Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

March 2025 ***Volume 83, Issue 7***

Celebrating 88 Years of Astronomy

Next Meeting

When: Sat. Mar. 8th, 2025

Time: 7:30 pm

Speaker: Dr. Heidi Hammel

Where: In-Person (UMD Obs.) and Online (Zoom)

See instructions for joining the meeting via Zoom on Page 8.

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Image Credits – ESA/Euclid/Euclid Consortium/NASA, image processing by J.-C. Cuillandre, G. Anselmi, T. Li

The European Space Agency's Euclid Space Telescope took the image shown above of an Einstein ring surrounding the galaxy NGC 6505. More information is available at www.nasa.gov/universe/euclid-discovers-einstein-ring-in-our-cosmic-backyard/.

Exploring the Solar System with the James Webb Space Telescope

Dr. Heidi Hammel – Association of Universities for Research in Astronomy (AURA)

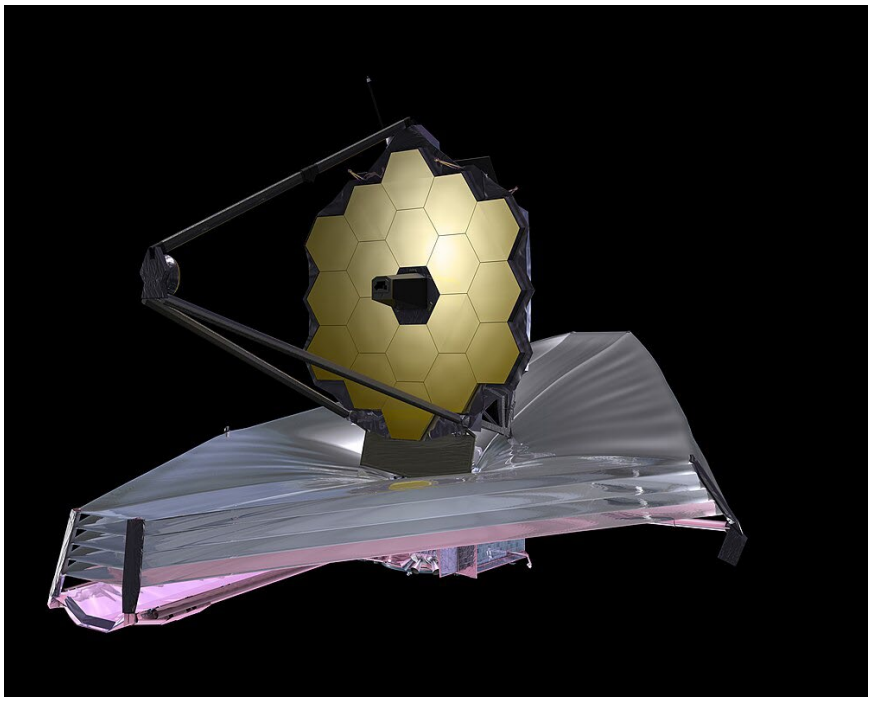

Image Credit – NASA public domain from Wikipedia commons.wikimedia.org/wiki/File:James_Webb_Space_Telescope_2009_top.jpg#mw-jump-to-license

The James Webb Space Telescope is revolutionizing our knowledge of the cosmos, from the most distant galaxies to objects right here in our own local neighborhood. Infrared studies of the Solar System have delved deeper into rings, rocks, plumes, auroras, and much more.

A renowned expert, Dr. Hammel will provide an exploration of some of the planetary science from JWST that has been intriguing her and her colleagues.

Biography: Heidi Hammel received her undergraduate degree from MIT and a Ph.D. in physics and astronomy from the University of Hawaii. After a post-doctoral position at JPL, where she was a member of the Imaging

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Title/abstract, excerpted from STScI Public Lecture Series: www.stsci.edu/contents/events/pls/2025/exploring-the-solar-system-with-the-james-webb-space-telescope?timeframe=upcoming&filterUUID=24ba27ed-9d32-4e90-aad8-3ee1a1784ae8.

