Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

May 2025 ***Volume 83, Issue 9***

Celebrating 88 Years of Astronomy

Next Meeting

When: Sat. May 10th, 2025

Time: 7:30 pm

Speakers: Dr. Rob Zellem

Also, a Science Fair Presentation from Julia Sites

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

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

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Image Credits – ESA/Webb, NASA & CSA, G. Mahler

What looks like one galaxy is actually two, the central elliptical one lensing a spiral one. More info is available at scitechdaily.com/webb-captures-a-perfect-einstein-ring-that-reveals-a-hidden-galaxy/.

The Nancy Grace Roman Space Telescope: NASA's Next Astrophysics Flagship Mission

Dr. Rob Zellem - NASA's Goddard Space Flight Center

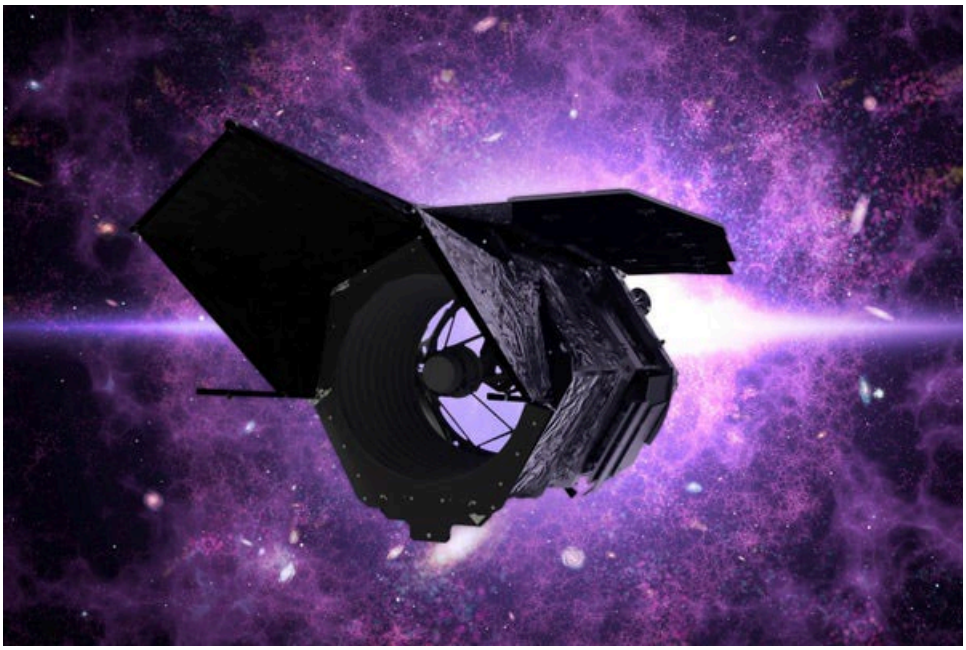

Illustration Credit - NASA

The 2.4-m Nancy Grace Roman Space Telescope, launching no later than May 2027, will survey the infrared skies to provide transformative science on astrophysics, cosmology, and exoplanets. With its Wide Field Instrument, Roman will have a field of view ~100-200x larger than JWST and Hubble and conduct Hubble-quality science ~1000x faster. With its Coronagraph Instrument, Roman will demonstrate next-generation technology for the first time ever in space to directly image exoplanets, paving the way for future missions to image Earth-like planets and search for life. Join Dr. Zellem as he gives an overview of NASA's Roman mission and its expected science returns.

