Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

May 2026 ***Volume 84, Issue 9***

Celebrating 89 Years of Astronomy

Next Meeting

When: Sat. May 9th, 2026

Time: 7:30 pm

Speaker: Dr. Stefanie Milam

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

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

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Image Credit – NASA, ESA, STScI, William Blair (JHU); Image Processing: Joseph DePasquale (STScI)

Hubble recently captured its most detailed image yet of the Crab Nebula. More info about the image is at science.nasa.gov/missions/hubble/nasas-hubble-revisits-crab-nebula-to-track-25-years-of-expansion/.

Big Eyes on Small Bodies: Studies of Comets, Asteroids, and Interstellar Objects with JWST and HWO

Dr. Stefanie Milam – NASA's Goddard Space Flight Center

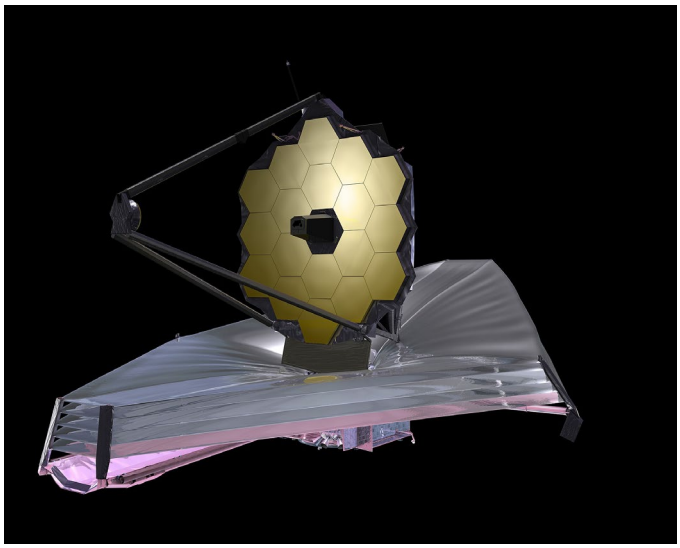

Image Credit – NASA

The James Webb Space Telescope (JWST) has been astonishing the public and science community since the summer of 2022 after a nail-biting deployment sequence and extensive commissioning campaign. The complex space telescope operates with exquisite sensitivity at infrared wavelengths with imagers and spectrometers on board covering 1-28 microns. These instruments are already returning amazing spectra and images of small and large bodies in our Solar System, revealing the composition and dynamic processes of these objects not readily accessible with other observatories or even planetary missions.

After only a few years, JWST has already provided fundamental insight into the composition and dynamics of small bodies across the Solar System. We are learning more about the distribution of volatiles and processed materials across the different reservoirs of planetesimals and providing new observational constraints on the formation of the Solar System. More importantly, the unprecedented resolution and spectral imaging are leading to new questions as well as revolutionizing planetary science for the outer Solar System. This presentation will highlight some of the amazing science in the Solar System being revealed and some perspectives on what is to come with the Habitable Worlds Observatory, HWO.

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Recent Astronomy Highlights

Discovery of Brown-Dwarf Binary That May One Day Lead to Formation of a Star

Approximately 1000 light years away, there is a pair of brown dwarfs that orbit each other so closely that mass from one of them is transferring to the other. The orbital period of the pair, labelled ZTF J1239+8347, is only about 57 minutes. A hot spot on the surface of the donor brown dwarf has been detected. Its luminosity, as seen on Earth, varies throughout the orbital period, that variance catching the attention of astronomers using the Zwicky Transient Facility at the Palomar Observatory. Brown dwarfs are often called failed stars because their mass, between 13 and 80 times that of Jupiter, is not high enough to cause the gravitational forces that lead to nuclear fusion occuring in their cores. But with both of the brown dwarfs in ZTF J1239+8347 being at the upper end of that mass range, the larger of the pair could eventually siphon enough gas off of its companion and grow massive enough to transform into a star. Or in the far future the pair's orbit, with a diameter less than that between the Earth and the Moon, could degenerate to the point that they coalesce, also forming a star. Since brown dwarfs are not as luminous as stars, they are more difficult to detect, so nobody knows how common they are, or how many such binary sytems there might be, but future survey telescopes such as the Roman Space Telescope and the Vera Rubin Observatory may give answers in the next few years. More information about this brown-dwarf binary is available at www.universetoday.com/articles/this-pair-of-brown-dwarfs-cant-get-enough-of-each-other.

