Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

June 2026 ***Volume 84, Issue 10***

Celebrating 89 Years of Astronomy

Next Meeting

When: Sat. June 13th, 2026

Time: 7:30 pm

Speaker: Science-Fair Winners

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)

Gas feeding into the supermassive black hole at the center of the galaxy designated M77 shines so brightly in infrared that it causes a defraction spike in this image from JWST. More information about the image is at www.nasa.gov/image-article/beacon-of-light/.

Science Fair Winners

This year's NCA Science Fair Winners and the titles of their projects are listed below. The names of those who are expected to discuss their projects at the June NCA meeting are underlined. Congratulations to all of the winners.

Fairfax County

Jason Wright - Can Magnetic Field Line Intensity Predict High-Velocity Coronal Mass Ejections?

Rushil Kukreja - Agent-based Modeling to Safeguard Satellites Under Extreme Space Weather

Harshpreet Singh - Real-time Magnetic-Field Modeling Using Physics Infused Neural Operators

Teo Kamath and **Benjamin Lang** - Does the ISS's SPADE-3 Probe's Magnetic-Field Sensor Data Align with Existing Models?

Brad Chen - Identifying New Candidate Substructures in the Milky Way Halo with Photometry

Jenila Benedict, **Madison Han** and **Pariya Naderi** - The Effect of Machine-Learning Algorithms on the Prediction of Solar Flares

Kyle He - Comparing Exoplanet Transit Detection Pipelines Under Realistic Noise and Data Gaps

Prince George's County

Anderson Hsu - The Effect of Star Multiplicity on the Absolute Magnitude of Stars

John Kelley - Applicability of Free, Open Source Finite Element Analysis (FEA) Software

Recent Astronomy Highlights

JWST Gives Clearest View of the Cosmic Web

Made up of filaments and sheets of tenuous gas and dark matter millions of light years in size as well as nodes, where various filaments meet and in which galaxies and galactic clusters exist, the Cosmic Web is the largest structure in the observable Universe. Data on nearly 200,000 galaxies, collected by the James Webb Space Telescope has been used to create a map of a small slice of the Cosmic Web showing nearby filaments as well as regions so far away that the space telescope saw them as they were less than a billion years after the Big Bang. Much sharper than similar maps provided by the Hubble Space Telescope, the JWST map will allow astronomers to understand in greater detail the evolution of structures such as galaxy clusters throughout the life of our Universe. More information about this Cosmic Web survey is available at www.sciencedaily.com/releases/2026/05/260511213136.htm.

Solar System Seems to Be Passing Through Remnants of Supernova

Iron-60 is a very rare, radioactive isotope of iron created inside stars, then ejected when those stars go supernova. Ice samples taken from Antartica have shown an excess of this isotope indicating that the Local Interstellar Cloud, a region of slightly higher interstellar hydrogen density, through which the Solar System is passing, may contain the remnants of an ancient supernova. The Local Interstellar Cloud is estimated to be about 30 light years in diameter. More information is at www.sciencedaily.com/releases/2026/05/260513221751.htm.

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

Clear Skies!

Science Fair Winners – continued from page 1

Montgomery County

Nicholas Cabrera - A Python Implementation of TODCOR for Binary-Star Analysis

Buket Guner - Evaluating Radio Emissions in the 1-2 GHz Band as indicators of Close-In Exoplanets Around M Dwarf Stars

Washington D.C.

Madison Morgan - Measuring Dark Matter by Rotational Velocity of Parts of Spiral Galaxies

Each of the winners will receive:

- A certificate commemorating their accomplishment
- A 1-year subscription to Sky and Telescope
- A 1-year membership in the National Capital Astronomers
- A 1-year subscription to Star Dust
- Choice of NCA swag (mug, hoodie, hat, t-shirt, shopping bag, or water bottle)
- The opportunity to present their project at an NCA meeting
- A pizza dinner, hosted by the NCA, before the June Meeting (Ledo Restaurant – 4509 Knox Road, College Park at 5:45 p.m.)

