

Star Dust

Newsletter of National Capital Astronomers, Inc.
capitalastronomers.org

May 2022

Volume 80, Issue 9

**Celebrating 85 Years
of Astronomy**

Next Meeting

When: Sat. May 14th, 2022

Time: 7:30 pm

Where: Online (Zoom)
 See instructions for joining the meeting on Page 8.

Speaker: Dr. Harold Williams

Table of Contents

Preview of May 2022 Talk.....	1
Recent Astronomy Highlights.....	2
NCA Candidate Slate.....	2
Exploring the Sky.....	3
Occultation of SAO 110026 by (877) Walkure.....	3
Sky Watchers.....	4
Occultations.....	5
Calendar of Events.....	7

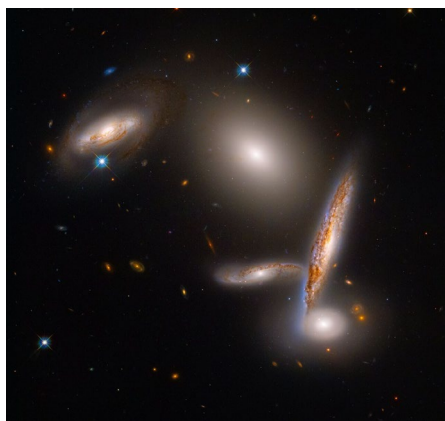


Image Credit - NASA, ESA and STScI
 The above image of the Hickson Compact Group 40 comes from the Hubble Space Telescope as part of the celebration of the telescope's 32 birthday.

The Nature of Time from the Planck Time until Now, and Maybe Beyond

Harold Williams

Montgomery College

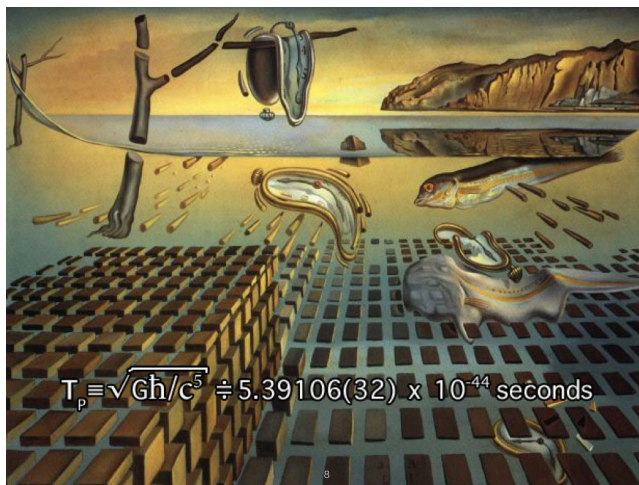


Image Credit – Painting by Salvador Dali, Equation by Max Planck

The Planck time is $\sqrt{G \hbar / c^5}$, which is approximately 5.4×10^{-44} seconds. It is the time scale that arises naturally from the natural constants G (the Newtonian gravitational constant), \hbar , pronounced h bar, (the Planck constant, h , divided by 2π), and c (the speed of causality: the speed of electromagnetism and gravity in a vacuum). Max Planck discovered this combination of natural constants by using dimensional analysis, in 1899, a year before he discovered his epochal formula for the spectrum of blackbody radiation (electromagnetic radiation in thermal equilibrium) in December of 1900 in Prussian Academy of Sciences, His discovery was reported in the article – Max Planck 'Über irreversible Strahlungsvorgänge', in the Sitzungsberichte der Preußischen Akademie der Wissenschaften, vol. 5, p. 440-479-480 (1899).

The talk will consider what the value of the Planck time tells us about our Universe.

Biography: Dr. Harold Alden Williams is the president of the NCA. His interest in the nature of time comes naturally: many of his ancestors were watch and clock repair persons, and he has repaired a few family clocks. He is planetarium/Universarium director at Montgomery College at Takoma Park. The planetarium is currently being upgraded and will reopen in the Leggett Math and Science building sometime in 2023.

continued on page 2

Recent Astronomy Highlights

“Missing Link” Black Hole Discovered

Astronomers have discovered a rapidly growing black hole in a starburst galaxy, a galaxy with a high rate of star formation. Labeled GNz7q, GN being the initials for the GOODS-North field or the Great Observatories Origins Deep Survey-North field, the survey from which the data on GNz7q was obtained. In that survey, astronomers found a compact source of ultraviolet and infrared light consistent with the theorized emissions from a newly formed and rapidly growing black hole, on the path to becoming a supermassive black hole, still obscured by the dust of its host galaxy. That dust blocks the more energetic X-rays formed in the inner part of the black hole's accretion disk from escaping. With the GOODS-North field being a relatively small part of the sky, finding such a ‘missing link’ black hole there hints that black holes like it may be more numerous than previously theorized. More information can be found at