Biography: Dr. Rob Zellem is a research astrophysicist at NASA's Goddard Space Flight Center. His research focuses on the characterization of the atmospheres of exoplanets using both the transit and direct imaging methods. Rob is a Deputy Project Scientist for NASA's Nancy Grace Roman Space Telescope and is a member of the Roman Coronagraph Project Science team where he led the development of the

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Recent Astronomy Highlights

Molecular Gas Cloud Found Very Close to Earth

A newly discovered cloud of molecular hydrogen is surprisingly close to Earth, only 300 light years away. The cloud is estimated to contain approximately 3,400 times the mass of the Sun. Designated Eos, the cloud has not been detected until now because it contains very little carbon monoxide, CO, which was easier to detect in the past, allowing astronomers to locate many other molecular clouds. Until recently molecular hydrogen has been difficult to detect directly, but a new method, looking for far-ultraviolet fluorescence, has proven to be able to reveal clouds such as Eos that have little CO. This new detection technique also will allow astronomers to more closely study how molecular clouds form and dissipate. Although molecular clouds such as Eos are often the birthplaces of stars, it is doubtful that Eos itself will give rise to such stars due to the fact that its gas is being dissapated into the interstellar medium at such a rapid rate that it will likely no long exist in approximately six million years. More information can be found at phys.org/news/2025-04-vast-molecular-cloud-invisible-solar.html.

Exoplanet Evaporating and Creating Enormous Comet-Like Tail

BD+05 4868 Ab, an exoplanet approximately 140 light years away, orbits its host star so closely that it is boiling away, creating a tail that is about 5 million miles long. Other disinegrating exoplanets have been found, but BD+05 4868 Ab is doing so far more rapidly, with the exoplanet losing a mass equivalent to that of Mount Everest every 30.5-hour orbit. It is estimated that the planet will be completely destroyed within one to two million years. The exoplanet's enormous tail was discovered by TESS, the Transiting Exoplanet Survey Satellite. The light curve of the exoplanet was different than that of most other exoplanets, with dimming of the host star lasting much longer. More info can be found at www.sciencealert.com/this-melting-planet-laid-a-trail-of-destruction-over-5-million-miles-long.

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Biography – continued from page 1

Image Credit - Christophe Marcade

science calibration plan. He is the Project Scientist and Lead for Exoplanet Watch, a citizen science project to observe transiting exoplanets to update their ephemerides to ensure the efficient use of large telescope time. Rob is the Ground-Based Sub-working Group co-lead for Pandora, whereby he is coordinating ground-based observations to support both the operations and scientific interpretation of Pandora data. He is also a co-lead for NASA's Nexus for Exoplanet System Science (NExSS) and a science team member for NASA's CASE contribution to ESA's Ariel mission.

Schedule of Upcoming NCA Meetings and Speakers

Carl Biagetti

May 10, 2025 -- Rob Zellem (GSFC/RST) *The Nancy Grace Roman Space Telescope: NASA's Next Astrophysics Flagship Mission*

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*

President's Corner

Guy Brandenburg

Elections

At our upcoming meeting on May 10, we will be holding elections for next year's officers. We have candidates for four out of our five major annual elective positions:

Guy Brandenburg for President;
Jim Simpson for Secretary-Treasurer;
Brian Tomich for Assistant Secretary-Treasurer;
Zachary Gleiberman for Trustee, a four-year rotating position.

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Exploring the Sky

2025 Exploring the Sky Sessions

5	Apr	8:00 PM
3	May	9:00 PM
7	Jun	9:00 PM
5	Jul	9:00 PM
2	Aug	8:30 PM
20	Sep	8:00 PM
18	Oct	7:30 PM
15	Nov	7:00 PM

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 June's Star Dust is May 30th.

Clear Skies

President's Corner – continued from page 2

However, as of this writing, we have not yet confirmed a candidate for Vice President, who is the person responsible for snagging our wonderful speakers. Hopefully we will have a candidate by May 10.

