

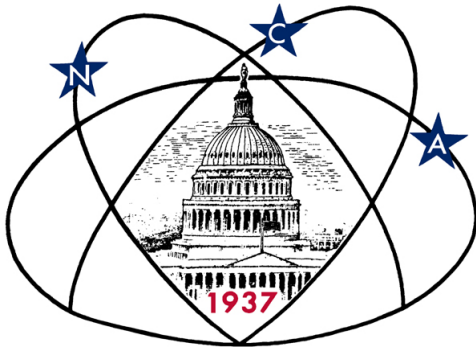
Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

September 2024

Volume 83, Issue 1



**Celebrating 87 Years
of Astronomy**

Next Meeting

When: Sat. Sept. 14th, 2024

Time: 7:30 pm

Speaker: Dr. Raman Sundrum

Where: In-Person (UMD
Observatory) and Online
(Zoom)

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

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Image Credits – ESA/Webb, NASA & CSA, A. Nierenberg

RX J1131-1231 is a quasar approximately six billion light years away. Its light, gravitationally lensed by a much closer elliptical galaxy, forms a beautiful ring in the image recently captured by JWST. More information is at

www.space.com/jeweled-ring-james-webb-space-telescope-image.

Annual Membership Dues are Due

Instructions to join NCA or renew your membership, are available at capitalastronomers.org/ (top right corner). Please fill out the electronic form! Dues payment is electronic (preferred!) or by check (see information for doing so on Page 7). Please support NCA by applying for or renewing your membership at this time to continue receiving Star Dust.

Thank you!

New Dimensions and Fundamental Physics: How, Why and Where

Dr. Raman Sundrum – University of Maryland

The possibility of extra dimensions of spacetime and the role they might play in fundamental physics will be introduced. I will describe how extra dimensions can be hidden from macroscopic view and yet play a vital role as part of the “genetic code” of our universe. In particular, extra dimensions are strongly connected to the ambitions of understanding the ultimate unification of fundamental forces and the incredible diversity of length scales that we observe in Nature. I will also describe how extra dimensions may be an emergent phenomenon knit together by strong quantum-mechanical effects. Finally, I will describe attempts to discover extra dimensions experimentally, ranging from particle-collider searches, gravitational-wave detection, and studying the statistical distributions of galaxy clusters.

Biography: Raman Sundrum is the John S. Toll Chair and Distinguished University Professor of Physics at the University of Maryland. He is also



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Recent Astronomy Highlights

Confirmation of Third Field Surrounding Earth

The Earth's gravitational and magnetic fields have been known for a long time. But the existence of third field, known as the Ambipolar Field, has recently been confirmed. The confirmation comes from data collected during the 2022 flight of a sounding rocket launched near the North Pole. However, the existence of this field was theorized decades ago as spacecraft passing over the poles recorded unexplained updrafts of charged particles. The Ambipolar Field starts at an altitude of about 150 miles, where light from the Sun ionizes the thin atmospheric gases into electrons and ions. Additional sunlight can give a kick to the much lighter electrons, helping them to rise higher, even to escape Earth's gravity. Since the electrical attraction between these electrons and ions is many orders of magnitude stronger than gravity, the rising electrons tend to draw the ions up with them. The overall field is weak, approximately a half a volt from the field's lowest altitude up into space, but this is enough to induce an outflow of electrons and lighter ions. In theory, any planet with an atmosphere should have an Ambipolar Field of its own. More information on the discovery is at science.nasa.gov/science-research/heliophysics/nasa-discovers-long-sought-global-electric-field-on-earth/.

Source of the Lunar Atmosphere Confirmed

Scientists have long known that the Moon has a very thin atmosphere, known as an 'exosphere', but they were unsure what the source of it was. Since the Moon has no magnetic field to protect it, even the particles in the lunar exosphere should have been stripped away long ago, were it not replenished. A new study shows that 'impact vaporization', the sudden vaporization of a steady stream of micrometeors hitting the lunar surface continually, replenishes those gases. More information can be found at www.eurekalert.org/news-releases/1052911.

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Abstract and Biography – continued from page 1

the Director of the Maryland Center for Fundamental Physics. He earned his BSc at the University of Sydney and his PhD at Yale. He did postdoctoral research at Berkeley, Harvard, Boston University, and Stanford.

Raman works on theoretical particle physics, primarily the structure of the fundamental forces and their connections to possible extensions of Relativistic Spacetime, such as Supersymmetry and Extra Dimensions. He also studies their possible roles in the very early Universe. His research provides theoretical templates for a broad range of experiments, from the CERN Large Hadron Collider to precision cosmological measurements.