Recent Astronomy Highlights

JWST Sees Continuous Flaring Around Sagittarius A*

Using hours of the James Webb Space Telescope's observing time, astronomers have recorded many flares in the environment around our Milky Way's supermassive black hole. Some of the flares lasted only seconds while others lasted hours. The shorter flares may have been caused by disturbances in magnetic fields, while the longer flares may have been caused by magnetic reconnection events. JWST's Near Infrared Camera (NIRCam) observed Sag A* in two infrared wavelengths, 2.1 and 4.8 microns. Those astronomers noted that changes in the intensity of light in the longer wavelengths lagged changes in shorter wavelengths by anywhere from a few seconds to as many as forty seconds. For further study, the astronomers are proposing to use the JWST NIRCam to observe Sag A* for as long as 24 hours uninterrupted in order to get a better understanding of the flares. More information can be found at scitechdaily.com/nasas-webb-captured-something-strange-happening-at-the-heart-of-our-galaxy/.

JWST Finds Surface Chemistry on Pluto's Moon Charon

Image Credit – NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute/Alex Parker

JWST recently focused on Pluto's moon, Charon, gathering spectroscopic data that shows the presence of carbon dioxide and hydrogen peroxide, as well as ammonia and water ice. The hydrogen peroxide is theorized to have formed when light and radiation reacted with water ice. More info is available at www.astronomy.com/science/jwst-reveals-surprising-surface-chemistry-on-charon/.

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Biography – continued from page 1

Science Team for the Voyager 2 Neptune Encounter, Hammel returned to MIT as a Principal Research Scientist in the Department of Earth, Atmospheric, and Planetary Sciences. She also spent many years with the Space Science Institute in Boulder, CO. Hammel has used Hubble many times, and led the Hubble Team that investigated Jupiter's atmospheric response to the impact of Comet Shoemaker-Levy 9 in 1994. She is an Interdisciplinary Scientist for the James Webb Space Telescope, Vice President of the Board of Directors of the Planetary Society and Vice President for Science of AURA.

Heidi Hammel bio and picture excerpted from AURA-astronomy.org - www.aura-astronomy.org/about/leadership/.

Schedule of Upcoming NCA Meetings and Speakers

Carl Biagetti

Mar. 8, 2025 -- Heidi Hammel (AURA) *Exploring the Solar System with the James Webb Space Telescope*

Apr. 12, 2025 -- Kevin Stevenson (JHU/APL) *Searching for Rocky Exoplanet Atmospheres with JWST (exact title tbd)*

May 10, 2025 -- Rob Zellem (GSFC/RST) *The Nancy Grace Roman Space Telescope (exact title tbd)*

June 14, 2025 – Science-Fair Projects and Astro-photos

Sept. 13, 2025 -- Kristin Sotzen (JHU/APL) *The Dragonfly Mission*

Oct. 11, 2025 -- David DeVorkin (NASM) *George R. Carruthers: The Quiet Genius Who Was the First to Send an Astronomical Telescope to the Moon*

Exploring the Sky

2025 Exploring the Sky Sessions

5 April 8PM
3 May 9PM
7June 9PM
5 July 9PM
2 Aug 8:30PM
20 Sept 8PM
18 Oct. 7:30PM
15 Nov. 7PM

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 see Solar System objects, open and globular clusters and maybe a fuzzy galaxy or two.

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 submission deadline for April's Star Dust is March 28th.

Clear Skies

President's Corner

Guy Brandenburg

Winter is almost over here in the DC area, at least astronomically. Weather forecasters say it's already over, but I disagree!

Spring is when local counties and cities put on science fairs so that energetic middle and high school students can demonstrate whatever project they've been working on. Some of those projects are amazingly good, but some are just carbon dioxide volcanoes. Groups like NCA make it a point to go to such science fairs and find the handful of exhibits and projects that have something to do with astronomy, and give some encouragement to the kids who did these projects. That season is coming up very soon, and those of you who already volunteered to help out with this will be hearing soon from our science fair coordinator, Milt Roney, with details. If you haven't already volunteered to be a judge, then please do so!