Lessons Learned from NCA Lectures

The past several speakers have to my mind demonstrated once again what a special place is this Earth of ours, and our Solar System, and how lucky we are to even exist. The incredible achievements of our modern telescopes in detecting signals at the entire range of the electromagnetic spectrum, and even gravity waves, are also truly amazing. Astronomers have now detected over 100 exoplanets within a 10-parsec distance of our Solar System. However, none (so far) are anything like Terra. Despite the unbelievable accuracy of the spectrographs on the Hubble and the JWST, it still remains true that detecting the particular wavelengths at which certain molecules might be subtracting a tiny amount of starlight because of their presence in the atmosphere of a transiting exoplanet is very difficult indeed. The only solution is to gather more data, and any declaration that any planet has life is extremely premature. A few days after Kevin Richardson's talk to us on April 12, discovery was announced of dimethyl sulfide around exoplanet K2-18b. That compound here on Earth is only produced by living organisms. However, as explained by Asa Stahl, Science Editor for the Planetary Society,

"In the case of K2-18b, there are reasons to remain cautious. Two years ago, Madhusudhan's team published findings from a different set of measurements of K2-18b, taken by JWST at different wavelengths. They found both methane and carbon dioxide were present in the atmosphere, along with a very tentative hint of DMS.

"However, a recent analysis of that same data by another research group found no significant evidence of carbon dioxide or DMS in the data at all. This is especially concerning because the new DMS detection has been described with roughly the same amount of statistical confidence as the earlier carbon dioxide detection that has now been called in question. That doesn't mean these signals aren't real – only that the jury is still out."

(source: www.planetary.org/articles/possible-sign-of-life-k2-18-b)

As our last speaker mentioned, unless there are laws of nature we don't know about, even if we do find unmistakable signs of life on an exoplanet, the only way to visit the place and to do a ground test would be via the imagination. The distances are so … uh … astronomical as to preclude any physical visit in either direction. And at a distance of 10 parsecs, even an electromagnetic message to any such place and back would take at least 65 years.

Public Observing (aka Outreach)

If you've never participated in a public observing session, where folks bring scopes and let others take a look, you've missed out on a great pleasure in life. Very seldom do you get to perform an unalloyed good for the public as a whole and then be thanked warmly and profusely for doing so by a host of smiling, random strangers! It does require some boldness of spirit, and the better you know your equipment, the more smoothly the whole thing will go. (Yes, it can be embarrassing if your telescope fails!

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Sky Watchers

May/June

Mercury will be very low in the predawn sky, probably not viewable as it rises shortly before sunrise. Venus will be high and bright in the predawn sky, reaching greatest western elongation on May 31st (see below). Mars will be high in the evening sky, setting well after midnight. Jupiter will be lower in the evening sky, setting a couple hours after sunset. Saturn has joined Mercury and Venus in the morning sky and will appear higher each successive morning. Despite predictions that it would already have happened, there is still no sign of the expected nova of T CrB.	
5/12	Full Moon – 12:57 p.m.
5/31	Venus will reach greatest western elongation, being 45.9 degrees from the Sun in the morning sky.
6/11	Full Moon – 3:45 p.m.

Time is in EDT (Eastern Daylight Savings Time)

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No matter, you can help someone else with their scope or maybe they can help you fix yours.) From a recent event at the C&O Canal National Park at Great Falls, MD, here is an email I wrote to Nicolette Talley, our ranger link:

"Things went beautifully yesterday! What gloriously clear blue skies we had! Over and over, people told us how happy they were to have this view of the Sun.

Please thank [NPS Intern] Tyson for me, Nicci! He took the initiative and operated the College of Charleston Safe Solar Viewer, which was very fortunate since only Chong and I came from NCA: part of our forces were at a long-scheduled event at the exact same time: Rockville Science Day.

It seemed to me that well over half of the folks who passed our location (between the bathrooms and the visitor center) stopped to take a look either through the eyepiece of the NCA H-alpha scope I was operating, or at the Sun Funnel that Chong was operating on his long-focus-length refractor, or at the wood-glass-rubber band-cinderblock COC SSV, that Tyson ended up running much of the time, or all three.

Chong's estimate that somewhere between 150 and 200 members of the public, of all ages, participated actively, sounds about right.