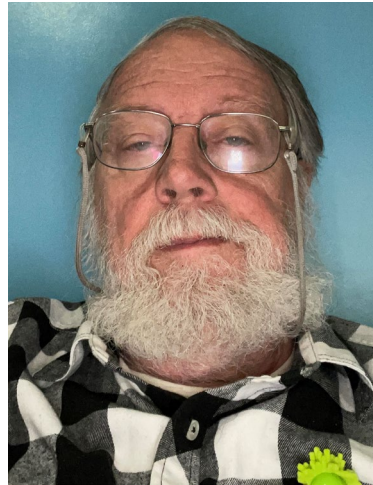
www.sciencedaily.com/releases/2022/04/220413130839.htm.

A New Type of Stellar Explosion Discovered

Astronomers have discovered several examples of a new type of explosion, named micronovae, on white dwarfs. A nova takes place when hydrogen builds up to a sufficient level on the surface of a white dwarf that pressure triggers its fusion into helium, causing a flare of light that can last for weeks. Generally, this hydrogen comes from a companion star to the white dwarf. In the case of micronovae, the white dwarf is rapidly spinning, creating a strong magnetic field which concentrates the incoming hydrogen at the magnetic poles of the white dwarf, therefore the ensuing fusion causes much less of a flare, perhaps a thousand times less, which lasts perhaps only a few hours. So far four such micronovae have been observed. More information can be found at phys.org/news/2022-04-astronomers-micronovae-kind-stellar-explosion.html.

continued on page 4

Abstract and Biography – continued from page 1



The 30-foot tilted dome will seat 100 people; it is to be installed by Spitz in October of this year. It will have a Digistar 7 laser projector with greater resolution and brightness than the previous SciDome from Spitz. Dr. Williams also teaches ASTR101 at the Takoma Park/Silver Spring campus of Montgomery College and is the Coordinator of the Science and Engineering Technology Laboratory. Having served as NCA's President for many years, he is delighted that this coming September the NCA will have a new President.

2022-2023 NCA Officer and Trustee Candidate Slate

NCA Nominating Committee – Jack Gaffey (chair), Jeff Norman and Wayne Warren

In the election that will be held on June 11, 2022, the following candidates have agreed to run for the indicated positions as 2022-2023 NCA Officers and Trustees:

President - Guy Brandenburg

Vice President - John Hornstein

Secretary-Treasurer - Henry Bofinger

Assistant Secretary-Treasurer - Jeff Norman

Trustee - Michael Brabanski (to June 2026)

Trustee - Michael Chesnes (to June 2023)

Any member is welcome to sign up to run for any of those positions. Trustees have staggered 4-year terms. The trustees whose terms continue through the June 11 election are:

Trustee - Jack Gaffey (to June 2024)

Trustee - Benson Simon (to June 2025)

Every member of the NCA can vote in the election on June 11. The election will be Zoom-based.

Exploring the Sky



Exploring the Sky is a joint public observing program between the National Capital Astronomers and the National Park Service. We have been holding these sessions for more than 70 years. We supply the telescopes and you supply the eyes. We meet in the field just south of the intersection of Military and Glover Roads, NW, near the Rock Creek Park Nature Center. A parking lot is located next to the field. The sessions will be canceled in the event of rain or cloudy skies.

Although this is not an optimal observing site, many of the objects people are interested in looking at are visible. At times we can see some of the planets, double stars, open clusters, globular clusters, the occasional comet or asteroid, nebulae and fuzzy galaxies. The latter two will never look like the magazine pictures!

2022 Exploring the Sky Sessions

- 4 June 9:00 p.m. - Moon
- 2 July 9:00 p.m. - Moon, Summer Triangle, M13
- 6 Aug. 8:30 p.m. - Moon, M13, Andromeda
- 3 Sep. 8:00 p.m. - Moon, Vega
- 1 Oct. 7:30 p.m. - Moon, Jupiter, Saturn
- 5 Nov. 7:00 p.m. - Moon, Pleiades, Jupiter, Saturn

More information can be found at NCA's web site, www.capitalastronomers.org or the Rock Creek Park web site, www.nps.gov/rocr/planyourvisit/expsky.htm. You can also call the Nature Center at (202) 895-6070. For general information on local astronomical events visit www.astronomyindc.org

The article-submission deadline for June's issue of Star Dust, is May 21st. Clear Skies!

