

Star Dust

Newsletter of National Capital Astronomers, Inc.
capitalastronomers.org

October 2023

Volume 82, Issue 2

**Celebrating 86 Years
of Astronomy**

Next Meeting

When: Sat. Oct. 14th, 2023

Time: 7:30 pm

Where: In-Person and Online
(Zoom)

See instructions for joining the meeting via Zoom on Page 9.

Speaker: Dr. Ben Hord

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Image Credit - ESA/Webb, NASA, CSA, T. Ray (Dublin)

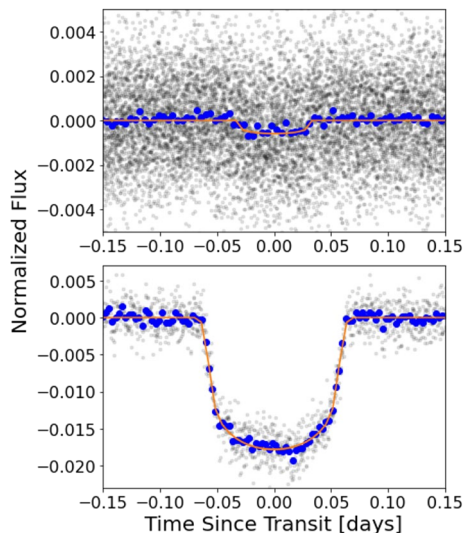
JWST recently captured the picture above of the jets coming off of a star that is only tens of thousands of years old, known as a Herbig-Haro object. This one is designated as Herbig-Haro (HH) 211. More information can be found at www.flickr.com/photos/nasawebbtelescope/53186159982/in/album-

Annual Membership Dues are Due!

You may join or renew using the form on Page 8 (and mailing it in) or our website's [online option](#) (right column). Please support NCA by applying for or renewing your membership at this time in order to keep receiving Star Dust. Thank you.

Where Did They Come From, Where Will They Go: The Life and Death of Hot Jupiters

Dr. Ben Hord – NASA's Goddard Space Flight Center



Phase-folded transits of the hot Jupiter WASP-132 b (bottom) and its nearby companion WASP-132 c (top) in TESS data. Image Credit – Dr. Ben Hord

Abstract: Hot Jupiters are one of the biggest surprises of exoplanet science. The birth and evolution of these hot, gaseous planets are unlike anything in the Solar System and they have challenged traditional theories of planet formation. A clue to unraveling this formation history comes from the lack of companion planets in orbits near to hot Jupiters. By studying the handful of cases in which hot Jupiters do exist near to other planets, we can distinguish between the possible mechanisms that form hot Jupiters. I will discuss the discovery of some of these new hot-Jupiter companion planets as well as emerging trends in the handful of hot-Jupiter systems with this rare architecture and what this means for hot-Jupiter formation. Hot Jupiters don't stick around forever though, and

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[72177720305127361](https://www.space.com/72177720305127361).

Recent Astronomy Highlights **Bubble of Galaxies One Billion Light Years in Diameter**

Astronomers recently discovered a bubble formed by galactic clusters approximately 820 million light years from Earth. A billion light years in diameter, the bubble has been designated Ho'oleilana, the name being a term from the Hawaiian creation chant Kumulipo describing structure formation. The bubble itself may be remnant of Baryon Acoustic Oscillations, ripples in the density of the plasma that existed throughout the Universe before it expanded and cooled enough for atoms to form approximately 380,000 years after the Big Bang. Parts of Ho'oleilana have previously been seen, including the Bootes Supercluster and the Bootes Void, a 330-million-light-year-diameter region relatively devoid of galaxies, but the bubble itself is so unexpectedly large that it defied detection until recently. More information can be found at www.space.com/billion-light-year-wide-galaxy-bubble-big-bang

