

**Program – Picnic at Willow Grove Park**

**Volume 28, No.1  
June 2022**

**Greg Smith – editor.**

**Meeting: Saturday June 18,  
2022  
Solstice Picnic Willow Grove Park  
6 PM**

### **The hunt for Omega Centaurus**

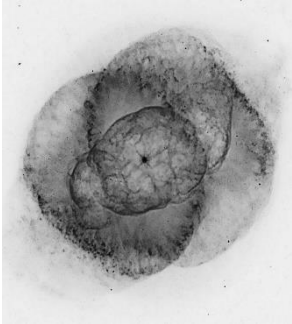
This past month my wife and I took a vacation to Maui, Hawaii. We spent two weeks at our timeshare in Kihei . I was hoping for a chance to do some star watching, unfortunately we had only one night of clear weather. Most days and nights were cloudy, no rain, but the temperature was very comfortable. On the clear sunny days, it was very hot and humid. I took a pair of binoculars, small ones 12X24's. They were not bad, great for watching the paddleboard riders and watching for turtles from the beach. I had only one night that it was clear. Using my phone astronomy app. I was able to find Centaurus in the south. Since Alpha and Beta Centaurus are the brightest stars, they were easy to locate. Using the star chart on my iPad I was able to star hop through Centaurus and find My goal of seeing the globular star cluster of Omega Centaurus. In those small binoculars, it was a smear of whiteness. I was a bit disappointed. I was hoping to at

least see a ball of whiteness. It has to be acknowledge that I was looking from the town of Kihei through some light pollution. A trip up to the top of Haleakalā and the observatories was \$150. I thought that was a bit much. So my viewing was not the greatest. What I found out was just how bright Centaurus is in the sky, as it was the only constellation I could see.

Next time I go to Hawaii I will take my bigger binoculars. My wife said after we got home that she would like to go back to Maui. So would I. Next time with larger binoculars and go down to the beach and try again at seeing some of the southern sky.

We also visited the aquarium and a cacao farm and factory. The aquarium had a 3D movie on Humpback whales. The whales really come up and look you in the eye. It was like you were swimming with them.

*Every Day is a Star Filled Day,  
Every Night is a Starry Night*



## Space Phantom



# Black hole – a lone ‘phantom’ – spotted via Hubble

Posted by  
[Dave Adalian](#)

June 11, 2022

## Seen! Lone black hole roaming the galaxy

Astronomers estimate there are 100 million “wandering stellar corpses” – [black holes](#) cast into space by the explosions that made them – lurking among the 100 billion stars of our [Milky Way](#) galaxy. And now scientists have captured imagery revealing what appears to be one of these cosmic zombies, as it crossed paths with a more distant star.

Hubblesite.org – which announced the news on Friday, June 10, 2022 – said:

Following six years of meticulous observations, the Hubble Space Telescope has, for the first time ever, provided direct evidence for a lone black hole drifting through interstellar space by a precise mass measurement of the phantom object. Until now, all black hole masses have been inferred statistically, or through interactions in binary systems or in the cores of galaxies. Stellar-mass black holes are usually found with companion stars, making this one unusual.

The object is believed to be the first dark stellar remnant discovered wandering through our galaxy, unaccompanied by another star.

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### **How far away is the black hole?**

The astronomers aren't sure exactly how far away this black hole might be. Their statement explained:

The newly detected wandering black hole lies about 5,000 light-years away, in the Carina-Sagittarius spiral arm of our galaxy. However, its discovery allows astronomers to estimate that the nearest isolated stellar-mass black hole to Earth might be as close as 80 light-years away.

By comparison, the nearest “living” star is Proxima Centauri, and it is 4 light-years away from Earth.

### **Some ways of detecting black holes**

Because black holes cast no light of their own, astronomers typically hunt for their effect on visible matter. The stellar-mass black holes discovered in the galaxy before this one are all only noticeable because they're in binary systems. The black holes pull matter from their companion stars, and the incoming matter forms a disk around the black hole. It's this accretion disk that astronomers typically see when studying stellar-mass black holes.

In recent years, astronomers with the Event Horizon Telescope (EHT) have also begun to acquire images of supermassive black holes. They've managed two so far. The first, announced in 2019, shows the supermassive black hole in the galaxy M87, some 55 million light-years from Earth. Then, just last month (May 2022), astronomers with the EHT announced the first-ever direct image of the supermassive black hole at the center of our Milky Way galaxy. It's about 28,000 light-years away.

By the way, the EHT images don't show the black holes themselves. Black holes are, by definition, black because no light can escape them. So black holes themselves are invisible. Instead, the EHT images show what astronomers are calling a black hole's “shadow,” a bright ring formed as light bends in the intense gravity around the hole.

Lone black hole found by gravitational lensing

But this new black hole isn't in a companion system. And it's not a supermassive black hole, and therefore not massive enough to be observed by the EHT team. Torn out of orbit by the enormous blast that created it, the black hole detected by Hubble was “seen” as it passed in front of a more distant star. That is, the scientists used gravitational lensing – the bending of a distant object's light by a massive object in the foreground – to capture their evidence. The scientists who made the detection said:

The light from a star far behind the black hole was momentarily brightened and deflected by the black hole passing in front of it. This was a long and painstaking measurement that the Hubble Space Telescope's exquisite resolution is well-suited for.

The black hole’s powerful gravitation left a unique fingerprint on the deflection of starlight, eliminating other potential gravitational lensing candidates.

### **The lensing event took 200 days**

The scientists said the duration of the lensing event helped convince them the object is a black hole, and not something else:

The very intense gravity of the black hole will stretch out the duration of the lensing event for over 200 days. Also, if the intervening object was instead a foreground star, it would cause a transient color change in the starlight as measured because the light from the foreground and background stars would momentarily be blended together. But no color change was seen in the black hole event. So the “signature” of a foreground black hole stands out as unique among other microlensing events.