Chong and I parked our cars in the regular parking area and hauled our equipment to that location using NCA's own sturdy folding carts, and thus didn't need to call on Park staff for any assistance. Before setting up, I checked in with the visitor center; they were expecting us. We came early, and left late -- since it was hard to tell people they couldn't look any more. The equipment all worked very well. The members of the public expressed their deep thanks for letting them see with their own eyes something they had never seen before -- and which won't be the same tomorrow. Lots of folks stuck around to talk

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Recent Astronomy Highlights – continued from page 2

'Dead' Galaxies in Early Universe Seem to Defy Theory

The James Webb Space Telescope has been finding massive, very active galaxies that existed within hundreds of millions of years of the Big Bang. Now JWST has also found a galaxy that was already formed and later 'died', or largely stopped forming new stars, less than 700 million years after the Universe began. Much closer to us, there are many galaxies that are classified as quiescent or 'red and dead', red because they no longer contain young blue stars. Known as massive quiescent galaxies, MQGs, theory seemed to indicate that such galaxies shouldn't have existed until much later in the Universe. But once again, the Universe seems to be upending the predictions of cosmology. More information is at www.sciencedaily.com/releases/2025/04/250402122855.htm.

Most Early Galaxies Appear to Rotate in the Same Direction

JWST records seem to indicate that in a large sample of galaxies in the early Universe, two thirds rotate in the clockwise direction while the other third rotate in the counter-clockwise direction. Theory indicates there should be no preferred direction. This may indicate there was rotation In the Universe's material before the Big Bang, or the find could be due to galaxies rotating in the direction opposite the Milky Way appearing brighter and therefore more of them are visible. More information is at sciencenewstoday.org/james-webb-telescope-spots-unprecedented-galaxy-rotation-pattern.

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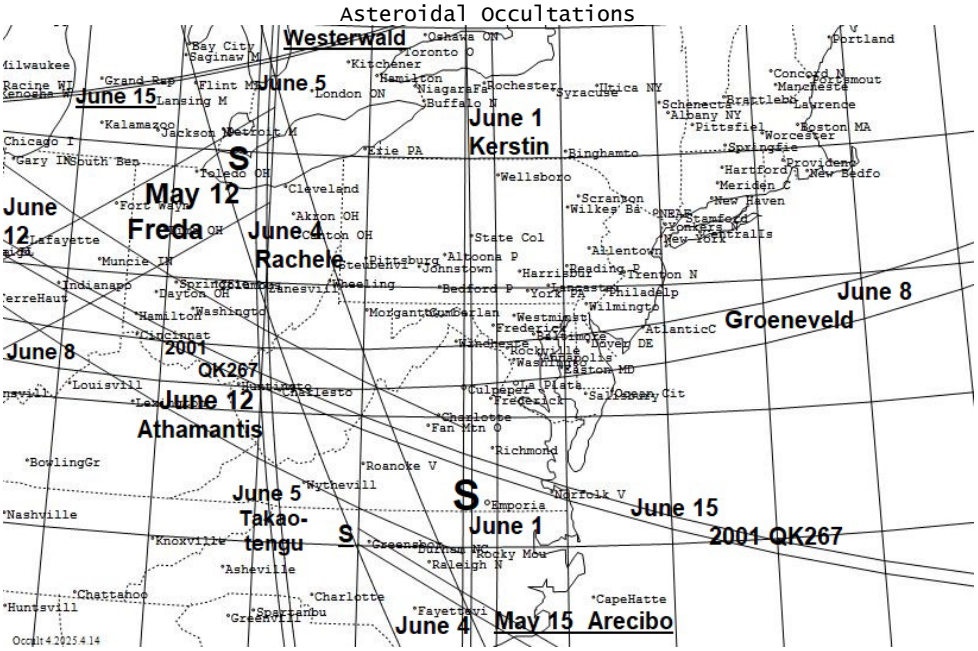
Occultation Notes