2022 Jan. 25 Occultation of SAO 110026 by (877) Walkure, Two for the Price of One

David and Joan Dunham

On 2022 January 25, (877) Walkure occulted a 9.8-mag. star in Pisces just north of Tucson, AZ. The target star, SAO 110026, is also known as UCAC4 480-002385. I wrote before the event "there is weak evidence of close duplicity, separation maybe 0.05", from a lunar occultation observed photoelectrically in 1984. Observations of this event will be valuable to see if the star really is double." The 1984 observation was made by David Evans at McDonald Observatory on February 8. For the Walkure occultation, we had only two hours of usable dark time before the event, so we decided to use easy-to-pre-point (to the altitude and azimuth of the occultation) 8-cm refractors that could record the relatively bright star. We thought that we had time for only two stations that we planned to set up near Picacho Peak and Cortaro, 29 miles apart, connected by high-speed Interstate Hwy 10. We had equipment for 3 stations, for redundancy. But we were lucky at Picacho Peak, and were approaching Cortaro an hour before the occultation, so we stopped at a good spot we knew from previous events near Rillito, 6 miles north of Cortaro, and were able to set up quickly there, leaving only half an hour before the event for the last site. We got on target there as well, so we made recordings of the occultation at all three stations. Also, Norm Carlson set up an 8-inch scope near Oracle Junction and Paul Maley had a similar telescope near Marana; all five stations are shown on the map in Fig. 1.

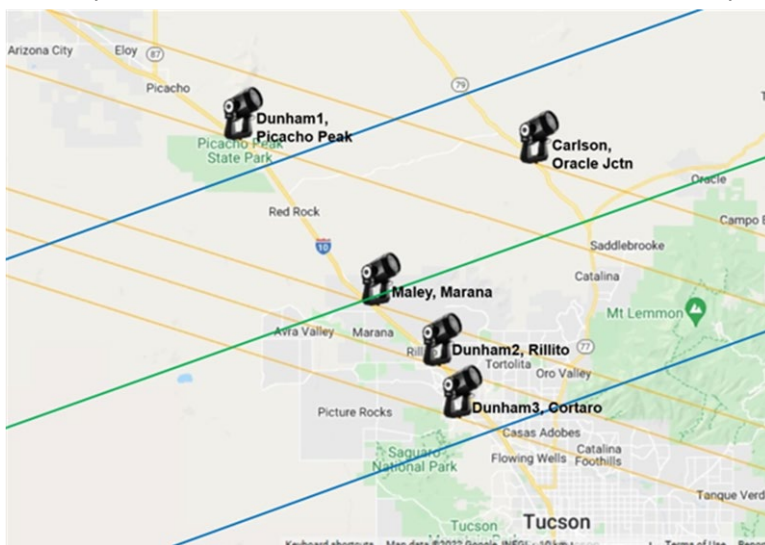


Figure 1: Map showing station locations for the Jan. 25th occultation by Walkure in Arizona. The green line is the predicted center while the blue lines show the predicted limits. The sites are at the bottom of the base of the telescope symbols. Ignore the fainter yellow lines that are irrelevant for the Walkure occultation. Credit: John Moore and David Dunham, and Google Maps.

We were surprised when we reviewed our recordings, that all three of them had about 5s occultations, close to the predicted central duration, even our first station, which was just outside the predicted path. Carlson reported a similar duration but noted that the magnitude drop that he had was less than a magnitude, much less than the five magnitudes expected. Finally, Maley, near the predicted central line, reported a much shorter occultation. This really puzzled us; we figured out that the star must be double to somehow explain these apparently inconsistent results. But looking at Maley's occultation light curve showed what happened; see Fig. 2 (page 4). He reported the short event because only then were both stars occulted by Walkure and the occultation obvious.

continued on page 4

Sky Watchers

May/June

The month brings a total lunar eclipse (see below). Mercury will mostly not be visible for the rest of May as it transitions from the night sky to predawn sky where it will join the other visible planets. Meanwhile Venus, Mars, Jupiter and Saturn will be in the predawn sky forming a line in the eastern sky throughout the month for early risers to enjoy.

5/15,16	Full Moon and Total Lunar Eclipse – The total eclipse, with the Moon in the Earth’s umbra, lasts from 23:30 EDT to 00:54 EDT with approximately one hour of time before and after when it traverses the Earth’s partial shadow or penumbra.
5/28, 29	Conjunction of Jupiter and Mars – The planets will be within 38 arcminutes of each other (slightly more than the full Moon’s diameter) at 10:03 p.m. and will still be extremely close to each other when rising in the early-morning DC-area.

