

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society



CVAS Executive Committee

Pres – Bruce Horrocks
bruceh@gembuildings.com

Vice Pres- James Somers
james.m.somers@aggiemail.edu.usu

Treasurer- Janice Bradshaw
loibrads@yahoo.com

Secretary – Wendell Waters (435) 213-9230
wendellw57@comcast.net

Night Sky Network Coordinator –
Garrett Smith – GarrettGillSmith@gmail.com

Past President – Dell Vance (435) 938-8328
avteam.dell@gmail.com

Public Relations – Lyle Johnson -
lyledj@aol.com

Webmaster, Librarian – Tom Westre
twestre45@aol.com

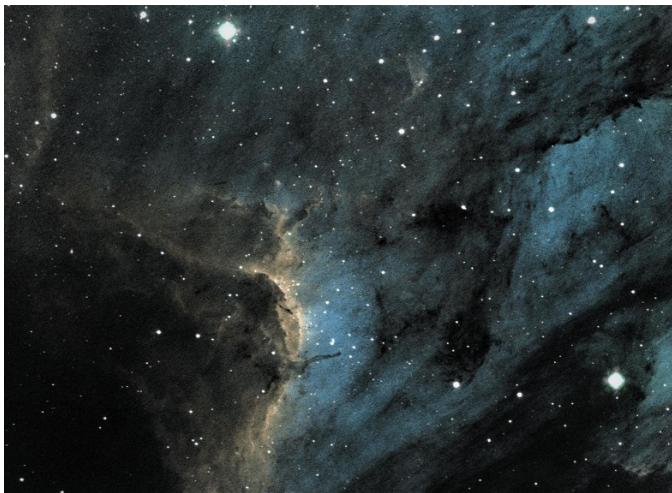
Vol. 8 Number 11

July 2021

www.cvas-utahskies.org

Meeting Announcement

Look here for information about a club star party on August 6th. More details to follow



Pelican Nebula photo by Bruce Horrocks

The President's Corner By Bruce Horrocks – CVAS President



Cygnus Wall photo by Bruce Horrocks

Interesting conjunctions in July

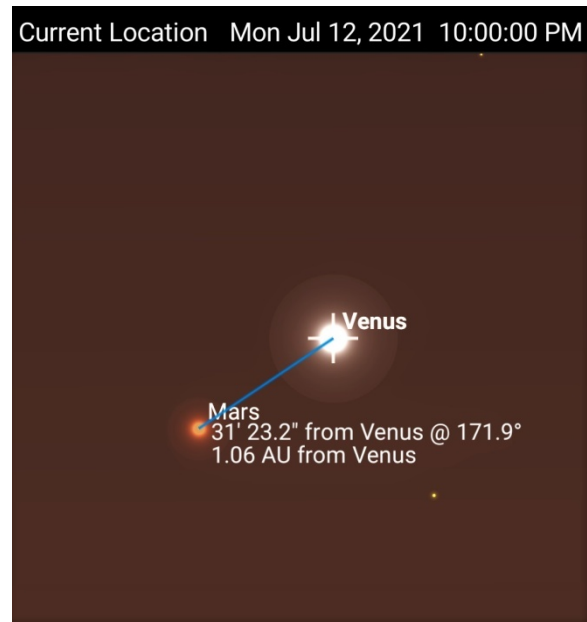
by Blaine Dickey

The Moon, Venus, Mars, Saturn, and Jupiter are worth taking a look at in July as they form conjunctions between each other and the Moon. Below in order by date are some sights you may observe with the eye, binoculars, or a telescope. Some of these conjunctions would make a nice picture taken with a camera on a tripod or through a telescope.