A bit later this year we will have elections for next year's officers. We will have an opening for a rotating trustee position (easy to do). Any NCA member is invited to run for any of the officer positions, however we are especially hopeful that someone will step forward as a candidate for vice president, which is a very important position: he or she is the person who finds our monthly speakers. Carl Biagetti, our current VP, deserves our thanks for finding and introducing the outstanding speakers we have had this year. However, he says he cannot make time for it anymore, so we need a new volunteer.

If you'd possibly consider being the NCA VP, you can be assured that Carl has already found several speakers for next year. The main thing our new VP needs is enough gumption to contact the many local government and private astronomy organizations, and find out if they know anybody who would like to give a talk on something!

Saturn's Rings Will Appear to Vanish Soon

On March 23rd, Saturn's iconic rings will seem to vanish, but they will reappear later in 2025. The disappearance is due to what astronomers describe as a ring plane crossing, when the rings, as seen from Earth, will be completely edge on. Since those rings are so thin, they will basically not be viewable. It is an event which happens approximately every 15 years. Unfortunately, it will be difficult to see this event on the day it starts since Saturn will appear so close to the Sun. But after it transits to the morning sky in coming weeks a ringless Saturn will become viewable once again.

While this disappearance might be disappointing to people viewing Saturn through a telescope for the first time, astronomers look forward to these ring plane crossings in part because it allows them to search for additional moons of Saturn since the light from the rings normally overpowers any light from those undiscovered moons. Several smaller moons of Saturn were in fact discovered during previous ring plane crossings.

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Sky Watchers

March/April

Mercury will reach greatest eastern elongation on March 8th (see below), then drop lower each evening in the evening sky until it transits to the morning sky in late March. Venus starts out low in the western sky at sunset at the beginning of the period, but also transits to the morning sky in mid March. Mars will be visible throughout most of the night. Jupiter will be high in the evening sky, setting after midnight. Saturn will be largely unviewable as it transits to the morning sky throughout the period. Despite predictions that it would already have happened, there is still no sign of the expected nova of T CrB.

3/8	Mercury will reach greatest eastern elongation, being 18.2 degree from the Sun in the evening sky.
3/14	Full Moon and Lunar Eclipse – 2:56 a.m. More detail on the eclipse can be found at eclipse.gsfc.nasa.gov/LEplot/LEplot2001/LE2025Mar14T.pdf.
3/23	Saturn's Rings will seem to vanish, from the perspective of Earth in an event known as a ring plane crossing. (See page 3.)

Time is in EDT (Eastern Daylight Savings Time)