Black Holes 'Burp' Up Star Material Later Than Thought Possible

Tidal Disruption Events, TDEs, take place when a star ventures so close to a black hole that tidal forces rip that star apart, some of it, but certainly not all, then being absorbed by the black hole. Astronomers have long known that black holes are messy eaters, ejecting much of the star's material back into space as evidenced by radio waves also emitted. Until now though, it was believed that such burps took place within a few months of the TDE. However, astronomers studying twenty-four black holes with recent TDEs have seen radio waves pick up, presumably from star material being ejected, two to six years after the stars were initially disrupted. Two black holes even showed two different peaks in radio-wave emission. Whether the material ejected is from an accretion disk or from closer to the black holes remains unknown. More info is at www.livescience.com/space/black-holes/up-to-half-of-black-holes-that-rip-apart-stars-burp-back-up-stellar-remains-years-later

Abstract and Biography – continued from page 1

the death of these strange planets is similarly enigmatic. Every hot Jupiter is doomed to inspiral into its host star, meaning that these giant planets have finite lifetimes. I will present current and future work on directly observing hot-Jupiter inspiral to constrain their lifetimes and the clues this phenomenon leaves us. With this, we can understand the two bookends of a hot Jupiter's life.



Biography: Dr. Ben Hord is a NASA Postdoctoral Program Fellow at NASA's Goddard Space Flight Center. He recently received his Ph.D. in Astronomy from the University of Maryland, College Park this past July and received bachelor's degrees in Astrophysics and History from Columbia University in 2018. Dr. Hord's research primarily focuses on understanding the mechanisms that drive hot-Jupiter formation and evolution as well as planet discovery and validation using large photometric data sets. He is also currently working on the Pandora SmallSat mission, an upcoming space observatory that will observe both exoplanet atmospheres and their host stars in optical and infrared wavelengths.

President's Corner

Guy Brandenburg

Annular Solar Eclipse, October 14

People in the DC area can witness a partial solar eclipse on October 14. It will start at 12:00 noon and last about two and a half hours. In some of the western United States, this will be an annular eclipse, but nowhere will this one be a total eclipse. Here in DC, MD and VA, roughly 30% of the sun's disk will be covered at most, which means that unless a person knows what to look for, they won't notice it at all.

Please come out and join other NCA members and help the public view this event through a variety of solar telescopes at the Eisenhower Memorial, opposite the National Air and Space Museum, along Independence Avenue SW, during those hours, weather permitting.

Please remind people not to try to observe this event with their naked eyes, nor with an unshielded telescope, nor with ordinary sunglasses!

You can read lots of details about this partial eclipse at www.timeanddate.com/eclipse/in/usa/washington-dc?iso=20231014

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Exploring the Sky



2023 Exploring the Sky Sessions

21 Oct. 7:30 P.M. Moon, Jupiter

18 Nov. 7:00 P.M. Jupiter, M45, outer planets

Exploring the Sky is a joint program between the National Capital Astronomers and the National Park Service Rock Creek Park Nature Center and has been run since 1948 at this location, the field at the corner of Glover and Military Roads in the District. There is an adjacent parking lot. It is free and all are welcome who have an interest in observing the heavens. It's not an ideal dark sky location but we can still see solar system objects (even the occasional comet), open and globular clusters and maybe a fuzzy galaxy or two.

This year, as an added feature, you can come one hour early and see a planetarium program in the Nature Center and then come to the field to observe. Also, if the sky is cloudy or it's raining there will be a planetarium program at that one-hour-earlier time so Exploring the Sky will no longer be canceled! Planetarium programs can be found at:

www.nps.gov/rocr/planyourvisit/calendar.htm. You can also search "astronomy", "dark skies" or call the Nature Center at: (202)-895-6070.

The article-submission deadline for November's issue of Star Dust, is October 18th.

Clear Skies!