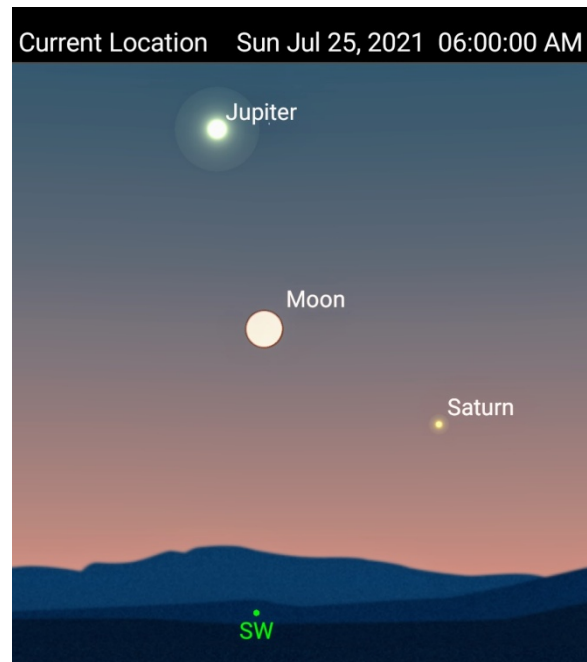
A triple conjunction occurs on the evening of **Sunday July 11th** around 10 PM in the darkening twilight. Mars and Venus will be about 1° apart while the moon hovers $4\frac{1}{2}^\circ$ to the right of Venus. The earth's light should be reflected nicely on the moon.



The very next evening on Monday **July 12** at 10:00 PM, Venus and Mars will pass within $1/2^\circ$ of each other. This would make for a nice photo image with brilliant Venus and receding Mars to its left. It should be visible with the naked eye as well as with a binocular or small telescope with both objects within the same field of view.



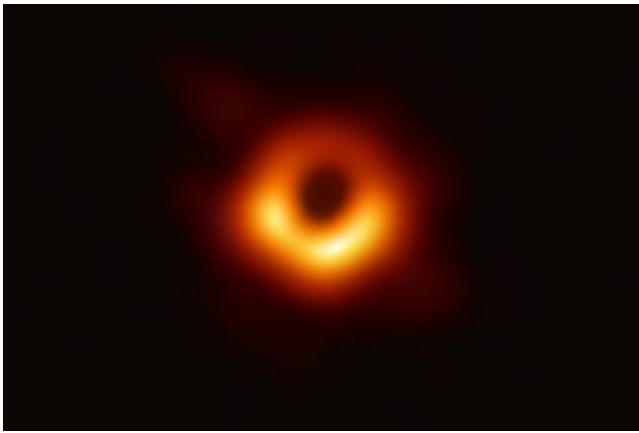
Finally on Sunday morning **July 25** at 6:00 AM the moon will form a near isosceles triangle in the western sky with Jupiter and Saturn. Jupiter will be almost 11° to the upper left of the moon, and Saturn will be about 11° to the lower left of the moon.



All simulations are from SkySafari 6 Pro software.

What is in the Center of the Milky Way Galaxy?

Back in April of 2019, the world was stunned by the publication of the first ever picture of a Black Hole.



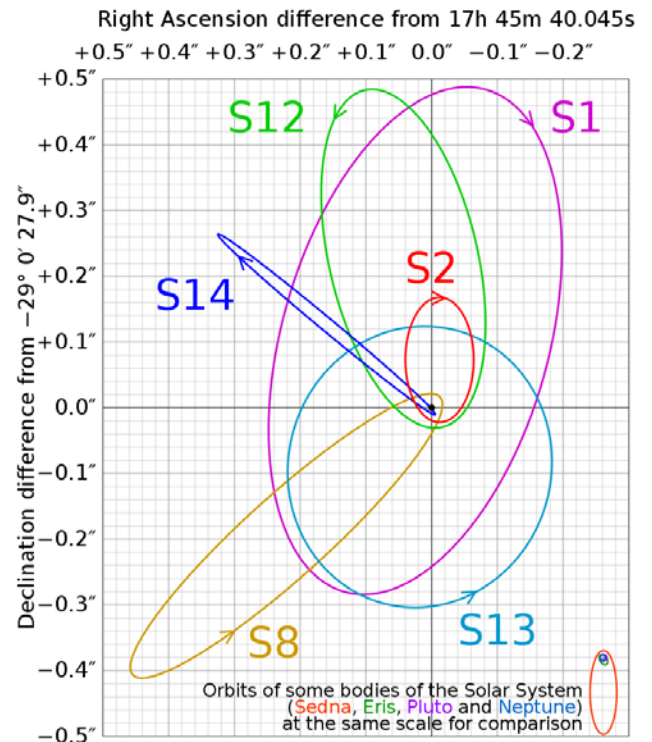
(Image credit: EHT Collaboration)