Saturn's Rings Will Appear to Vanish Soon – continued from page 3

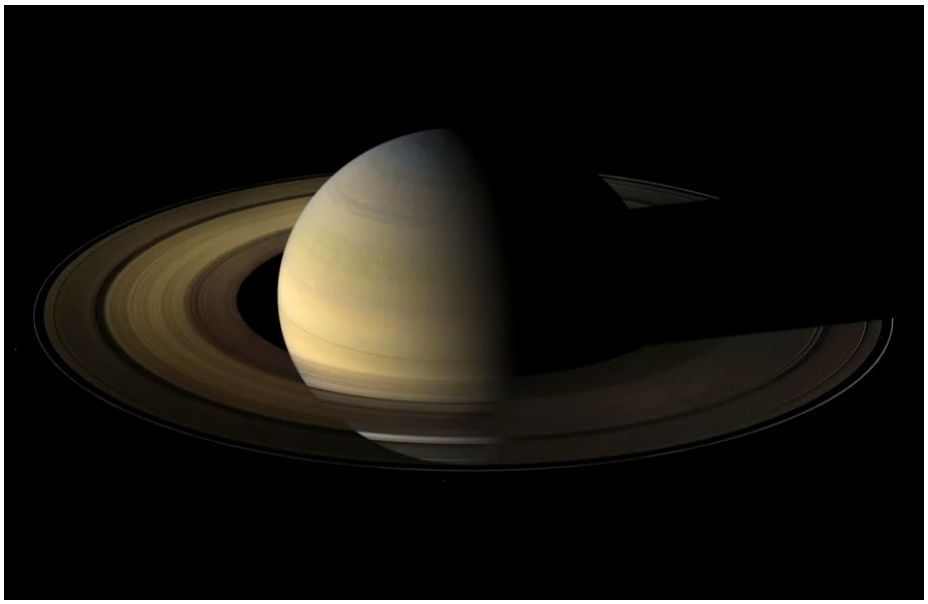

Image Credit - NASA/JPL/Space Science Institute

Galileo was the first human to see the rings thorough one of his telescopes, describing them as 'ears' since that telescope did not have the resolving power to allow him to see the ring structure. But in 1612, he did see those ears disappear in the first ring plane crossing ever observed by humanity. And later he saw the ears reappear.

More information on the ring plane crossing can be found at nasaspacenews.com/2025/02/whats-making-saturns-rings-disappear-and-is-it-forever/

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Recent Astronomy Highlights – continued from page 2

Canyons on the Moon Carved Out In Minutes

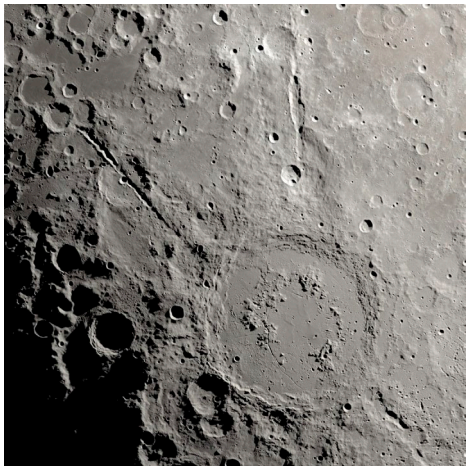

Image Credit – NASA/SVS/Ernest T. Wright

Scientists speculate that two lunar canyons, Vallis Schrödinger, radiating NNW from the Schrödinger crater in the image above and Vallis Planck, radiating almost directly north, were carved out in approximately ten minutes by debris launched outward by the impact that created Schrödinger crater itself. The impact is estimated to have taken place around 3.8 billion years ago. Both canyons, lying on the far side of the Moon near the lunar south pole, are approximately the same size as the Grand Canyon. The Schrödinger impact is seen as analogous to the Chixilub impact on Earth, and exploration of it by future lunar missions may provide insights into such life-changing impacts on Earth. More info about the lunar canyons is at www.nature.com/articles/s41467-024-55675-z.

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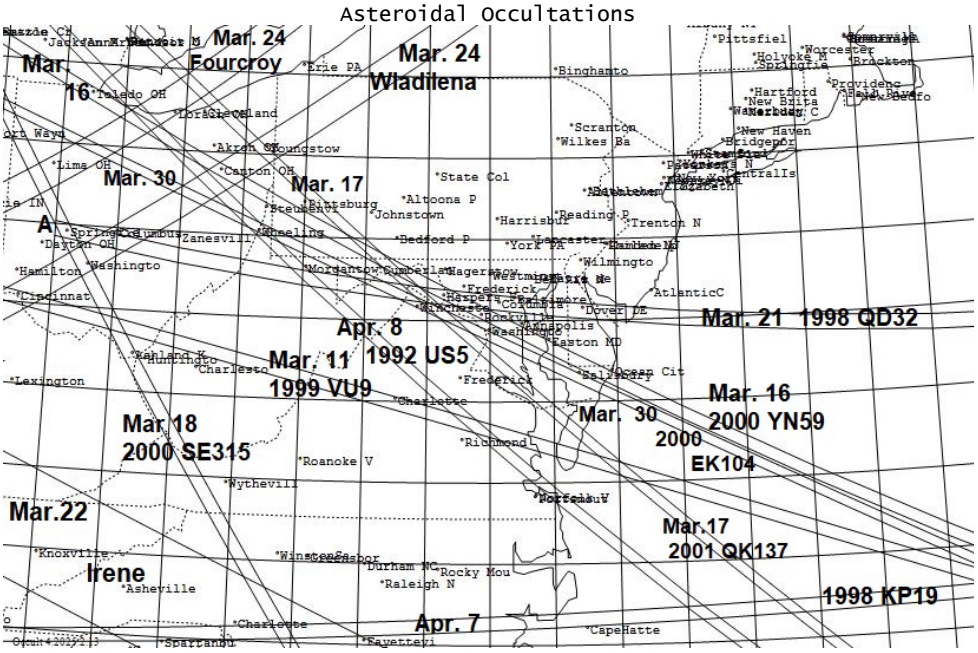
Occultation Notes