President's Corner – continued from page 2

An easy and safe way to view the Moon appearing to 'eat' part of the Sun is to hold up a straw hat, or a kitchen colander, or even a piece of cardboard in which you poke some holes with a pencil. Or stand under a tree with dappled sunlight on the ground beneath. Then look down at the shadows. If we were closer to the centerline, then at some point, we might see the partially-eclipsed Sun casting shadows through a colander looking like this:

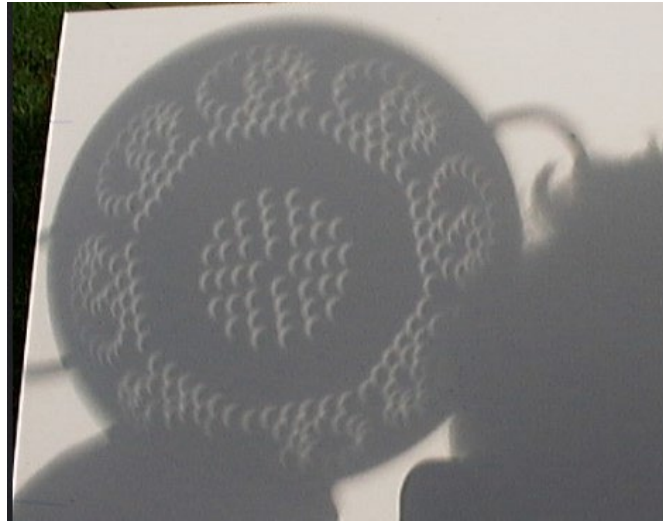


Image Credit – Paul Downey (cropped from original picture at www.flickr.com/photos/45581782@N00/21744187/) Permission to use image given per creativecommons.org/licenses/by/2.0/.

Dedicated, safe and certified solar glasses are relatively cheap these days. I am looking into designing and ordering a large number of NCA-branded solar glasses to distribute either free or for a very low price. We will have these on hand before the total eclipse of April 8, 2024, but probably not by October 14.

I also have a dozen or more sets of lenses that can be used to build a safe and inexpensive home-made solar viewer as described here: [DIY Solar Viewer | Total Solar Eclipse 2017](#). I plan to advertise a session before the April 2024 eclipse where folks can make one of these for very little money, using scraps of wood and such.

Hopewell Observatory Open House, November 4

In the DC-MD-VA area, autumn is often the most pleasant time to go out and look at the stars. It's generally neither too hot nor too cold, and if you can find a dark location where you can actually see the Milky Way, you can look up knowing that most of the biting insects are inactive. Also, sundown occurs relatively early, especially after the end of Daylight Savings Time (this year, the night of November 4).

On that very night, the Hopewell Observatory, located about an hour from DC, will be holding its annual Fall Open House, for which you can see details in this issue of Star Dust on page 7. It's free, our scopes are very good for visual observing, and our location is much darker than inside the Beltway. Unfortunately, despite its remote location, light pollution gets a bit worse there every year.

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Sky Watchers

October/November

Mercury drops lower in the predawn sky, transitioning to the evening sky late in October. Venus remains high in the morning sky throughout the period, reaching Greatest Western Elongation on 10/23 (see below). Jupiter will rise shortly after sunset until November 3rd when it will reach opposition (see below). Saturn will be high in the eastern sky at sunset. Mars will mostly be unviewable.

10/21-22	The Orionids Meteor Shower peaks on the evening of the 21st into the morning of the 22nd with approximately 20 meteors/hour. A first-quarter Moon will set around midnight allowing for ideal viewing conditions afterward.
10/23	Venus will reach Greatest Western Elongation, appearing 46.4 degrees from the Sun.
10/28	Full Moon 3:25 p.m. and a partial Lunar Eclipse which will not be visible in the Washington D.C. region.
11/4-5	The Taurids Meteor Shower peaks on the evening of the 11/4, usually producing 5-10 meteors per hour. A second quarter Moon will interfere with viewing all but the brightest meteors. The best time for viewing is just after midnight.

All times are in EDT (Eastern Daylight Savings Time).

President's Corner – continued from page 3

Disclaimer: I happen to be the current president of both NCA – a 501(c)(3) non-profit—and The Hopewell Corporation, a supposedly for-profit, small group enterprise that began building this observatory about fifty years ago. I was not an original Hopewell member, but many of the founders of the observatory, in particular the late Bob McCracken, were members and officers of NCA.

Science Fair Judges, Spring 2024

This year, it looks like we have at least eight NCA members who have generously volunteered to help judge science or STEM fair exhibits related to astronomy in the various nearby jurisdictions. So far, we have James Cole, John Hutzell, Jay Miller, Milt Roney, Kristin Palmason, Stephen Solomon, Lisa Webb, and myself. This is the best showing we've done in quite a while.