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The submission deadline for May's Star Dust is May 29th.

Clear Skies!

Abstract and Biography – continued from page 1

Image Credit - Chip Gillespie

Biography: Dr. Stefanie Milam works in the Astrochemistry Laboratory at the NASA Goddard Space Flight Center. She is an expert in rotational spectroscopy, observations, and laboratory modeling of astrochemistry and molecular astrophysics of the interstellar medium and comets. Her observational focus is on the compositional studies of primitive bodies, namely comets and interstellar objects, and uses ground- and space-based facilities to understand their connection to the formation and evolution of planetary systems. She also has a laboratory dedicated to simulating interstellar/cometary/planetary ices and detecting trace species, employing the same techniques used for remote observations to help constrain the chemical complexity of the ices, the amount of processing that occurs, and to interpret past and present data from missions that observe ice features. Dr. Milam has been working on the James Webb Space Telescope as part of the Project Science team since 2014. Under this role she has helped enable observations within our own Solar System from Near-Earth Asteroids to the farthest reaches of the Kuiper belt and even the brightest objects in the infrared sky (e.g. Mars). In 2021, she was honored with asteroid 40706 (1999 RO240) which was renamed to 40706 Milam. She received the NASA Exceptional Scientific Achievement Medal in 2022 for her work on enabling Solar System Science with JWST. Dr. Milam started work on the Habitable Worlds Observatory in December 2025 and is working to enable Solar System Science with this next Great Observatory for NASA.

Schedule of Upcoming NCA Meetings and Speakers

Bryan Vandrovec

May 9, 2026 -- Stefanie Milam (NASA's Goddard Space Flight Center) - *Big Eyes on Small Bodies: Studies of Comets, Asteroids, and Interstellar Objects with JWST and HWO*

June 13, 2026 -- Science Fair Winners and Astrophotos

September 12, 2026 -- Saswatee Banerjee (Photonic Wave Solutions LLC) - *Computational Photonics: Finite-Difference and other Computational Methods in Design and Fabrication of Photonic Devices*

Exploring the Sky

Exploring the Sky-2026
78th Year
National Capital Astronomers / National Park Service

18 Apr 8:00 pm M45, Orion, Jupiter
16 May 9:00 pm M44, Leo, Arcturus, M13, Jupiter, Venus (?)
20 Jun 9:00 pm Leo, Bootes, M13, Moon, Venus, Beehive
18 July 9:00 pm Moon, M13, Summer Triangle, Venus
15 Aug 8:30 pm Moon, M13, Summer Triangle, M57, M31, Venus
19 Sep 8:00 pm Moon, Summer Triangle, M31, M13
17 Oct 7:30 pm Summer Triangle, Moon, M31, Saturn
7 Nov 7:00 pm Summer Triangle, Pegasus, M31, Saturn, Moon

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 distant galaxy or two. If it is cloudy or raining observing is, of course, cancelled. As a bonus, come to the Nature Center an hour before the observing starts for a free planetarium show on that night's sky.

For more information about Rock Creek Park, please visit www.nps.gov/rocr/planyourvisit/nature center-and-planetarium.htm. To learn about their planetarium programs and scheduling, visit www.nps.gov/rocr/planyourvisit/ calendar.htm. You can also explore keywords like "astronomy" or "dark skies," or simply reach out to the Nature Center directly at 202.895.6070.

Information on joining the National Capital Astronomers, which is 86 years old, can be found at capitalastronomers.org.

Join us for an evening of celestial wonder!

President's Corner

Guy Brandenburg
President, National Capital Astronomers

Next Year's NCA Officers - Nominations on May 9th - Voting on June 13th

We will have official nominations for our club officers, as well as one trustee position, at Saturday's meeting. I am happy to report that we have a full roster of people willing to take on these thankless tasks:

President: Guy Brandenburg
Vice President: Bryan Vandrovec
Secretary-Treasurer: Jim Simpson
Assistant Secretary-Treasurer: Elizabeth Warner
Trustee: Michael Brabanski

However, all positions are open for additional nominations, and if anybody else would like to run for president, I would be even happier!

