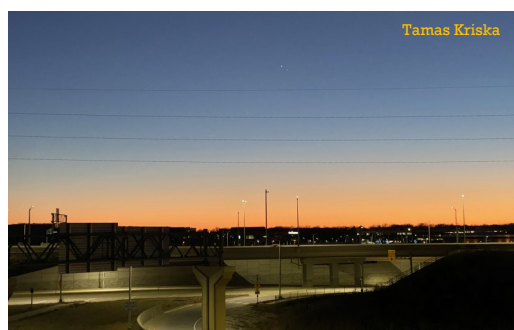
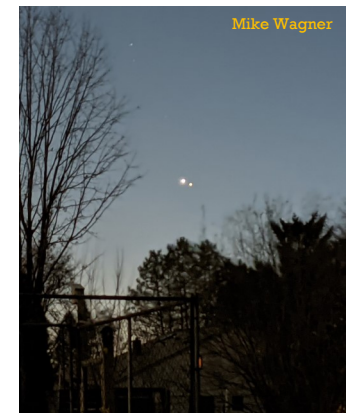
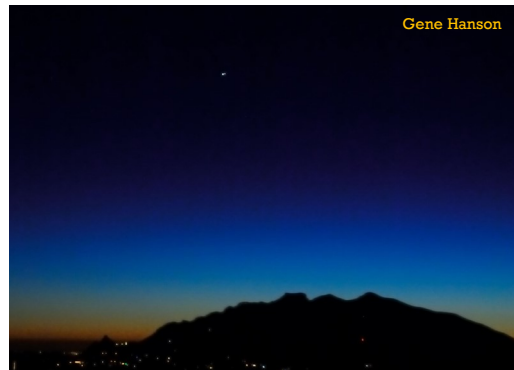
Gene Hanson

The Great Conjunction of 2020

One of the most anticipated astronomical event of the year was the Great Conjunction. Great conjunctions occur every 19.6 years. Jupiter takes 11.9 years to orbit the Sun whereas for Saturn it takes 29.5 years. Each planet moves East in the sky every day, with Jupiter moving further East than Saturn. Jupiter finally overtakes Saturn in its orbit in 19.6 years. What made this event special is the fact that the December 21st conjunction was especially close that happens only every 400 years.

Only Gene Hanson was able to observe the closest approach on December 21st down in Arizona. In Milwaukee the first opportunity to see the conjunction presented itself on the 23rd as a short opening between two cloud bands. But even on December 25th, the first real clear night since the closest approach, the two planets still appeared extremely close to each other.

Here is a little compilation of images taken by MAS members.



In the Astronomical News

'It's Mindboggling!': Astronomers Detect Most Powerful Black-hole Collision Yet

Astronomers have detected the most powerful, most distant and most perplexing collision of black holes yet using gravitational waves. Of the two behemoths that fused when the Universe was half its current age, at least one — weighing 85 times as much as the Sun — has a mass that was thought to be too large to be involved in such an event. And the merger produced a black hole of nearly 150 solar masses, the researchers have estimated, putting it in a range where no black holes had ever been conclusively seen before.

“Everything about this discovery is mindboggling,” says Simon Portegies Zwart, a computational astrophysicist at Leiden University in the Netherlands. In particular, he says, it confirms the existence of ‘intermediate mass’ black holes: objects much more massive than a typical star, but not quite as big as the supermassive black holes that inhabit the centers of galaxies. The event was detected on 21 May 2019, by the twin Laser Interferometer Gravitational-wave Antenna (LIGO) detectors in the United States and by the smaller Virgo observatory in Italy. It is named GW190521 after its detection date.

Since 2015, LIGO and Virgo have provided new insights into the cosmos by sensing gravitational waves. This has revolutionized the study of black holes, providing direct evidence for dozens of these objects, ranging in mass from a few to about 50 times the mass of the Sun.

These masses are consistent with black holes that formed in a ‘conventional’ way — when a very large star runs out of fuel to burn and collapses under its own weight. But the conventional theory says that stellar collapse should not produce black holes between about 65 and 120 solar masses. That’s because towards the end of their lives, stars in a certain range of sizes become so hot in their centers that they start converting photons into pairs of particles and antiparticles — a phenomenon called pair instability. This triggers the explosive fusion of oxygen nuclei, which rips the star apart, completely disintegrating it. In their latest discovery, the LIGO and Virgo detectors sensed only the last four ripples produced by the spiraling black holes, with a frequency that rose from 30 to 80 Hertz within one-tenth of a second.

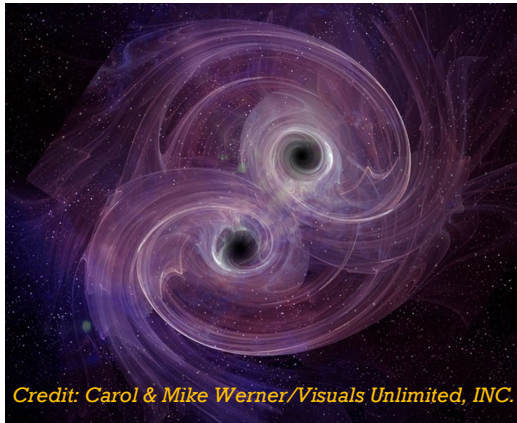
While relatively smaller black holes continue to ‘chirp’ up to higher frequencies, very large ones merge earlier, and barely enter the lower end of the frequency range to which the detectors are sensitive.

In this case, the two objects were estimated to weigh around 85 and 66 solar masses. “This is quite neatly in the range one would expect the pair-instability mass gap should be,” says LIGO astrophysicist Christopher Berry of Northwestern University in Evanston, Illinois. Selma de Mink, an astrophysicist at Harvard University in Cambridge, Massachusetts, puts the cut-off for pair instability even lower, perhaps at 45 solar masses, which would push the lighter of the two objects firmly into the forbidden zone, too. “For me, both black holes are uncomfortably massive”, she says.

To explain their observations, the LIGO researchers considered a range of possibilities. The main scenario the team contemplated is that the black holes got so large because they were themselves the result of earlier black-hole mergers. Black holes resulting from stellar collapse should teem inside dense stellar clusters, and in principle they could undergo repeated mergers. But even this scenario is problematic because, following a first merger, the resulting black hole should typically get a kick from the gravitational waves and eject itself from the cluster. Only in rare cases would the black hole stay in an area where it could undergo another merger. Successive mergers would be more likely if the black holes inhabited the crowded central region of their galaxy, de Mink says, where gravity is strong enough to prevent recoiling objects from shooting out.

It is not known in which galaxy the merger happened. But in roughly in the same region of the sky, a team of researchers spotted a quasar — an extremely bright galactic center powered by a super massive black hole — undergoing a flare around a month after GW190521. The flare could have been a shockwave in the quasar’s hot gas produced by the recoiling black hole, although many astronomers are cautious to accept that the two phenomena are related.

Davide Castelvecchi, nature.com



Credit: Carol & Mike Werner/Visuals Unlimited, INC.

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



MAS Observatory

18850 Observatory Rd
New Berlin, WI 53146

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	262-894-1253
Jill Roberts	262-765-7092
Clark Brizendine	414-305-2605
Jason Doyle	414-678-9110
Dennis Roscoe	608-206-0909
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

January Keyholders

1/02	Jim Bakic	414-303-7765
1/09	Mike Bauer	262-894-1253
1/16	Steve Volp	414-751-8334
1/23	Russ Blankenburg	262-938-0752
1/30	Paul Borchardt	262-781-0169