Prince George's, Montgomery, Arlington, Fairfax, the District and other counties generally have their STEM fairs in March – often, all on the very same weekend.

Each student winner will earn a nice certificate; a year's subscription to Star Dust and membership in NCA; a one-year subscription to their choice of **Sky & Telescope** or **Astronomy**; an NCA-branded hat, bag, T-shirt, or mug of their choice; an invitation to present their work to our June meeting; and dinner at a restaurant TBD before the meeting.

Some years there are lots of excellent projects that deserve prizes, and sometimes few or none. We will see!

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[Recent Astronomy Highlights – continued from page 2](#)

Carbon-Bearing Molecules Detected in Atmosphere of Exoplanet

Approximately 124 light years away, K2-18b is an exoplanet with a mass nearly nine times that of Earth, a type of planet known as a sub-Neptune. K2-18b orbits a red dwarf star in that star's habitable zone, a region surrounding the star where the surface temperature of an exoplanet may be conducive to having liquid water. The James Webb Space Telescope has recently observed transits of K2-18b in front of its star, during which time some of the light from the star passed through the exoplanet's atmosphere before making the long trek to our Solar System. Spectroscopic data taken by JWST show the presence of carbon dioxide and methane in the atmosphere. These findings lend credence to the theory that K2-18b may be a Hycean exoplanet, an exoplanet with a hydrogen-rich atmosphere and a surface covered by a water ocean. The lack of detectable ammonia also points to this possibility. In addition, a possible detection of dimethyl sulfide, leads some to speculate that the K2-18b may actually have life since that compound is only produced on Earth by life, most of it by phytoplankton. It should be noted however, that the signal for dimethyl sulfide is much weaker than the signals for carbon dioxide and methane and will require confirmation from further observations by JWST. More information is available at www.nasa.gov/universe/exoplanets/web-b-discovers-methane-carbon-dioxide-in-atmosphere-of-k2-18-b/

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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

2023 Date	Day	EDT/EST	Star	Mag.	Asteroid	dmag	dur. s	Ap. "	Location
Oct 10	Tue	4:46	V1119 Tauri	7.9	Porthan	8.5	7	2	se-nVA, s-CMD, DC
Oct 10	Tue	22:12	4U393118381	12.6	Balder	4.3	1.1	8	nVA, SMD, SNJ; DC?
Oct 11	wed	22:41	4UC58912753	11.7	Tugela	3.9	10	5	e-SCNC, nWSC, nGA
Oct 12	Thu	1:19	4UC52713517	11.6	Isko	4.1	6	5	nOK, nTN, w-ENC
Oct 15	Sun	5:01	TYC13961943	10.5	2002 CC4	9.6	1.1	4	OK, OH, nwPA, cNY
Oct 23	Mon	3:32	4UC53430659	12.5	Astraea	0.3	11	6	ORD, nOH, nPA, SNY
Oct 23	Mon	5:23	SAO 118412B	10.0	Majuba	0.5	1.1	4	DTW, sON, nPA, SNY
Oct 24	Tue	3:37	TYC13810323	9.6	Kemchinsky	8.6	2.0	3	saAZ, w-neTN, sVA
Oct 27	Fri	21:54	TYC57200602	10.3	Asporina	3.5	1.8	4	nAZ, sw-CVA, SMD
Oct 29	Sun	23:43	4UC57307729	12.2	Germania	0.7	0.7	5	NJ, MD, DC, VA, wNC
Nov 4	Sat	20:46	4UC57107537	10.1	Deborah	4.4	5	4	seVA, eNC, cSC, GA
Nov 4	Sat	22:29	4UC60329598	11.0	Arachne	2.5	40	4	n+wNY, wPA, neOH
*** Dates and times above are EDT, those below are EST ***									
Nov 9	Thu	22:57	119 Tauri	3.1	Adachi	0.4	3	2	OBX, SNC, cSC, cGA
Nov 11	Sat	5:33	TYC12530072	11.9	Elsa	0.5	6	5	C+WMD, nVA, swPA
Nov 12	Sun	4:47	4UC53607641	13.1	Emita	0.3	11	8	MD, DC, nVA, swPA