Image Credit - NASA Kennedy Space Center / NASA/John Kraus

Thoughts on the Artemis Mission

Did you watch the Artemis launch? I did, with three other NCA members, all of whom knew a whole lot more about it and other flying machines than I do. They were all literally jumping up & down and screaming with joy when it took off successfully.

I was impressed by the whole thing, and glad that I got to watch it with them on a big-screen TV with a great view of the Potomac River and big airplanes coming in for a landing. But I wasn't jumping up and down like I did when I was a little kid in elementary school, watching Explorer I take off in 1958 and Alan Shepherd do a suborbital flight in 1961 on a single black-and-white TV set in the cafeteria. By the time of the Moon landing of 1969, I was in college and because of the war in Vietnam I had become much more cynical about the whole space race, thinking it a waste of money and a propaganda race between East and West. (I guess it still is.)

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Sky Watchers

May/June

Mercury transitions to the evening sky mid-May and will appear higher after sunset as the period progresses. Venus remains in the evening sky, setting well after sunset. Mars rises before the Sun in the morning sky. Jupiter will be high in the sky after sunset, setting around midnight. Saturn will be low in the morning sky.	
5/1	Full Moon – 4:46 a.m.

Time is in EDT (Eastern Daylight Saving Time).

President's Corner – continued from page 3

Yes, it is always encouraging to see high-tech stuff like this being designed and used to discover more about the universe, rather than explicitly to kill and blow each other up as we see currently in Ukraine, Iran, Israel, and the rest of the Middle East, or in Vietnam and Southeast Asia (as in 1969).

But the fact is that a single crewed space mission costs the same as anywhere from a HUNDRED to a THOUSAND robotic missions. (See Combined Make-up Readings.pdf and www.youtube.com/watch?v=rrnZv8Mnihk.)

However, the real advances in our scientific understanding of the universe over the past 101 years since Cecilia Payne-Gaposchkin's discovery of the contents of the Sun have mostly been via extremely precise machines, robots, and spectroscopes. The Apollo astronauts did bring back some great photos of the Earth, including the very first X-ray photos taken on a device built by the late George Carruthers of the Naval Research Lab, described by David DeVorkin during a recent talk to us. And they brought back a lot of lunar rocks, which helped a lot with understanding how both the Moon and the Earth formed.

But robots keep getting better, cheaper, and faster, as the wars in Iran and Ukraine have unfortunately shown us all. They also don't need air, food, water, or sewage treatment, and can endure temperature changes and radiation levels that would kill us instantly.

Unfortunately, the Trump proposed budget for 2027 asks for huge cuts to all of the NASA science missions and a huge boost to Artemis manned lunar missions. In the rest of the budget, huge cuts to many social welfare programs are proposed explicitly in order to fund huge boosts to the War Department.

I hope that this is not a proposal that will be approved by the public, by scientists, or even by Congress. I am glad that the Artemis crew returned safely and brought back a few more cool photos of Earth, but crewed missions to other planets are a colossal waste of resources.

Donating Telescopes to Local Youth?
We still need ideas on how to publicize this initiative. Your ideas are welcome! Please send them to gfbrandenburg@yahoo.com.

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Possible Superkilonova Discovered
A kilonova is the blast of matter and energy when two neutron stars or a neutron star and a stellar-mass black hole collide. A supernova happens when a star exhausts its fuel and implodes at first, then explodes, or when a white dwarf builds up a large amount of material from a binary companion which then explodes. These are very different processes, yet recently astronomers discovered an event which started out looking like a kilonova, but then changed to behaving like a supernova. The event, which took place approximately 1.3 billion light years away, was ultimately designated AT2025ulz. Astronomers theorize that this may be the first example of a hypothetical event known as a superkilonova. In such a superkilonova, a rapidly spinning star goes supernova, but the collapsed core of that dying star, in spinning even more rapidly, forms not one, but two neutron stars, perhaps comparatively low-mass neutron stars, that closely orbit one another. Then within hours, the orbit of the two neutron stars shrinks as their interactions generate gravitational waves that radiate away, until those neutron stars merge in a kilonova-type event. Then for several days the superhot debris gives indications of that kilonova, but this fades, leaving the signs of the earlier supernova. More such events will have to be observed before speculation about superkilonovae can actually be confirmed. Additional info is at www.sciencedaily.com/releases/2026/04/260423031532.htm.