All times are in EDT (Eastern Daylight Savings Time)

2022 Jan. 25 Occultation of SAO 110026 by (877) Walkure – continued from page 3

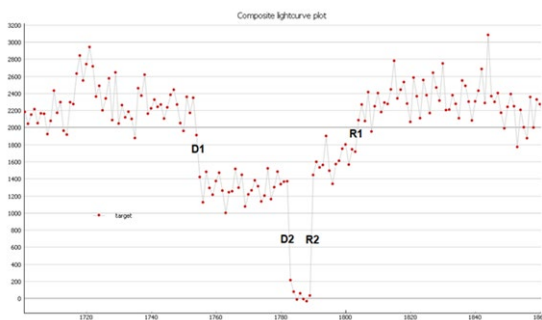


Figure 2: Paul Maley’s occultation light curve showing the occultations of both components of the close double star SAO 110026 by Walkure. He had a long occultation of star 1, but only a short event with star 2, the slightly brighter component. Credit: Paul Maley and Tony George.

But when the observations were analyzed and projected on the sky plane at Walkure, it was initially not clear how to assign the chords; see Fig. 3.

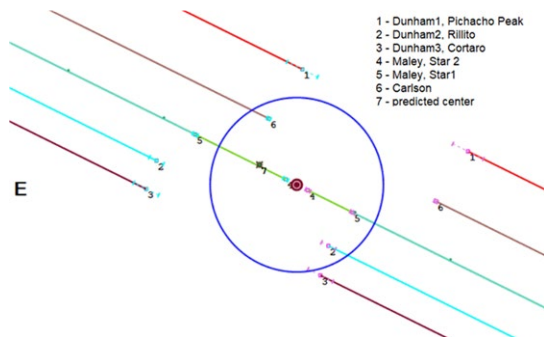


Figure 3: Initial sky plane plot of timings of the occultation of SAO 110026 by Walkure on 2022 Jan. 5. Credit: John Moore, IOTA.

After some time, Dave Herald in Australia, author of the Occult4 program used for the analysis, figured out the puzzle, including a solution for the separation (sep.) and position angle (PA) for the components of the double. He produced two views, one like above, but showing the two solution ellipses of the same size, shape, and orientation, one for each component, as shown in Fig. 4 (on Page 6):

continued on page 6

Star Dust is published ten times yearly September through June, by the National Capital Astronomers, Inc. (NCA).

ISSN: 0898-7548

Editor: Todd Supple

Editorial Advisors:

- Michael Chesnes
- John D. Gaffey, Jr.
- Jeffrey Norman
- Elizabeth Warner
- Wayne Warren
- Marjorie Weissberg
- Harold Williams

Electronic Distributor: Jay Miller



Please Get Star Dust Electronically

NCA members able to receive Star Dust, the newsletter of the NCA, via e-mail as a PDF file attachment, instead of hardcopy via U.S. Mail, can save NCA a considerable amount of money on the printing and postage in the production of Star Dust (the NCA’s single largest expense), save some trees and have one-click access to all the embedded links in the document. If you can switch from paper to digital, please contact Henry Bofinger, the NCA Secretary-Treasurer, at hbofinger@earthlink.net

Thank you!

Recent Astronomy Highlights – continued from page 2

Earendel

At 6.5 meters across, JWST’s mirror is huge for a space-based telescope. But fortunately, the Universe builds ‘space telescopes’ that are far bigger, even the size of galactic clusters. The gravity of one such cluster, designated WHL0137-08, has warped the space around it, magnifying the light from what is possibly a single star so much that it has been detected in an image from the Hubble Space Telescope. Astronomers named the star Earendel, an Old English word that means morning star. Earendel could have been between 50 and 500 times the mass of the Sun and was burning brightly when the Universe was less than a billion years old. More information on this discovery can be found at phys.org/news/2022-03-hubble-distant-star-distance-billion.html.

continued on page 7

Occultation Notes

- D following the time denotes a disappearance, while R indicates that the event is a reappearance.
- The times are for Greenbelt, MD, and will be good to within +/-1 min. for other locations in the Washington-Baltimore metropolitan areas unless the cusp angle (CA) is less than 30 deg., in which case, it might be as much as 5 minutes different for other locations across the region.
- Some stars in Flamsteed's catalog are in the wrong constellation, according to the official IAU constellation boundaries that were established well after Flamsteed's catalog was published. In these cases, Flamsteed's constellation is in parentheses and the actual constellation is given in the notes following a /.
- Mag is the star's magnitude.
- % is the percent of the Moon's visible disk that is sunlit, followed by a + indicating that the Moon is waxing and - showing that it is waning. So, 0 is new moon, 50+ is first quarter, 100+ or - is full moon, and 50- is last quarter. The Moon is crescent if % is less than 50 and is gibbous if it is more than 50. E indicates a lunar eclipse is in progress, and the value is the percent of the Moon's disk that is NOT in the umbra. So 0E means during the total phase.
- Cusp Angle is described more fully at the main IOTA Web site.
- Sp. is the star's spectral type (color), O,B,blue; A,F,white; G,yellow; K,orange; M,N,S,C red.
- Also in the notes, information about double stars is often given. "Close double" with no other information usually means nearly equal components with a separation less than 0.2". "mg2" or "m2" means the magnitude of the secondary component, followed by its separation in arc seconds ("), and sometimes its PA from the primary. If there is a 3rd component (for a triple star), it might be indicated with "mg3" or "m3". Double is sometime abbreviated "dbl". Often, rather than the separation, I give "dTime" or "dT", the time difference of the secondary star occultation relative to the primary star's occultation.
- Sometimes the Axis angle (AA) is given. It is the angle measured around the Moon's disk, from the Moon's axis of rotation. It can be used with a lunar map to tell where a star will reappear relative to lunar features.