Lunar Grazing Occultations

2023 Date	Day	EST	Star	Mag	% alt	CA	Location, Notes
Nov 7	Tue	5:31	ZC 1559	8.2	31- 41	6S	sFrdrik, AlfaRidgPk, Dundalk, MD

Lunar Total Occultations

2023 Date	Day	EDT/EST	Ph Star	Mag	% alt	CA	Sp.	Notes
Oct 12	Thu	6:32	R ZC 1693	7.5	5- 16	30N	F5	Sun alt. -9 deg.
Oct 17	Tue	19:33	D ZC 2269	5.4	10+ 3	57S	B5	Azimuth 235 deg.
Oct 20	Fri	19:59	D SAO 187432	8.3	37+ 18	55N	K5	
Oct 21	Sat	20:02	D 59 Sgr	4.5	48+ 23	37S	K3	ZC 2912
Oct 22	Sun	22:13	D SAO 189937	8.2	60+ 21	82N	F3	
Oct 22	Sun	22:17	D ZC 3073	7.8	60+ 21	52S	K5	
Oct 23	Mon	21:24	D ZC 3214	6.8	71+ 33	33N	A0	
Oct 23	Mon	23:29	D SAO 164803	7.9	72+ 24	50N	A9	
Oct 23	Mon	23:43	D SAO 164816	8.0	72+ 22	77S	K1	mag2 10 sep 4" dT -.4s
Oct 24	Tue	0:53	D 29 Aqr	7.2	72+ 12	32N	A0	Az236, ZC3228, double
Oct 24	Tue	22:17	D 74 Aqr	5.8	81+ 39	58N	B8	ZC3356, mag2 6, dT -.05s
Oct 25	wed	18:50	D SAO 146849	7.7	89+ 22	77S	G5	Sun alt. -7 deg.
Oct 25	wed	23:30	D ZC 3503	7.6	90+ 45	30N	A2	
Oct 29	Sun	23:37	R ZC 485	7.0	98- 55	84S	K2	Axis Angle 256 deg.
Oct 30	Mon	0:46	R 63 Arietis	5.2	98- 66	78S	K3	AA 250, ZC 487
Oct 30	Mon	1:33	R 65 Arietis	6.1	98- 71	45S	A1	AA 217, ZC 492
Oct 31	Tue	21:23	R ZC 780	6.8	87- 13	40S	G5	Az. 66, spec. binary
Nov 1	wed	23:54	R ZC 952	8.0	79- 31	83S	K2	
Nov 2	Thu	0:56	R SAO 78191	7.7	79- 42	83N	A0	
Nov 2	Thu	1:20	R SAO 78206	8.0	78- 47	79N	K0	
Nov 2	Thu	3:36	R SAO 78291	7.7	78- 72	61S	K0	
Nov 2	Thu	23:56	R ZC 1093	6.6	70- 21	89S	F8	mag2 7.3, dTime -1.4s
Nov 3	Fri	2:31	R SAO 79256	7.8	69- 50	60S	K0	
Nov 3	Fri	2:52	R SAO 79264	8.0	69- 54	86S	G2	
Nov 4	Sat	6:13	R SAO 80070	7.5	59- 75	90N	K0	
*** Dates and times above are EDT, those below are EST ***								
Nov 6	Mon	3:14	R SAO 98813	8.4	40- 25	54S	F8	
Nov 7	Tue	2:17	R ZC 1553	7.8	31- 15	70N	A0	Azimuth 86 deg.
Nov 7	Tue	3:12	R SAO 99227	8.2	31- 25	50N	K0	
Nov 7	Tue	5:08	R SAO 99256	8.3	31- 46	5N	K0	
Nov 8	wed	3:13	R ZC 1646	7.6	23- 15	70S	K0	Azimuth 93 deg

Not listed above is the annular solar eclipse in the s.w. USA the morning of Oct. 14. We may record it from the s. limit near Gallup, NM.