- 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	s	Ap. "	Path
May 12	Mon	5:04	TYC61931380	10.5	1093	Freda	2.3	8	6	ON-IN
May 15	Thu	21:20	4UC56940040	11.3	4337	Arecibo#	8	0.5	9	NC
Jun 1	Sun	4:44	SAO 212156	7.9	842	Kerstin	8	8	3	NY-NC
Jun 4	Wed	22:51	SAO 99609	9.4	674	Rachele	3.5	5	3	MI-NC
Jun 5	Thu	23:16	TYC67231840	10.4	10171	Takaotengu	7	2.7	4	SC-ON
Jun 8	Sun	1:50	SAO 187526	8.3	1674	Groeneveld	8	2.5	3	NJ-IN
Jun 12	Thu	4:45	TYC67190785	11.5	230	Athamantis	0.5	13	4	NC-IN
Jun 15	Sun	0:38	SAO 186821	8.9	77837	2001 QK267	10	0.9	3	VA-OH
Jun 15	Sun	3:0x	PPM 207368$	10.3	10253	Westerwald	10	0.2	4	MI-ON

#: Important binary asteroid but the star's Gaia RUWE is poor, 2.0
$: UAE main belt asteroid mission (launch 2028) flyby target.

Lunar Grazing Occultations

2025 Date	Day	EDT	Star	Mag	% alt	CA	Dist. & az. from Greenbelt
Jun 4	Wed	21:32	X 34942	9.5	68+	46 ON	27km, az. 235 deg., Sun -11
Jun 4	Wed	23:22	SAO 138728	7.9	69+	32 15N	118km, az. 229 deg.

Lunar Total Occultations

2025 Date	Day	EDT	Ph	Star	Mag	% alt	CA	Sp.	Notes
May 8	Thu	21:06	D	ZC 1798	6.2	89+	42 72N	G9	Sun alt. -11 deg.
May 19	Mon	3:22	R	27 Cap	6.3	62-	16 44N	F2	ZC 3092
May 29	Thu	21:18	D	SAO 79316	7.5	11+	24 89N	G2	Sun altitude -10 deg.
Jun 4	Wed	0:59	D	ZC 1692	6.9	60+	12 60S	A3	Az.261,mg2 10,dT +0.4s
Jun 4	Wed	21:15	D	ZC 1769	6.6	68+	46 48S	F2	Sun -8,dbl,dTime +47s
Jun 4	Wed	21:16	D	ZC 1768	7.0	68+	46 47S	F3	comp. of ZC1769,sep.20"
Jun 5	Thu	1:40	D	ZC 1779	6.5	69+	8 21S	K0	Azimuth 257 deg.

More is on the northeast US occultations pages at groups.io/g/OccultNEUS and iota.jhuapl.edu/exped.htm.

We have completed our move from Maryland to Arizona, so starting with the September Stardust, I hope someone else will do the main work for occultations in the region; I'm reaching out to other occ'n observers in the region about this, and I'll help the transition, especially for the lunar events. David Dunham, dunham@starpower.net

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about it. Everybody who looked through the H-alpha scope (except the youngest kids who haven't quite mastered the skill of looking through an eyepiece) told me that they saw sunspots, flame-like prominences, and worm-like dark filaments.

Activating the backup date was clearly the right thing to do. All worked out well. Let's keep it up and hope for beautiful skies like those again!"