Mid-Atlantic Occultations

David Dunham

Asteroidal Occultations

2022 Date	Day	EDT	Star	Mag.	Asteroid	dmag	dur. s	Ap. Location
May 16	Mon	21:42	4UC53160264	14.4	Chao	1.4	4 11	SNJ,CDE,DMV
May 19	Thu	3:52	4U356111364	11.8	Octavia	2.7	7 6	seVA,n+WNC,nwSC
May 26	Thu	2:26	TYC68430441	10.4	Hiroshi	8.0	1.2 4	seNY,nNJ,nPA,nOH
May 28	Sat	23:52	4UC60846795	14.0	Tauntonia	2.0	3 10	c-sePA,DE,eMD
May 30	Mon	22:36	4UC51551253	13.6	Aegina	1.0	4 9	OH,c-seVA,neNC
Jun 4	Sat	1:16	4U383138804	11.7	Justitia	1.2	23 5	CNJ,e-nwPA,nWOH
Jun 5	Sun	0:03	4UC42374009	13.7	Hypatia	0.4	12 10	neNC,cVA,SWV,nKY
Jun 5	Sun	23:19	4UC51594017	13.3	Prothoon	3.8	4 8	NYC,CNJ,CPA,nOH
Jun 8	wed	0:14	see notes	14.0	Dolores	0.6	5 10	SNJ,neMD,se-nwPA
Jun 10	Fri	3:57	4U282201322	13.0	Paquet	5.0	2 10	NJ,CMD,cVA;nVA?
Jun 11	Sat	5:05	4U375120303	14.4	Weywot	4.3	6 12	USA;DC? see note
Jun 11	Sat	23:42	4U344119076	11.1	Charleroi	5.4	2 5	neNC,scVA,SWOH
Jun 12	Sun	4:37	TYC51330546	11.6	Echemmon	6.3	2 5	neMD,swPA,neOH
Jun 13	Mon	3:20	4U332123588	14.5	Suleika	0.3	4 12	SNJ,CMD,DC,cVA
Jun 14	Tue	2:44	4U397107010	13.1	Hesperia	0.5	11 8	SMD,s+cVA,SWV,KY

Jun 8: The star is G175428.5-194413, too long to fit in the table column.
 Jun 11, Weywot: is a 140-km moon of the Kuiper belt object (50000) Quaoar, so it's a valuable but low-probability (3% for a given place) event. Dawn twilight will be too bright (Sun alt. -7 deg.; star alt. 23 deg. in az. 225), but skies may be dark enough for observers farther west in the Mid-Atlantic.
 We may travel southwest to those darker areas to try to get an observation. Details, with an interactive map for local info., is at lesia.obspm.fr/lucky-star/occ.php?p=105944

Lunar Grazing Occultations

2022 Date	Day	EDT	Star	Mag	% alt	CA	Location, Notes
May 16	Mon	0:51	SAO 159328	9.3	0E 32	57U	Mt Airy,Laurel, sw Crofton,MD
Jun 9	Thu	21:13	SAO 139225	8.3	75+ 48	7N	Gainsvil,Triang,Nind,Chrtn,VA
Jun 12	Sun	22:40	Dschubba	2.3	97+ 31-20S		Gladstn,wSkipsrs,VA;Gumbery,NC