More information at iota.jhuapl.edu/exped.htm.

David Dunham, dunham@starpower.net

Partial Occultations of Stars by Asteroids 3rd-mag. 119 Tauri occultation over N. Carolina Nov. 9 pm

David Dunham

Usually, when one observes an occultation of a star by an asteroid, the star suddenly disappears for several seconds, then just as suddenly reappears, a startling sight, as the asteroid is usually too faint to see; the star appears to just

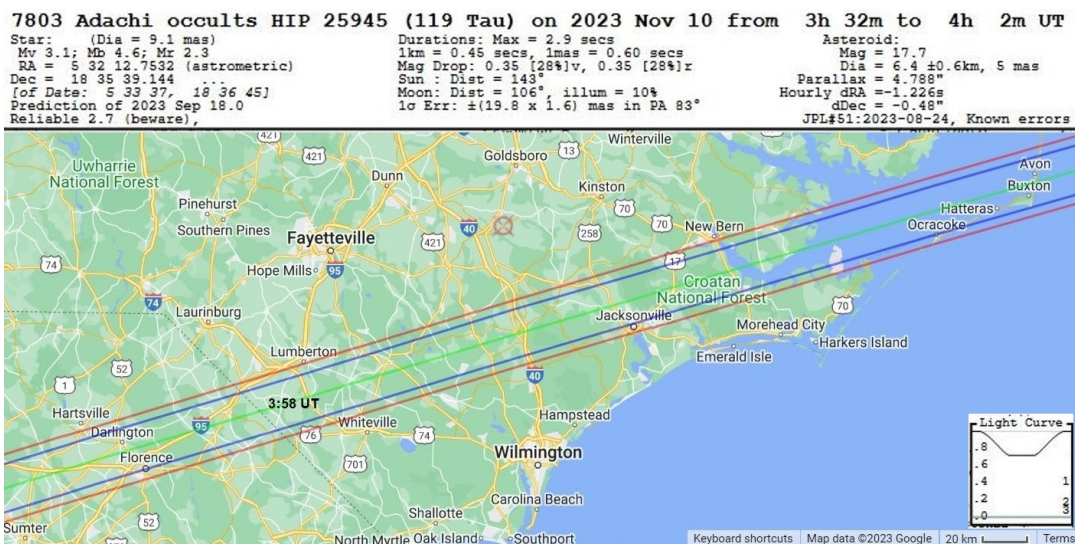
continued on page 6

Partial Occultations of Stars by Asteroids - 3rd-mag. 119 Tauri occultation over N. Caroline Nov. 9 pm – continued from page 5

vanish from the field of view. The angular size of the asteroid is almost always larger than that of the star, but sometimes, the star is a red giant with a significant angular size relative to the asteroid. In July 2010, we went to Spain to observe such an event, when 2.7-mag. delta Ophiuchi (Yed Prior) was occulted by the asteroid (472) Roma, only about 3 times the angular size of the star. So some observers had only partial occultations of the star, while others had a complete occultation, but with long partial phases (long gradual disappearances and reappearances).

In a 3-month period, we are unusually lucky to have three such occultations in the eastern USA. The first was on Tues. Oct. 10, at 4:46 am, when the 7.9-mag. star V1119 Tauri (=HIP 19853 = SAO 76523, spectral type M4) was occulted by the 25-km asteroid (2333) Porthan whose shadow passed over DC, and central and southern Maryland. This was too early to include in Star Dust, so I distributed information about the occultation via the main DMV astronomy club e-mail lists on Monday, Oct. 9; earlier messages about that event were distributed in mid Sept., but in that message, I gave an incorrect name for the asteroid, Portan, copied from the original message to which I had replied. The predicted occultation duration was 6s, but with gradual D and R expected to last about 2 seconds. In addition, the star has a nearby 8th-mag. companion, so that remained visible during the total occultation by Porthan. The star's mag. was given as 5.8 by Gaia, but photometric catalogs show that is 2 mag. too bright.