NCA members are encouraged to submit **astro-photos** to be shown after the science fair presentations at the June meeting. You can bring them to the meeting on a memory stick or submit them to Elizabeth Warner at warnerem1303@gmail.com ahead of time.

Schedule of Upcoming NCA Meetings and Speakers

Bryan Vandrovec

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

Science is important, but surveys show that many folks around the planet understand very little of it, and some reject it outright, while enjoying its benefits.

However, if you visit any of the local county- or city-wide science fairs, as NCA has been doing for over 30 years, you will find lots of young people who are delving very deeply and impressively into lots of scientific topics. At our June 13 meeting (our last one until September) you will have the chance to listen to seven or more very impressive secondary students from DC and Fairfax, Prince George's, and Montgomery counties. They will describe their astronomy-related projects in person to us. Several of those projects involve the use of machine-learning algorithms to sort through enormous amounts of freely available data released by NASA and other space agencies.

Check out the titles of their projects on page one and two of this issue!

Each of these science fair honorees is receiving their choice of NCA-branded swag (mug, hoodie, hat, T-shirt, shopping bag, or water bottle); a year's subscription to both Star Dust and Sky & Telescope; a one-year membership in NCA; a certificate; a pizza dinner at Ledo's in College Park at 5:30 before the meeting; and the chance to present to us. Feel free to join us at Ledo's and talk with some of these young folks before the meeting!

Public events like sidewalk astronomy are the best way I can think of to engage members of the public in serious science topics that affect all of us. I find that folks are always extremely happy to have the chance to view something in the sky, and often love to talk about it afterwards! So, if public understanding of science is important to you, and you like people, then please join us at our public observing events, both the scheduled ones in Rock Creek Park (Exploring the Sky) and our various pop-up Sidewalk Astronomy events in Mount Pleasant and elsewhere.

You may know that NCA has been holding a regular, weekly amateur telescope-making workshop in the DC area ever since World War Two. DC's Department of Parks and Recreation has been very generously housing those classes, for free, at the Chevy Chase Community Center (CCCC) since that building was erected in 1971, though we have also met at a number of other locations in the past. I (Guy) took over the workshop in 1999 from the late Jerry Schnall, eight years after he first showed me how to grind, polish, and figure parabolic telescope mirrors. As unpaid, volunteer instructors, Jerry and I benefited from the help of

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Sky Watchers

Summer Overview

After reaching greatest eastern elongation on June 15th (see below) Mercury will be lower in the evening sky each night until beginning its transition to the morning sky in early July quickly reaching greatest western elongation on August 2nd (see below), then it will begin transitioning back to the evening sky at the end of August. Venus remains in the evening sky throughout the period, reaching greatest eastern elongation on August 15th (see below). Mars rises well before the Sun in the morning sky throughout the summer. Jupiter will be lower in the sky after sunset each evening until it begins to transition to the morning sky at the end of July, setting around midnight. Saturn will rise early in the morning until at the beginning of the period, rising at midnight in mid-July and around 9:00 p.m. at the beginning of September.

6/15	Mercury at greatest eastern elongation. It will be 24.5 degrees away from the Sun.
6/21	Summer Solstice – at 4:25 a.m. the Sun will be above the Tropic of Cancer, highest in the sky of the Northern Hemisphere, as summer begins.
6/28	Full Moon – 7:58 p.m.
7/28-29	Peak of the Delta Aquarids Meteor Shower- Approximately 20 meteors per hour. Unfortunately, the nearly full Moon will make for less-than-ideal viewing conditions.
7/29	Full Moon – 10:37 a.m.
8/2	Mercury at greatest western elongation. It will be 19.5 degrees away from the Sun.
8/12,13	Peak of the Perseids Meteor Shower – 60 meteors/hour. With the new Moon, there will be no light interference, so viewing conditions should be ideal.
8/15	Venus at greatest eastern elongation, 45.9 degrees from the Sun.
8/28	Full Moon – 12:19 a.m. (There will also be a partial lunar eclipse, but it will not be visible in the DC area.)