Telescope Lending Library

If you would like to try out a scope, or take it to help at a public event, NCA has either purchased or has been given a number of telescopes that you may borrow: basic manual Dobsonians in 6", 8" and 12" varieties, a 4" refractor with alt-az tripod, all of which can be outfitted with Sun Funnels and masks for solar viewing. We also have a Celestron 8" SCT with tripod and clock drive and the NCA Coronado double-stack Solar Max hydrogen-alpha scope, which is reserved for public solar events. In some cases, an ID and a deposit are required

Smithsonian FolkLife Festival

Gael Gomez and I will be representing young and old amateur astronomers at this year's Smithsonian FolkLife Festival. If you've never met Gael, he is a much better amateur astronomer, both visual and photographic, than I am and delights in getting amazing results from second-hand or even donated equipment. He has also built, with the help of Alan Tarica and myself in the NCA telescope making, maintenance, and modification workshop, at least two different scopes, and has done some spectacularly good re-figuring work on parabolic mirrors. He has also been putting on impromptu, pop-up sidewalk astronomy sessions literally on the sidewalk outside his apartment building in the Mount Pleasant neighborhood of NW Washington, sometimes alone and sometimes with the help of one of his neighbors or from some of us NCA members or with a HS intern from DC's School Without Walls high school. He has an instagram following whom he alerts when he is about to set up his scopes. He is only 18 years old and is so impressive that when some Smithsonian staffers happened to come upon one of his sidewalk astronomy sessions, and knowing that the theme of the SI Folk Life festival is "Youth and the Future of Culture", they invited him (and me, as his teacher) to put on three sessions in July - two in the daytime and one after sunset. If the weather cooperates, we will bring solar telescopes by day and regular telescopes by night. One of the sessions will be a talk session, probably coupled with making very low-cost spectroscopes with inexpensive diffraction gratings, aluminum foil, tape, and either paper towel or toilet paper rolls. Once we are told when these events will occur, we will let local astronomy clubs, including NCA, know, so they can bring their own equipment for the public, if they wish.

Collecting Empty Paper Towel Rolls, Or Other Cardboard Tubes

We need to collect empty paper towel and toilet paper rolls for this. See this description of how one can make those spectroscopes:

www.youtube.com/watch?v=IvwW-S0j7gg

Recent Astronomy Highlights – continued from page 4

Suprising Finding from the Small Magellanic Cloud

The tracking of approximately seven thousand young, massive stars in one of the Milky Way's closest galactic neighbors, the Small Magellanic Cloud, SMC, has led to a couple of unexpected findings. First, the movements of those stars on opposite sides of the SMC, the stars on one side moving toward the Large Magellanic Cloud, LMC, and the stars on the other side moving away from the LMC, seems to indicate that the LMC might be tidally disrupting the SMC. Also there doesn't seem to be much of a rotational component in the movement of those massive stars, indicating that the gas from which they recently formed is likely also not rotating within the Small Magellanic Cloud. This could mean a revision is necessary in the estimated mass of the SMC. More info on these findings is available at www.sciencedaily.com/releases/2025/04/250410161005.htm/

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 202-262-4374 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: Monday, May 21st at 1:00 p.m., Dr. Melissa Hayes-Gehrky, (UMD Astronomy Department), will give a talk (Zoom only) on one of her courses in which non-astronomy students learn how to observe asteroids, measure their light curves and determine their rotation periods. The Zoom link to register and attend is apsphysics.zoom.us/meeting/register/qsTMASEqSOSVAgTRSOoLeA.

June 14, 2025 – Science-Fair Projects and Astro-photos – 7:30 p.m. at the University of Maryland Observatory and on Zoom.

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

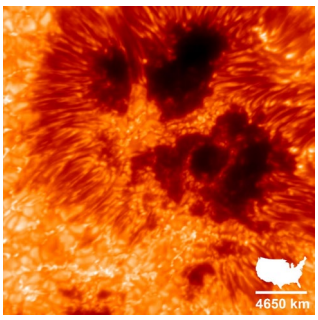

Image Credit - VTF/KIS/NSF/NSO/AURA

The Daniel K. Inouye Solar Telescope's Visible Tunable Filter (VTF), recently achieved first light with the stunning image of sunspots shown above. More information is available at nso.edu/press-release/largest-imaging-spectro-polarimeter-achieves-first-light-at-the-nsf-daniel-k-inouye-solar-telescope/.

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 May 10th
7:30 pm
Dr. Rob Zellem

- *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