The next is on Nov. 9, at 10:57pm (time at s. OBX), when the 6km asteroid (7803) Adachi will occult 3.1-mag. 119 Tauri (=ZC 832 = HIP 25945 = SAO 94628) across southern N. Carolina. But in this case, the spectral type M2Ib red giant star will have an angular diameter of 9 milli-arc-seconds (mas), while the asteroid subtends only 5 mas. So, this will be an annular occultation with the annular phase lasting just under 2 seconds, when about 70% of the star's disk will be covered, producing an occultation magnitude drop of less than 0.4. This will be surrounded by shallow partial phases about a second long. Another problem is that we don't know where the path is; due to its brightness, the star has a poor Gaia solution for its astrometric data, so the actual path may be more than 10 km north or south of the predicted line; the formal prediction errors are wrong. I was hoping to try to observe this with small "mighty mini" systems, but I have a schedule conflict made before I knew of this event that will prevent it. I can loan out 3 mighty mini's to those who want to try the event; if so, you need to supply the laptop(s) to record it. The occultation will also occur across s. Europe, where a campaign is organized, as a test for the last event; their page is at call4obs.iota-es.de/2023-nov-10-0336-ut-7803-adachi-occults-hip-25945-119-tau-3-1-mag.



The path of the Nov. 9/10 Adachi occultation of 119 Tauri across southern North Carolina. The light green line is the predicted center and the blue lines are the expected limits of annularity. The header has basic event information, and an inset shows the expected occultation light curve. Credit: David Dunham, Google Maps and IOTA.

The last is on Dec. 12, at 8:24pm EST, when Betelgeuse will be occulted by (319) Leona in s. Florida. Occultations of other stars by Leona on Sept. 13 and 16 showed that Leona may be a little larger than predicted, but that was at only two orientations and Leona was found to be elongated. So, unless some more occultations can be recorded before Dec. 12, we won't know just what to expect; the event is likely to be a deep annular, but not a total, occultation. The star is too bright for Gaia, so its positional data were obtained from the USNO Bright Star Catalog, a special attempt to cover those stars as well as possible. A special page has been set up for the event at proam-gemini.fr/photometrie-et-spectroscopie-de-betelgeuse-%ce%b1-ori-lors-de-son-occultation-par-319-leona-du-12-12-2023/.

These links and more are at iota.jhuapl.edu/exped.htm.

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Invitation to Hopewell Observatory Open House on Saturday, November 4, 2023

You are invited to the upcoming Fall 2023 Astronomical Open House at the privately-owned Hopewell Observatory on the night of Saturday, November 4.

This observatory is located on a ridgetop, out in the woods, and was completely built by its original members, starting 50 years ago. Under its roll-off roof (shown below, in its closed position, with a visiting group of scouts) it houses a number of telescopes up to 14" diameter. We also have Dobs and other scopes that we roll out on our small field. The motors and drive mechanism on our oldest and largest telescope mount (also shown below) were recently rebuilt by us (with considerable expert help from others), using modern CN stepper driver controllers and a freely-distributed software package called OnStep. So now it's a true GoTo scope.

Hopewell is about a 45-minute drive from the intersection of I-66 and the DC Beltway. Detailed driving directions to the observatory can be found here - wordpress.com/post/quysmathastro.com/1873

Warning: the road up the mountain is not the greatest, and there is no running water. We do have bottled water, electricity, a warming cabin, hand sanitizer, and an outhouse, and we will have ready the makings for tea, coffee, hot chocolate, and hot cider.

You can stay as late as you like, and if you feel like bringing your own telescope, that's fine, too!

If it's your first visit to Hopewell, we recommend that you come before it gets completely dark, especially since you would need to walk about 250 yards in the dark. There are no streetlights up there, so bring a flashlight (a cell phone will do).

Sunset is predicted for about 6 pm, and at about 7:30 it gets fully dark – except for the ever-worsening light pollution from the encroaching suburbs.

The required liability release form can be found at hopewellobservatory.rsvpify.com/?securityToken=R5q5yJ1X9sIQaQDL0OoidG4vZDUdijxo

For more information, feel free to email gfbrandenburg@yahoo.com.