Lunar Total Occultations

2022 Date	Day	EDT	Ph Star	Mag	% alt	CA	Sp. Notes
May 12	Thu	20:49	D ZC 1825	5.9	87+ 43	28S	G8 Sun alt. -8 deg.
May 14	Sat	1:34	D 82 Vir	5.0	95+ 33	24N	M2 ZC1962,Term,Dist. 18"
May 15	Sun	23:59	D SAO159316*	8.9	0E 29	42U	F0 companion of ZC 2214
May 16	Mon	0:00	D ZC 2214	6.3	0E 29	42U	A5 dTime -25s, see above
May 16	Mon	0:47	D SAO159328*	9.3	0E 31	56U	G8 MD graze; see above
May 16	Mon	0:54	R SAO159328*	9.3	1E 33	58U	G8 This occ longer in DC
May 16	Mon	1:14	R SAO159316*	8.9	31E 31	52U	F0 companion of ZC 2214
May 16	Mon	1:15	R ZC 2214	6.3	32E 31	53U	A5 dTime -23s, see above
May 19	Thu	4:01	R ZC 2743	7.6	86- 23	72N	A5 mg2 9 ".4, dTime -.5s
May 20	Fri	2:12	R omega Sgr	4.7	77- 12	45N	G3 Az139,ZC2910,close dbl
May 20	Fri	2:18	R SAO 188724	7.7	77- 13	79S	F5 Azimuth 141, close dbl?
May 20	Fri	3:45	R 60 Sgr	4.8	77- 22	36N	G8 ZC2914, spec. binary
May 20	Fri	5:02	R SAO 188817	8.0	76- 25	67N	A9 Sun altitude -9 degrees
May 21	Sat	4:01	R ZC 3073	7.8	66- 21	41N	K5
May 22	Sun	2:59	R ZC 3215	7.5	55- 8	60S	G8 Azimuth 123 degrees
May 23	Mon	3:52	R SAO 165339	8.3	44- 13	50S	F8 Azimuth 119,close dbl??
May 24	Tue	4:09	R ZC 3490	7.2	33- 12	74N	F8 Azimuth 110 degrees
Jun 3	Fri	21:39	D SAO 80165	7.5	18+ 27	52N	F2
Jun 3	Fri	22:04	D SAO 80173	8.3	18+ 22	44S	K0
Jun 6	Mon	20:59	D SAO 99317	8.1	44+ 52	70N	K0 Sun altitude -6 degrees
Jun 8	wed	21:24	D SS Vir	7.7	65+ 49	88N	C6 Sun -9,xZ54025,mag 7-9
Jun 9	Thu	23:06	D ZC 1903	7.7	75+ 38	56N	F8
Jun 10	Fri	0:51	D SAO139272*	7.6	76+ 22	86S	K0
Jun 11	Sat	20:58	D ZC 2136	6.6	92+ 28	11S	K1 Sun -5, Term,Dist. 8"
Jun 11	Sat	23:24	D ZC 2147	6.9	92+ 33	69N	K0 Close double?
Jun 12	Sun	22:23	D Dschubba	= 2.3	97+ 26	6S	B0 ZC2290, see notes for
Jun 12	Sun	22:56	R del sco	2.3	97+ 28	-46S	B0 AA 222, the VA-NC graze

*in Kepler2 program so occultation light curves are sought.

May 16th events are during a lunar eclipse;
 SAO 159316 is 11" from ZC 2214 in PA 280 deg.
 Sometime soon, the URL will change to iota.jhuapl.edu/exped.htm.

David Dunham, dunham@starpower.net

2021-2022 Officers

President:

Harold Williams
haroldwilliams@me.com or
Harold.Williams@montgomerycollege.edu
 240-461-4948

Vice-President:

John Hornstein
jshgwave@yahoo.com
 301-593-1095 (h)

Secretary-Treasurer:

Henry Bofinger
hbofinger@earthlink.net
 202-675-1075

Asst. Secretary-Treasurer:

Jeffrey B. Norman
jeffreynorman@comcast.net

Trustees:

- Michael Brabanski (2022)
- Guy Brandenburg (2023)
- Jack Gaffey (2024)
- Benson Simon (2025)

Appointed Officers and Committee Heads:

Exploring the Sky

Jay Miller
jhmillier@me.com

Telescope Making

Guy Brandenburg
gfbrendenburg@yahoo.com
 202-262-4274 (leave message)

NCA Webmaster

Elizabeth Warner
warnerem@astro.umd.edu
 301-405-6555

Star Dust Editor

Todd Supple
NCAStardust@gmail.com
 301-595-2482 (h)

Social Media

Twitter: [@NatCapAstro](https://twitter.com/NatCapAstro)