The photograph of the Supermassive Black Hole in the center of the elliptical galaxy M87 has quickly become one of the most famous pictures in the world of astronomy. The next step, of course is to take a "photo" of Sagittarius A*, the black hole at the center of our own Milky Way Galaxy.

However, in a new paper published in May, E. A. Becerra-Vegara et. al.; suggests that this may never happen because there just might NOT be a black hole at the center of the Milky Way.

The conclusion that Sagittarius A* exists is based on the orbits of a group of stars, called "S stars" around the black hole. The high velocities and close approaches to the supermassive black hole makes these stars useful to establish limits on the physical dimensions of Sagittarius A*, as well as to observe general-relativity associated effects like periaipse shift of their orbits.

An active watch is maintained for the possibility of stars approaching the event horizon close enough to be disrupted, but none of these stars are expected to suffer that fate. The most important S-cluster member is S2 which, with an orbital period of about 16 yr. The S2 orbit data have allowed us to test General Relativity predictions such as the relativistic redshift and precession.



However, back in May 2002, something unusual in images of the center of the Milky Way was noticed. The gas cloud G2, which has a mass about three times that of Earth, was confirmed to be likely on a course taking it into the accretion zone of Sgr A*. Predictions of its orbit suggested it would make its closest approach to the black hole in early 2014, when the cloud was at a distance of just over 3,000 times the radius of the event horizon from the black hole. G2 has been observed to be disrupting since 2009, and was predicted by some to be *completely destroyed by the encounter*, which could have led to a *significant brightening of X-ray and other emission from the black hole*.

Nothing was observed during and after the closest approach of the cloud to the black hole, which was described as a *lack* of "fireworks" and a "flop". Astronomers from the UCLA Galactic Center Group published observations obtained on March 19 and 20, 2014, concluding that G2 was still intact.

E. A. Becerra-Vegara and his collaborators came to the conclusion that the motion of G2 cannot be explained by the presence of a Black Hole, but it can be explained by the presence of a super-massive "clump" of dark matter. "The new data from G2 shows for the first time that a highly dense concentration of Dark Matter particles sited at the

Galactic Core can explain the dynamics of the S-stars with similar (and some cases better) accuracy compared to a central Black Hole model. *These results strengthen the alternative nature of Sgr A* as a dense quantum core of darkinos superseding the central massive Black Hole scenario.*”

This theory might also answer the question of how super-massive black holes come into existence. Stellar black holes result from the collapse of massive stars, but super-massive black holes cannot be explained by this phenomenon. Some astronomers have suggested that they are formed out of the collapse of massive clouds of gas during the early stages of the formation of a galaxy. Another idea is that a stellar black hole consumes enormous amounts of material over millions of years, growing to supermassive proportions. Yet, another is that a "cluster" of stellar black holes form and eventually merges in to a supermassive black hole.

But if Becerra-Vegara is right, then supermassive black holes may be created from large “clumps” of dark matter. “Dark Matter profiles are both thermodynamically and dynamically stable for the lifetime of the Universe, or eventually collapse into a supermassive Black Hole if a critical (threshold) mass of the quantum core is reached. This provides a new appealing scenario for the formation, starting from a Dark Matter seed, of the supermassive Black Holes observed in active galactic nuclei.”

One of the great things Astronomy is that we always seem to be discovering new things and coming up with new theories to explain the nature of the universe. It's going to be really interesting to see what we learn if and when we get a “photo” of Sagittarius A*.