The scientists also commented that the Hubble Space Telescope is making these measurements very precisely – down to the milliarcsecond range – making it extremely well-suited for this particular observation. The announcement from Hubblesite.org put it this way:

That’s equivalent to measuring the diameter of a 25-cent coin in Los Angeles as seen from New York City.

### **Could it be a neutron star?**

The black hole discovery was made by a pair of teams at the University of California, Berkeley, and the Space Telescope Science Institute in Baltimore, Maryland. The object they measured has a mass that falls in a range between 4.4 and 1.6 solar masses.

The lower end of that range means the object could be a neutron star. The announcement quoted Jessica Lu of the UC Berkeley team:

As much as we would like to say it is definitely a black hole, we must report all allowed solutions. This includes both lower-mass black holes and possibly even a neutron star.

Either way, the object is the first “dark stellar remnant” found wandering alone through the Milky Way. A formidable discovery!

Bottom line: For the first time, astronomers have discovered an isolated stellar-mass black hole, moving like a ghost or phantom among the stars of our Milky Way galaxy.

## **2022 Friends of Galileo Astronomy Viewing Schedule**

<b><u>June</u></b>	<b><u>Moon: New=28, Full=14</u></b>
18	Solstice Picnic at Willow Grove Park
24/25	Club Star Party @ Mike’s
<b><u>July</u></b>	<b><u>Moon: New=28, Full=13</u></b>

6/7 Sidewalk Astronomy (Location TBD)  
 20 Club Meeting (Zoom?)  
 26-31 Oregon Star Party at Ochoco National Forest  
 29/30 Club Star Party at Mike's  
**August Moon: New=27, Full=11**  
 4/5 Sidewalk Astronomy (Location TBD)  
 11/12 Perseids/Club Star Party at Mike's (Moon is Full)  
 17 Club Meeting (Zoom?)  
 26-28 MSHI Sky & Star Party at Coldwater Science and Learning Center

**September Moon: New=25, Full=10**

1/2 Sidewalk Astronomy (Location TBD)  
 21 Club Meeting (In-Person/Zoom)  
 23/24 Club Star Party at Mike's  
 30 Club Star Party at Mike's

**October Moon: New=25, Full= 9**

1 Club Star Party at Mike's (if not held September 30)  
 19 Club Meeting (In-Person/Zoom)  
 21/22 Club Star Party @ Mike's

<b>☞ June 2022 Meeting ☞</b>	
DATE:	<b>Saturday June 18</b>
TIME	<b>6 pm</b>
PLACE:	<b>Willow Grove Park</b>
PROGRAM	<b>Club Picnic</b>

**Moon Phases**

**1st Qtr.: June 6th**    **Full:June14** , **3<sup>rd</sup> Qtr.: June 20,**    **New: June 28**

**The Star Report** is posted on the clubs website: 1. It is listed in the blog portion of the website.

### **Minutes of the May FOG Meeting**

Here's the agenda from the May meeting, along with the relevant discussion about each:

#### **- Sky report**

Ted presented the sky report, which is now available on the FoG website.

#### **- Treasurer's report**

Steve reports we are financially sound.

#### **- Election of club officer**

Current slate of officers unanimously re-elected; nobody else volunteered to run for office.

**Program: The Solar Constant** – the average of the electromagnetic radiation that the sun puts out per square meter or 1.362 Kilowatts.

#### **- Dues for 2022-2023 are payable now**

Steve collected dues from almost all members in attendance. As of June 10, we have 16 members who have paid their 2022-2023 dues, and 9 2021-2022 members who have not. Dues are still \$24 and can be paid by sending a check to Steve or paid in person at the June 18 Willow Grove event. Plans are to send the current membership list and payment to the Astronomical League about June 20, so we need the final membership list by that time.

#### **- Star Party at Mike's - Friday May 27, alternate date is Saturday May 28**

Cancelled due to weather.

#### **- Solstice picnic at Willow Grove Park in lieu of June meeting - Saturday June 18 at 6:00pm**

Members and educational partners will receive details by email. No regular third Wednesday meeting on June 15 because of the Willow Grove event.

#### **- Sponsor cost for Solstice Lantern Walk booths - porta-potty rental**

New member Ken indicated Honey Bucket can supply porta-potties for an estimated \$125-\$150 each, much less than the quotes we received for the 2021 event. Officers will follow up with this. If this is accurate, there is probably no need to increase the sponsor cost for the 2022 event.

#### **-Next meetings**

Our meeting room at R. A. Long High School is unavailable over the summer. June 18 solstice picnic at Willow Grove, July 20 and August 17 meetings via Zoom only, resume hybrid Zoom and in-person meetings at RAL in September.

#### **Other items discussed but no updates or action taken:**

- **MSHI Sky & Star Party** - Weekend of August 26-28 (Friday to Sunday)

- **Next Sky & Star Party planning meeting** with MSHI personnel and FoG/RCA members - Zoom Wednesday June 15 10:00am

- **Longview centennial time capsule**

## Friends of Galileo Club Officers

PRESIDENT	Ted Gruber
VICE-PRESIDENT/ PROGRAM CHAIR	Mark Thorson
SECRETARY	Greg Smith
TREASURER	Steve Powell
WEBSITE	Ted Gruber
NEWSLETTER ED.	Greg Smith
ALCOR	Tom Meek

## Next Month's Newsletter Deadline

The deadline for items in next month's newsletter is:  
**Wednesday: seven days before next meeting.**

**Please feel free to send in your thoughts and experiences about your astronomical adventures.**

Submit your material by E-mail to: [gryth@msn.com](mailto:gryth@msn.com)

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