2022 Jan. 25 Occultation of SAO 110026 by (877) Walkure – continued from page 4

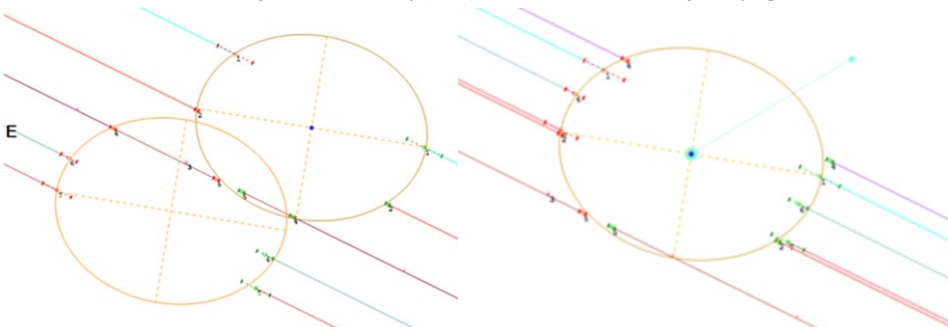


Figure 4, left: Sky plane plot of SAO 110026 by Walkure on 2022 Jan. 5, showing double star solution. The station numbers are: 1, Dunham1, Picacho Peak; 2, Carlson; 3, the predicted center; 4, Maley star 1; 5, Maley star 2; 6, Dunham2, Rillito; and 7, Dunham3, Cortaro. The ellipse in the upper right is Maley's star 2, the brighter one, while the ellipse in the lower left is Maley's star 1. Credit - Dave Herald, IOTA. Figure 5, right: Credit - Dave Herald, IOTA.

Figure 5 shows the final elliptical solution with the double star solution as a line, and the star 2 ellipse shifted by the double-star solution to overlay the star 1 ellipse. Although Maley was at the predicted center, he had the northernmost and southernmost chords across Walkure. The matching of Carlson's chord #2 for star 2 and our Cortaro chord #7 for star 1 locked the solution. But also, Walkure has a shape model determined from its rotational light curve. Dave Herald fitted the model, DAMIT #1095, to the ellipse with appropriate scaling, in Fig. 6. The solution numbers are given on the figure with their 1-sigma errors.

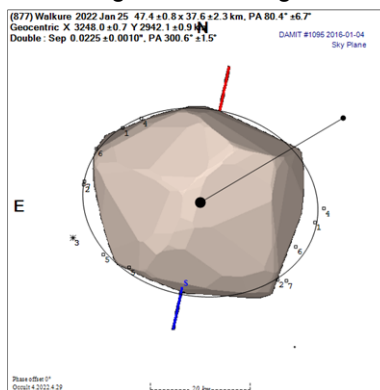


Figure 6, above, shows the final solution with the double star solution as a line, and the star 2 ellipse shifted by the double star solution to overlay the star 1 ellipse, like in Fig. 5. In the heading of the figure, the first line gives the ellipse solution, the second one solution center's geocentric offset, and the third line, the double star solution. **Image Credit: Dave Herald, IOTA.**

The components were closer in January this year than they were during the lunar occultation in 1984; then, the separation was 0.05" in vector PA 72°. "vector PA" is the PA of the occultation on the Moon's limb; the actual double star separation could have been larger in a somewhat different direction. The publication of the 1984 observation gave the component magnitude difference as 0.1, which is consistent with the levels of Maley's recording. The differences show that there was orbital motion between the two epochs, possibly many revolutions. I'm trying to get the *Astronomical Journal* publication of the 1984 event, to try to assess their errors. Hopefully, Gaia will be able to obtain more information about this pair, possibly even an orbit, with their final release.

This event also prompted a review of the astrometric treatment of close double stars resolved by previous asteroidal occultations; Dave Herald was appalled when he found out that none of the past events tried to correct the pair's position to at least a center of light of the pair. For that, the masses or the magnitudes of the separate components are needed, so the occultation light curves will be requested for future double star events, and attempts will be made to obtain such data for some of the earlier asteroidal occultations of double stars.

Recent Astronomy Highlights – continued
from page 4

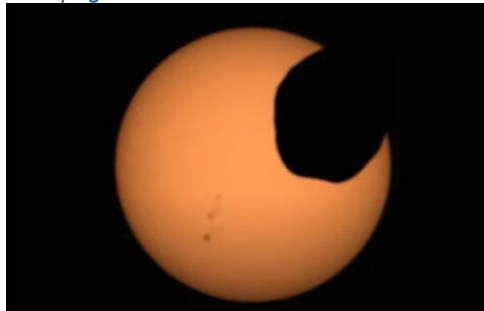


Image Credit - NASA/JPL-Caltech/ASU/MSSS/SSI

Solar Eclipse on Mars

NASA’s Perseverance Mars rover captured the above image of the Martian moon Phobos passing in front of the Sun on April 2, 2022. Phobos is only 27 kilometers in diameter along its widest axis and orbits only six thousand kilometers above Mars. The eclipse lasted for only 40 seconds. More information about the eclipse, as well as a video of the event can be found at phys.org/news/2022-04-nasa-perseverance-rover-captures-video.html.