Here are some hyper-links to the paper by [Becerra-Vegara](#), a great video on YouTube by [Dr. Becky](#) discussing the new theory and a video from the ESO showing [G2's approach to SgrA*](#).

Upcoming Events and Anniversaries

- Jul 04 - [Mercury](#) At Its Greatest Western [Elongation](#) (22 Degrees)
- Jul 13 - [Venus Passes 0.5 Degrees From Mars](#)
- Jul 18 - 55th Anniversary (1966), [Gemini 10](#) Launch (John Young & Michael Collins)
- Jul 18 - [John Glenn's](#) 100th Birthday (1921)
- Jul 20 - 45th Anniversary (1976), [Viking 1](#), Mars Landing
- Jul 20 - 65th Anniversary
- Jul 21 - 60th Anniversary (1961), [Mercury 4](#) Launch (Gus Grissom, Liberty Bell 7)
- Jul 22 - 70th Anniversary (1951), [Launch of the 1st Dogs Into Space \(Dezik & Tsygan\)](#)
- Jul 25 - 45th Anniversary (1976), [Viking 1](#) Image of Cydonia Regon (["Face" on Mars](#))
- Jul 26 - 50th Anniversary (1971), [Apollo 15](#) Launch (4th Manned Moon Landing)
- Jul 29 - [South Delta-Aquarids Meteor Shower](#) Peak
- Jul 31 - 50th Anniversary (1971), [Dave Scott Becomes 1st Person To Drive Vehicle on Moon](#) (Apollo 15)

Library Loaner Telescope Program Status

10/31/2020

Library	Telescope Donated By	Telescope Placed	Available for Checkout	Library Status
Logan Library	CVAS	6/10/2018	10/15/2018	Loaning out with Holds pending
Logan Library #2	ICON Health & Fitness 	6/18/2019	7/15/2019	Loaning out
Hyrum Library	CVAS	12/11/2018	2/1/2019	Loaning out
Smithfield Library	Occipital, Inc	12/14/2018	4/10/2019	Loaning out
North Logan Library	Utah NASA Space Grant Consortium 	3/4/2019	4/5/2019	Loaning out
North Logan Library #2	Friends of the North Logan Library	10/26/2020	11/1/2020	Loaning out
Cache County Library (Providence)	INOVAR & CVAS Members	3/1/2019	5/22/2019	Loaning out
Lewiston Library	Schreiber Food's 	7/9/2019	9/1/2020	Loaning out
Richmond Library	Anonymous	10/25/2019	1/25/2019	Loaning out
Preston Library	Idaho NASA Space Grant Consortium	9/5/2019	9/26/2019	Loaning out
Mendon Library	Campbell Scientific 	4/8/2019	5/30/2019	Loaning out
Newton Library	A Club Member	9/24/2019	9/24/2019	Loaning out

CACHE VALLEY ASTRONOMICAL SOCIETY MEMBERSHIP APPLICATION FORM

Member # _____

NAME: _____
 First Middle Initial Last

Address: _____
 Street City State Zip Code

Home Phone: _____ Cell Phone: _____

Work Phone : _____ Occupation : _____

Email Address: _____

How did you learn about CVAS?

_____ Website _____ Star Party _____ CVAS Member _____ Other _____

Membership: \$20 lifetime membership

Tell us about yourself: Do you have a special interest in astronomy? Do you have special skills? Are you willing to volunteer on CVAS projects or attend public outreach star parties? Astro equipment owned.

By signing this application, I acknowledge I have access to the CVAS website, cvas-utahskies.org, and the CVAS Constitution. I agree to abide by the constitution.

Signature: _____ Date: _____

Bring this form to the meeting or Mail Application to:

Janice Bradshaw, Treasurer
175 W 700 S
Wellsville, UT 84339

For any questions contact our Treasurer, Janice Bradshaw at lojbrads@yahoo.com
or our Secretary Wendell Waters at wendellw57@comcast.net