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Recent Astronomy Highlights – continued from page 4

3I/Atlas Appears to Have Formed in a Very Cold Environment

The third observed interstellar visitor to the Solar System, interstellar comet 3I/Atlas was only discovered last year and is already back beyond the orbit of Jupiter, headed out of the system for good. The comet is estimated to be between 440 meters and six kilometers in diameter. When it was closer to the Sun, the interstellar comet gave off a considerable amount of volatiles. Those volatiles were studied using an array of visible light telescopes as well as ALMA, the Atacama Large Millimeter/submillimeter Array, in Chile. Deuterium is a heavier form of hydrogen, most hydrogen having only one proton in its nucleus while deuterium has one proton and one neutron. ALMA observations led to the determination that 3I/Atlas has a higher concentration of deuterium than that in any other planetary system so far studied as well as in any comet native to the Solar System: 30 to 40 times as much. This seems to indicate that the interstellar comet formed in a very cold environment with low radiation levels, unlike the environments in which planetary systems form. Astronomers also estimate that 3I/Atlas may be up to 11 billion years old, over twice the age of the Solar System. A separate study also found that 3I/Atlas emitted methane during its time near the Sun. This seems to indicate that the comet shed its original outer layer during its long time wandering the Milky Way and was outgassing more of its inner material during its brief time in the inner Solar System. Further analysis of all of the data collected on 3I/Atlas, as well as from any future interstellar comets that visit our system, will no doubt give more clues to the processes that happen in the cold, dark regions of space. More information on both findings can be found at news.umich.edu/the-interstellar-comet-3i-atlas-was-born-somewhere-much-different-from-our-solar-system/ and phys.org/news/2026-04-methane-emerges-interstellar-comet-3iatlas.html.

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Performance Meets Portability: Insights from the 35th Annual Astronomy Expo

Bryan Vandrovec

Image Credit - Northeast Astronomy Forum & Space Expo and Rockland Astronomy Club

The Northeast Astronomy Forum (NEAF) recently marked its 35th year as the premier global gathering for space enthusiasts, serving as the industry's central stage for unveiling the latest advancements in astronomical gear. For those looking to enhance their viewing or imaging sessions, the 2026 event highlighted a clear industry-wide shift toward integrated technology and portability, ensuring that sophisticated tools are becoming more attainable for the average observer. The current landscape suggests a move away from complex setups toward systems that offer a streamlined, "turn-key" experience without sacrificing optical performance.

For those prioritizing ease of use and travel-friendly designs, smart telescopes remain a significant trend. Vaonis has expanded its lineup with the Vespera 3 and Vespera Pro 2, which feature redesigned optical trains and improved battery life, delivering 15% sharper stars and longer imaging sessions. Meanwhile, Dwarf Lab is moving toward larger models with increased aperture and longer focal lengths, and ZWO is finalizing the highly anticipated Seestar S50 Pro, which aims to build on the success of their compact S30 and S50 units. An innovative accessory for these compact rigs is the new "imaging pod" from Pulsar Observatories; this small, weather-resistant dome featuring a rain sensor is designed specifically for smart scopes, allowing observers to leave their equipment outside for automated sessions while protecting it from the elements.

Visual observers and those just beginning their astronomical journey have several excellent new avenues that emphasize performance and simplicity. Explore Scientific has launched a new introductory line of telescopes that uses a smartphone app—leveraging the device's internal sensors rather than complex plate-solving—to help users navigate constellations. For those who prefer the traditional light-gathering power of a manual setup, their latest line of 6-inch to 10-inch Dobsonians remains an ideal entry point. Additionally, the revised Sky-Watcher HEQ5-R Pro mount offers a modern take on a classic platform, integrating a belt drive and built-in Wi-Fi at a competitive price point of approximately $1,700, making it a robust foundation for both visual use and advanced astrophotography.