Calendar of Events

NCA Telescope Making, Maintenance, and Modification Workshop (TM3W) (previously the NCA Mirror- or Telescope-making Classes): The Chevy Chase Community Center has reopened and classes have resumed. Classes will be Tuesdays and Fridays, from 5:00 to 8:30 pm at the Chevy Chase Community Center (intersection of McKinley Street and Connecticut Avenue, N.W.) Please contact instructor Guy Brandenburg at 202-262-4274 (leave message) or at gbrandenburg@yahoo.com if you plan to attend. Note that masks are mandatory, as in all DC government buildings. More info is at guysmathastro.com.

Open house talks and observing at the University of Maryland Observatory in College Park are temporarily suspended. When they resume, they will be on the 5th and 20th of every month at 8:00 pm (Nov.-Apr.) or 9:00 pm (May-Oct.). Updates are posted at www.astro.umd.edu/openhouse.

Next NCA Meeting: 11 June 7:30 p.m. Science-Fair Winners, NCA Elections and Astro-photos

The APS Mid-Atlantic Senior Physicists Group: (Zoom Meeting) May 18th at 1:00 p.m., Dr. Randolph “Rand” Elmquist, NIST, will give a talk entitled “Quantum Hall Array Structures Apply Quantized Resistance in the Wider World” Information on the meeting, can be found at www.aps.org/units/maspg/meetings/meeting.cfm?name=SENIOR0522. If you're interested in attending the meeting, please email units@aps.org.

National Capital Astronomers Membership Form

Name: _____ **Date:** ___/___/___

Address: _____ **ZIP Code:** _____

Home Phone: ___ - ___ - ___ **E-mail:** _____ **Print / E-mail Star Dust (circle one)**

Membership (circle one): Student..... \$ 5; Individual / Family.....\$10; Optional Contribution.....\$__

Please indicate which activities interest you:

- Attending monthly scientific lectures on some aspect of astronomy _____
- Making scientific astronomical observations _____
- Observing astronomical objects for personal pleasure at relatively dark sites _____
- Attending large regional star parties _____
- Doing outreach events to educate the public, such as Exploring the Sky _____
- Building or modifying telescopes _____
- Participating in travel/expeditions to view eclipses or occultations _____
- Combating light pollution _____

Do you have any special skills, such as videography, graphic arts, science education, electronics, machining, etc.?

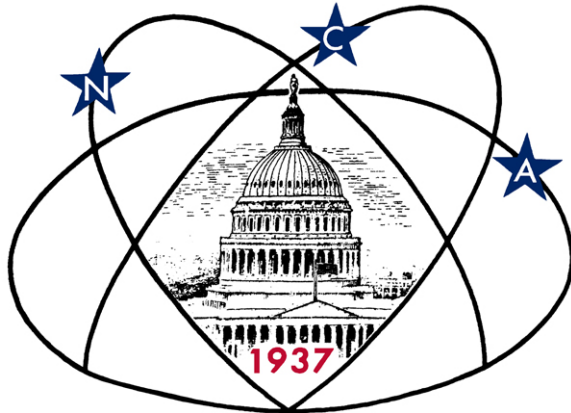
Are you interested in volunteering for: Telescope making, Exploring the Sky, Star Dust, NCA Officer, etc.?

Please mail this form with check payable to **National Capital Astronomers** to:
Henry Bofinger, NCA Treasurer; 727 Massachusetts Ave. NE, Washington, DC 20002-6007

National Capital Astronomers, Inc.

If undeliverable, return to
NCA c/o Elizabeth Warner
400 Madison St #2208
Alexandria, VA 22314

First Class
Dated Material



Celebrating 84 Years of Astronomy

Next NCA Meeting:

2022 May 14th

7:30 pm

(On Zoom)

Dr. Harold Williams

To join the Zoom meeting, use the following link:
umd.zoom.us/j/96856095178?pwd=cWhyNE92bGFYUkYxZnl6eWVlK0lKdz09

Please download and import the following iCalendar (.ics) files to your calendar system: umd.zoom.us/meeting/tJllcu-opz4rHdxfgBb8Lh5wRlgETFQ8lnI5/ics?icsToken=98tyKuCupj4sGt2QsR6PRowAGo_4M_TxmCVcgqdFmhjHAXh_albhBO5FF4ZZIYDc

Please note that NCA Zoom meetings are often recorded.

Inside This Issue

Preview of May 2022 Talk.....	1
Recent Astronomy Highlights.....	2
NCA Candidate Slate.....	2
Exploring the Sky.....	3
Occultation of SAO 110026 by (877) Walkure.....	3
Sky Watchers.....	4
Occultations.....	5
Calendar of Events.....	7