Time is in EDT (Eastern Daylight Saving Time).

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Recent Astronomy Highlights – continued from page 2

Different Origins for Two Outer Rings of Uranus

Uranus and its rings as seen in near-infrared light. Image Credit - NASA, ESA, CSA, STScI

Uranus's rings were only discovered approximately 50 years ago, so the fact that they still hold mysteries is no surprise. Two of the outer rings are designated with the Greek letters ν (nu) and μ (mu). While the ν ring has more of a reddish hue, the μ ring is more bluish. Multiple telescopes, including Hubble and JWST, were used to tease out the compositions of the two rings. The μ ring seems to contain mostly ice crystals, giving it its bluish appearance. These ice crystals likely originate from Mab, one of Uranus's smallest moons, only twelve kilometers in diameter. The ν ring contains rocky material along with organic compounds that perhaps come from even smaller bodies in orbit of Uranus that have yet to be discovered. Additional info is at www.iflscience.com/the-mysterious-two-outer-rings-of-uranus-have-two-very-different-origins-83387.

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Recent Astronomy Highlights – continued from page 4

Star Formation in Ancient Galaxies May Have Been Shut Down By Violent Winds from Supermassive Black Holes

Observations of quasars, the extremely bright centers of galaxies with actively feeding supermassive black holes, by the James Webb Space Telescope may have given an answer to one of the mysteries of the Universe – why many ancient galaxies stopped making stars so long ago. The observed quasars existed approximately a billion years after the Big Bang. JWST observed winds of gas coming off the quasars with velocities as high as 5,000 miles per second. Such winds, as well as the energetic light also generated by a quasar, could have blown gas completely out of those galaxies, leaving little of it around for further star formation, a mechanism known as "quenching." The gas, which often contains heavier elements created in early stars, could have been forced out into the intergalactic medium, possibly also explaining the presence of heavier elements present in that medium. More information 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.

Binary Asteroid Systems Seem to Continuously Exchange Rocks

In 2022, the DART (Double Asteroid Redirection Test) spacecraft deliberately crashed into Dimorphos, the smaller of two asteroids in a binary system, in order to test the possibility of diverting asteroids on a collision course with Earth. Moments before the DART spacecraft impacted, it took an image of Dimophos that has since been processed to remove the shadows of boulders on its surface and correct for lighting conditions. That processed image shows a fan-shaped array of streaks caused by the impact of rocks it most likely received from Didymos, the larger of the asteroid pair. Such exchange of material is likely common for binary asteroids. More info is at www.eurekalert.org/news-releases/1119137.

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many others, especially Bill Blackmore, Bob Bolster, Bill Rohrer, and Alan Tarica locally, and the folks who led the Delmarva Mirror Making Marathon in Delaware, the Stellafane Telescope Makers Convention in Vermont, and the Eastbay Telescope Makers' Workshop in California, not to mention the numerous authors of numerous telescope-making books, articles, and social media posts and videos.

You may have heard that the DC government is planning to demolish both the CCCC and its adjacent library in 2027 and rebuild them by 2030 as a single structure with housing on the upper floors. The details are still to be finalized, but what plans the public has seen indicate that both the CCCC and the library will be downsized by about a third – which would mean our telescope-making, modification, and maintenance workshop (TMMMW) would probably need to come to an end. We simply have too much stuff: literally tons of glass, abrasives, glue, paint, wood, and metal, tools like a vacuum chamber, power saws, power drills, metal lathes, and a mill-drill, not to mention loads of measuring devices and electronics.

Where the "swing space" location (temporary quarters during reconstruction) for the TMMMW will be, I don't know. Audience reactions at hearings so far on the topic show that while they are quite divided regarding the housing proposal, sentiment is 100% against the idea of downsizing the library or the community center.