- 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



2025 Date	Day	EDT	Star Name	Mag.	Asteroid #	Name	dur. dmag	Ap. s	"	Path
Mar 11	Tue	23:07	TYC08890040	9.8	20679	1999 VU9	8	1.3	4	VA-KY
Mar 16	Sun	1:45	TYC02600481	9.7	63176	2000 YN59	10	0.8	4	MD-MI
Mar 17	Mon	23:19	TYC24071386	10.3	55099	2001 QK137	9	0.6	4	MI-VA
Mar 18	Wed	23:07	SAO 40238	8.1	54650	2000 SE315	12	0.7	3	IN-NC
Mar 21	Fri	5:32	TYC57451780	9.6	14113	1998 QD32	9	0.3	4	OH-NJ
Mar 22	Sat	23:00	TYC18920151	9.5	14	Irene	1.8	11	4	KY-NC
Mar 24	Mon	3:58	TYC62261042	9.7	13180	Fourcroy	10	2.5	4	IN-ON
Mar 24	Mon	4:17	HIP 70049	9.7	852	Wladilena	4	2.8	4	NY-KY
Mar 30	Sun	21:04	TYC24290045	10.1	50665	2000 EK104	9	0.7	4	IN-MD
Apr 7	Mon	20:44	HIP 24180	7.8	18732	1998 KP19	12	0.6	3	GA-NC
Apr 7	Mon	22:05	SAO 93455*	8.9	Uranus eps. ring		>9	5	14	cUSA
Apr 8	Tue	23:54	SAO 78380	8.3	5449	1992 US5	10	0.5	3	MI-VA

*hard with alt. 6 deg., az. 291; near Uranus with D 22:17, alt. 3 deg.

Lunar Grazing Occultations

2025 Date	Day	EDT	Star	Mag	% alt	CA Dist. & az. from Greenbelt
Mar 14	Fri	1:34	ZC 1676	6.5	71E	58-31S 273km, az. 233 deg.
Apr 3	Thu	21:28	SAO 77883	7.6	38+	49 11N 102km, az. 211 deg.

Lunar Total Occultations

2025 Date	Day	EDT	Ph	Star	Mag	% alt	CA	Sp.	Notes
Mar 20	Thu	2:01	R	ZC 2312	5.4	71- 9	38N	M2	Azimuth 135 degrees
Mar 21	Fri	3:36	R	ZC 2453	6.6	61- 13	38N	K1	Azimuth (Az.) 145 deg.
Mar 22	Sat	6:30	R	W Sgr	4.7	50- 21	87S	G0	Sun -8,ZC2609,close dbl
Mar 24	Mon	5:31	R	60 Sgr	4.8	30- 9	88N	G8	Az134,ZC2914, spec. dbl
Mar 31	Mon	21:14	D	ZC 425	7.1	9+ 15	85S	K0	Az. 285 deg.
Mar 31	Mon	21:31	D	SAO 75633	7.0	10+ 12	36S	K0	Az. 287
Apr 2	Wed	23:24	D	ZC 756	6.6	28+ 17	69N	F0	
Apr 5	Sat	0:14	D	47 Gem	5.8	50+ 30	78S	A4	ZC 1088
Apr 5	Sat	2:37	D	ZC 1105	6.5	51+ 5	45N	G7	Az. 301, close double
Apr 5	Sat	19:47	D	4 Cancri	6.3	60+ 75	55N	A1	Sun -3, ZC 1211
Apr 10	Thu	3:53	D	82 Leonis	6.7	93+ 19	51S	A2	ZC1657,spectroscop.bin.