Recent Astronomy Highlights – continued from page 4

Supermassive Black Hole’s Spin Confirmed

Using 23 years of observational data radioastronomers have confirmed that the supermassive black hole in the galaxy M87, is spinning, although the speed of that spin is yet to be determined. 6.5 billion times the mass of the Sun and only 55 million light years away, M87’s supermassive black hole was the first such object imaged by the Event Horizon Telescope, a group of radio telescopes spanning the globe. While the spin of a black hole cannot directly be detected, it was inferred by an observed 11-year precession of the relativistic jets streaming away from that black hole. The precession seems to be due to a misalignment of the spin of the supermassive black hole and the rotational axis of spin of its surrounding accretion disk. More information on the discovery can be found at www.eurekalert.org/news-releases/1002773.

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 6:00-9:00 pm at the Chevy Chase Community Center (intersection of McKinley Street and Connecticut Avenue, N.W.) Please contact instructor Guy Brandenburg at 202-635-1860 (leave message) or at gbrandenburg@yahoo.com if you plan to attend. 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 November 7:30 p.m. Anne Pommier (Carnegie Institute) **The Interiors of Terrestrial Planets, and The Surprising Role of Electrical Phenomena**

The APS Mid-Atlantic Senior Physicists Group: (Zoom Meeting) October 18th at 1:00 p.m., Dr. Miriam E. Hiebert, UMD and Smithsonian, will give a talk entitled “The Uranium Club: Unearthing the Lost Relics of the Nazi Nuclear Program”. You can attend the meeting in person or via Zoom. Registration info will be on

National Capital Astronomers Membership Form

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

Address: _____ **ZIP Code:** _____

Home Phone: ___-___-___ **E-mail:** _____ (necessary for delivery of Star Dust)

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

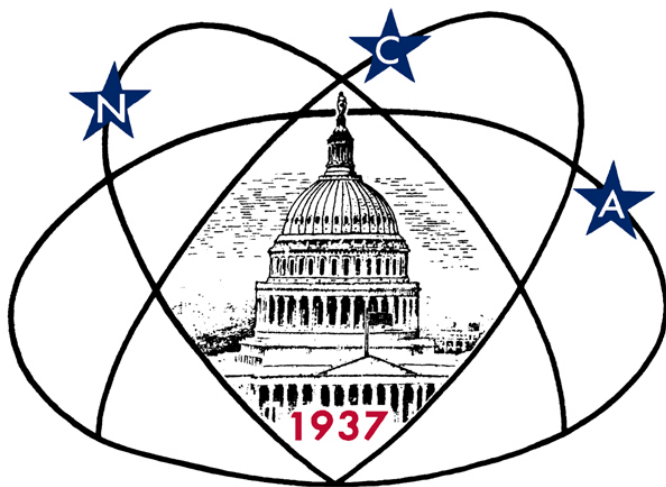
Please indicate which activities interest you:

- 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:
Jim Simpson, NCA Treasurer; 3845 Wayson Road, Davidsonville, MD 21035



Celebrating 86 Years of Astronomy



Image Credit: ESA/Euclid/Euclid Consortium/NASA

The European Space Agency's Euclid Telescope is set to investigate evidence of Dark Matter and Dark Energy. Launched on July 1, it recently took a test image, shown above. More information is at gizmodo.com/euclid-space-telescope-first-images-stunning-esa-1850696011.

To join or renew online, visit capitalastronomers.org and look in the right column for the Membership Form and PayPal links.

Next NCA Meeting:
2023 October 14th
7:30 pm
(In Person and On Zoom)
Dr. Ben Hord

To join the meeting via Zoom, use the following link:
umd.zoom.us/j/95154535739?pwd=cERBUE9XM3AvNE40TXYrNUptVEtzUT09

Please download and import the following iCalendar (.ics) files to your calendar system:
umd.zoom.us/meeting/tJEscu2trT4tGd1QOonrqcTNP3fs8VY-InJt/ics?icsToken=98tyKuCtrz4uH9eQtxqORowMBY_4LOztiVajacMrTDqDTJCYTfYBrFElepJKZX5

Please note that NCA Zoom meetings are often recorded.

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