I am happy to report that NCA has been fortunate to have a number of younger amateur astronomers and telescope makers (in particular, Gael Gomez, Zack Gleiberman and Richard Zhang) who have been bringing their home-made telescopes to local street corners. Gael even started the Mount Pleasant Sidewalk Astronomers, an informal group that people can sign up for. Having non-commercial scopes that work very well gives a special flavor to such outreach events.

We have willing candidates for all of the required NCA offices for academic year 2006-7. Nominations are over and the formal election will be at the start of the meeting on 6/13/2026. Our annual summer board meeting will be held in August at a date to be decided later.

Here is the list of candidates:

President: Guy Brandenburg

Vice-President: Bryan Vandrovec

Secretary-Treasurer: Jim Simpson

Assistant Secretary-Treasurer: Elizabeth Warner

Trustee: Michael Brabanski (term ends in 2030)

2025-2026 Officers

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Trustees:
- Michael Brabanski (2026)
- Elizabeth Warner (2027)
- Chong Wang (2028)
- Zachary Gleiberman (2029)

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Nancy Grace Roman Space Telescope May Launch as Early as September 2026

Image Credit - NASA Goddard Space Flight Center Scientific Visualization Studio

With equipment tests going well, NASA is now looking at launching the Nancy Grace Roman Space Telescope as early as this September. Whenever it does ultimately launch, the Roman Space Telescope is set to revolutionize our understanding of the Universe, specifically concerning dark matter, dark energy and exoplanets. More information about the launch schedule and the telescope itself is available at www.sciencedaily.com/releases/2026/05/260518041345.htm.

NASA Releases 12,000 Photos From Artemis II Mission

Image Credit - NASA

NASA recently released the images taken by the Artemis II crew during the mission that took them beyond the Moon. More information about the archive is available at dailygalaxy.com/2026/05/nasa-just-dropped-12000-photos-artemis-ii/ and the images themselves are at eol.jsc.nasa.gov/Collections/Artemis/Artemis2/.

Recent Astronomy Highlights – continued from page 5

Atmosphere That Shouldn't Exist Detected on Trans-Neptunian Object

A trans-Neptunian object, TNO, designated 2002 XV93, is defying expectations by showing evidence of an atmosphere. It is at an average distance of 39 AU (astronomical units) from the Sun, a similar distance to that of the more famous trans-Neptunian object, Pluto, but it is approximately 500 kilometers in diameter, only one fifth that of the dwarf planet. In 2024, astronomers in Japan recorded 2002 XV93's occultation of a star. Instead of an abrupt disappearance of that star, it dimmed over a short period before disappearing briefly behind the TNO. Too small in theory to hold a permanent atmosphere, 2002 XV93 may have a temporary one, lasting perhaps a thousand years, caused by a comet collision or gases escaping from beneath its surface. Additional info is at www.sci.news/astronomy/trans-neptunian-object-atmosphere-14740.html.

Calendar of Events

The NCA Telescope Making, Maintenance, and Modification Workshop (TMMMW) 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 TMMMW, 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.

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

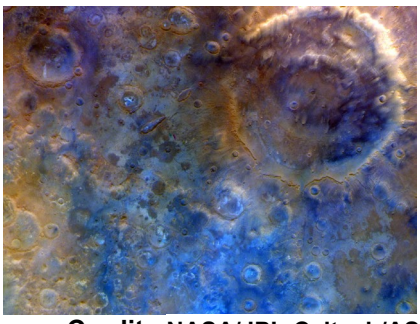

Image Credit - NASA/JPL-Caltech/ASU

The representative-color image above was recently taken by the Psyche spacecraft during its close approach to Mars for a gravity assist on its way to the asteroid Psyche. More info on this image is at www.nasa.gov/image-article/psyche-spacecraft-completes-mars-flyby/.

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 June 13th

7:30 pm

Science Fair Presentations and Astro-photos

- *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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