Much more on mid-Atlantic occ's page at iota.jhuapl.edu/exped.htm.
David Dunham, dunham@starpower.net

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- Michael Brabanski (2026)
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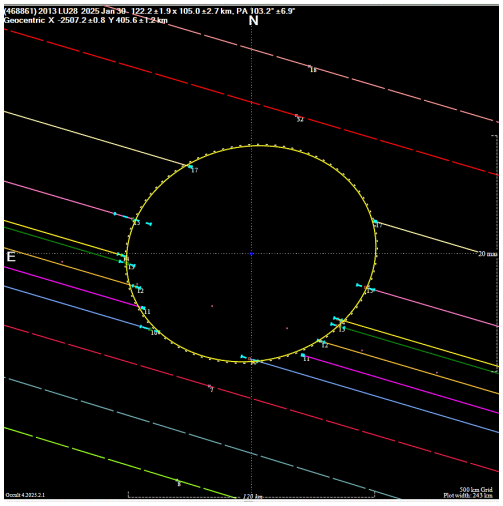
Occultation by elusive Damocloid object from the Oort Cloud timed in central MD Jan. 29

David and Joan Dunham, and Norm Carlson

(468861) 2013 LU28 is a rare distant "Damocloid" from the outer regions of the Solar System (aphelion 353 AU; period 2434 years) in a very eccentric retrograde orbit. It passed perihelion in 2024 at 8.7 AU. Astronomers tried to obtain occultations by the object for over 5 years, and first succeeded the evening of Jan. 29 (Jan. 30 UT) when it occulted a 12th mag. star in Auriga in a path that passed over the eastern USA, including the DMV. Special astrometric observations refined the orbit (JPL's prediction was best). As shown in the very preliminary sky plane plot, the observed chords are fit well by an ellipse. Our success enabled a second occultation to be recorded from 4 stations in s. Algeria on Feb. 18. We thank the astrometric teams in Spain, Italy, and elsewhere for their efforts to promote and predict these events; Dave Gault and Dave Herald in Australia for pulling together the results of the Jan. 29th event; and the many observers who provided their data quickly to enable the success in Algeria, The figure is available on IOTA's North American results page at www.asteroidoccultation.com/observations/Results/Reviewed/index.html.



Sky Plane plot of positive and nearby negative (miss) observations of the occultation by 2013 LU28 on Jan. 29, 2025 (Jan. 30 UT). Image Credit - Norm Carlson and Dave Gault, IOTA

18 (miss): A. Foote & A. Moore (UVa), Walkersville, WV
32 (miss): E. Press et al. (UVa), Midland, WV
17: K. Green et al., Redding, CT
15: I. Venzor et al., Los Lomas, Mexico
14: R. McConnell, Chattanooga, TN
13: K. Hartnett, Sunshine, MD
12: L. Dorsey & N. Smith, Trenton, GA
11: R. Kelley, Silver Spring, MD
10: D. & J. Dunham, Greenbelt, MD
7: (miss): W. Zhang et al. (UVa), Charlottesville, VA
6: (miss): A. Siakas, Prodromos, Cyprus
8: (miss): Paolo Fini, Imprueta, Italy

Recent Astronomy Highlights – continued from page 4

Most Powerful Volcanic Eruption Ever Observed on Io

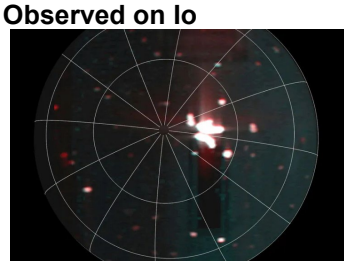


Image Credit - NASA/JPL-Caltech/SwRI/ASI/INAF/JIRAM

Jupiter's moon, Io, is known as the most volcanic body in the Solar System, its volcanic activity driven by deformation caused by the gas giant's powerful gravitational field. Neverthelss, even astronomers who study Io were shocked by the multiple simultaneous eruptions observed on the moon, as recorded by Juno, a probe studying the planet and its moons. The multiple eruptions were generating 80 trillion watts of energy. More information on this discovery is available at www.eurekalert.org/news-releases/1070746.