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- Elizabeth Warner (2027)
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- Zachary Gleiberman (2029)

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For the more dedicated enthusiast, the expo showcased high-precision instruments designed for specialized research and high-resolution imaging. Sky-Watcher unveiled the SkyMax 200DX Maksutov-Cassegrain, which features a unique "no-shift" Unison focuser, full-frame sensor compatibility, and built-in cooling fans to ensure stability and rapid acclimation for both planetary and deep-sky work. Those seeking the pinnacle of optical purity may look to the Takahashi FSQ-80, a complete redesign of the legendary "Baby Q" optimized for modern small-pixel cameras, or the FCT-114D, a compact fluorite triplet designed for high-end visual performance. Furthermore, Primaluce Lab collaborated with Celestron to introduce a kit for the CPC Deluxe HD that converts the alt-azimuth system into a capable deep-sky imaging rig using their Arco rotator and Sesto Senso focuser, bypassing the need for a cumbersome equatorial wedge.

Beyond hardware, the event highlighted the rewarding nature of citizen science and community-driven initiatives. Organizations like the American Association of Variable Star Observers (AAVSO) and the International Occultation Timing Association (IOTA) demonstrated how backyard setups can contribute to real scientific discoveries, such as timing asteroid occultations with specialized smart cameras. For those not ready to purchase their own gear, the Library Telescope Program continues to expand, placing tabletop telescopes in public libraries to ensure the wonder of the night sky remains reachable for everyone.

Whether through a specialized StellaVita controller from ToupTek to manage a complex rig or a giant pair of Analog Sky Bloom binoculars, the innovations of 2026 prove that the tools for exploring the cosmos are more capable and versatile than ever before. But as always, the most important piece of gear remains the one that gets the observer under the stars.

Image Credit - Northeast Astronomy Forum & Space Expo

Recent Astronomy Highlights – continued from page 5

Undergraduate Students Discover One of the Oldest Stars Ever Studied

Using publicly available data from the Sloane Digital Sky Survey, as well as observation time at the Las Campanas Observatory in Chile, students at the University of Chicago discovered the most metal-poor star ever seen. Astronomers define metals as any element other than hydrogen and helium. SDSSJ0715-7334 turns out to have almost no such metals. This indicates that it must have formed before its place of origin was filled with the ejecta from supernovae, which is generally high in metals created by fusion in the cores of the stars that gave rise to such supernovae. Subsequent study of SDSSJ0715-7334's motion showed that while it is currently within the Milky Way, it likely originated in the Large Magellanic Cloud before ultimately drifting into our galaxy. Additional info is at www.sciencedaily.com/releases/2026/04/260403224450.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.

The APS Senior Physicists Group: Wednesday, May 20th at **1:30 p.m.**, Dr. Keith Gendreau, (NASA's Goddard Space Flight Center), will give a talk entitled **Astrophysics and Technology Demonstration from the International Space Station.** Participants can attend in person at the UMD PSC (Physical Science Complex) Room 2148.or via Zoom. The Zoom link to register for the talk is apsphysics.zoom.us/meeting/register/RPIajPInQ1WVH1EkFNK_9g#/registration.

Next NCA Meeting – June 13, 2026 -- Science Fair Winners and Astrophotos

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

$ 20 – 1 year Individual/Family
$ 45 – 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 89 Years of Astronomy

Image Credit - NASA, CSA, ESA, F. Belfiore (European Southern Observatory – Germany), J. Lee (Space Telescope Science Institute), A. Leroy (The Ohio State University), and D. Thilker (The Johns Hopkins University); Processing: Gladys Kober (NASA/Catholic University of America)

More info on this JWST image of M64 is at science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubble-messier-catalog/messier-64/.

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

Next NCA Meeting:

2026 May 9th
7:30 pm
Dr. Stefanie Milam

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

umd.zoom.us/j/95619565617?pwd=uqwxzZ39zgVfgOypmcp8cy6xFaCcRb.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.

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