Calendar of Events

The NCA Telescope Making, Maintenance, and Modification Workshop (TMMW) is held on Tuesdays & Fridays, from 6:00 to 9:00 PM, in the basement wood shop of the Chevy Chase Community Center. The CCCC is located at the intersection of McKinley Street and Connecticut Avenue, NW, a few blocks inside the DC boundary, on the northeast corner of the intersection. There is no cost to attend. At the TMMW, you can make a telescope from scratch, or else get assistance with collimating or modifying a scope you already own. We can also re-aluminize mirrors up to 12.5" in diameter for much less money than you would pay anywhere else. For additional information visit Guy Brandenburg's Website. To contact Guy, call 202 dash 262 dash 4374 or Email Guy.

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.

Mar 27, 2025 -- The APS Senior Physicists Group: Thursday, Mar. 27th at 1:00 p.m., Dr John Moult, (UMD, Institute for Bioscience and Biotechnology Research and Department of Cell Biology and Molecular Genetics), will give a talk entitled "*The 50-year battle between physics and information methods for computing protein structure*." Participants can attend in person at the American Center for Physics at One Physics Ellipse, College Park, MD 20740 or via Zoom. A Zoom link to register and attend will be posted in a future email to NCA members.

Apr 12, 2025 -- Kevin Stevenson (JHU/APL) *Searching for Rocky Exoplanet Atmospheres with JWST (exact title tbd)*

National Capital Astronomers

Online Membership Application and Renewal

To submit or renew a membership to the National Capital Astronomers, and pay dues, please visit capitalastronomers.org/. There is a Google form for membership on the upper right. Please fill out the Google form, including your email address, in order to continue receiving issues of Star Dust.

Membership Rates

$ 15 – 1 year Individual/Family
$ 35 – 3 years Individual/Family
$ 5 – 1 year Student
$200 -- Life Member

(Please note that membership dues will go up in coming years, so consider joining/renewing with the 3-year option in order to save money.)

If you prefer to pay membership dues by check,

- make check payable to ***National Capital Astronomers*** then
- mail to: **Jim Simpson, NCA Treasurer; 3845 Wayson Road, Davidsonville, MD 21035.**
- Don't forget to also fill out the membership Google form, even if renewing!

NCA can use your help! Please indicate on the membership Google form which astronomy activities are of interest to you. In addition, we are also looking for volunteers! We need new officers, help with our website and social media, and help with outreach and science fair events.

Thank you!

Celebrating 88 Years of Astronomy

Image Credit - NASA, ESA, Imad Pasha (Yale), Pieter van Dokkum (Yale)

The Hubble Telescope took the image above of LEDA 1313424, nicknamed the Bullseye, a galaxy with nine rings. More information about the galaxy is available at science.nasa.gov/missions/hubble/hubble-investigates-galaxy-with-nine-rings/.

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

Next NCA Meeting:

2025 Mar. 8th
7:30 pm
Dr. Heidi Hammel

- *Virtual attendees:* To join the meeting via Zoom, use the following link:

  umd.zoom.us/j/91273752763?pwd=XKZL9V94XIDzwWg7FYDKLbVUQb5YRP.1

- *In-person attendees*: The UMD Astronomy Observatory is at 3255 Metzerott Road, College Park, MD 20740. Directions: www.astro.umd.edu/openhouse/1visiting/directions.html

Please note that NCA Zoom meetings are often recorded.

Inside This Issue