Raman is a Fellow of the American Physical Society as well as the American Association for the Advancement of Science, is a Distinguished Visiting Chair at the Perimeter Institute in Canada, and was formerly a Moore Fellow at CalTech. In 2019 he was awarded the J.J. Sakurai Prize for Theoretical Particle Physics of the American Physical Society along with his former collaborator, Lisa Randall of Harvard University, for their pioneering of what are now known as the "Randall-Sundrum" models of warped higher-dimensional spacetime.

Fall 2024 Schedule of NCA Meetings and Speakers

Carl Biagetti

September 14, 2024 -- Raman Sundrum (UMD) **New Dimensions and Fundamental Physics: How, Why and Where**

October 12, 2024 -- Benedikt Diemer (UMD) **Where to Look for Dark Matter**

November 9, 2024 -- Brian J Williams (GSFC) **A New X-ray Eye on the Sky: XRISM**

December 14, 2024 -- Geoff Chester (USNO) **Sky With Ocean Joined: Scaling the Stars at the U.S. Naval Observatory, 1830 to the Present**

President's Corner

Guy Brandenburg

NCA had a busy summer!

1. Along with members from other local astronomy clubs, several of us took part in the (very hot) Astronomy Festival on the National Mall on June 22. That night, most Smithsonian museums stayed open late. We gave hundreds (thousands?) of people views of the Sun and other astronomical targets with a variety of scopes, including a completely automated SeeStar S50 and the NCA's double-stack Coronado Solar Max H-alpha scope.

2. During June, we finished our silent auction of donated telescopes and other astronomical equipment and netted a grand total of \$4,780. One of the older Meade automated SCTs we sold had a problem with the display on the hand controller, and it took a bit of sleuthing to figure out

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Exploring the Sky



2024 Exploring the Sky Sessions

- 05 Oct 7:30 P.M. Summer Triangle,
Great Square of Pegasus, M31,
Saturn
- 02 Nov 7:00 P.M. Venus, Summer
Triangle, Pegasus, M31, Saturn

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.

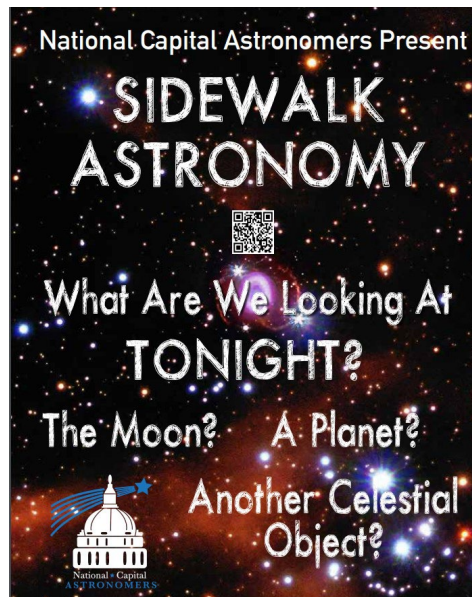
The submission deadline for October's Star Dust, is September 28th.

Clear Skies

President's Corner – continued from page 2

the fix. Many items were delivered to their new owners before and after our last meeting, June 8, when Cal Powell was kind enough to explain the various types of meteorites and show us his spectacular collection of meteorites.

3. Zach Gleiberman, Gael Gomez and I have put on a number of 'sidewalk astronomy' events in the Adams Morgan area of DC. Passersby were extremely glad we were there and letting them look at stuff! A photo of one of those events is below, as well as possible posters for the two-sided A-frame display. (Comments and suggestions for the posters are invited.)



4. On August 4, we held the annual NCA board meeting. Astronomical League dues, which NCA must pay, have increased. We have 138 members and a balance of around \$15,657. Quoting from the minutes, "At the 2023 Annual Board meeting, the dues were increased to \$15 for a single year for the FY 2024-2025 and \$20 for a single year for the FY 2025-2026. "By unanimous vote, we increased the 3-year rate for FY 2024-2025 to \$35 and to \$45 for FY 2025-2026". We also voted to

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Sky Watchers

September/October

Mercury will be difficult to view, rising nearer to sunrise as September progresses, beginning its transition to the evening sky in early October. Venus will be low in the evening sky at sunset. Mars rises at around midnight. Jupiter will rise before midnight and by around 10:00 p.m. at the end of the period. Having reached opposition on September 8th, Saturn will rise in the evening sky before sunset, having a close encounter with the Moon on 9/17 (see below). As of the writing of this column, there is still no sign of the expected nova of T CrB.

9/17	After sunset, Saturn will appear within 18 arcminutes of the Moon (approximately half the diameter of the Moon) in the DC area. Parts of the world from eastern Australia to the west coast of the US will actually be able to see the Moon occult the ringed planet.
9/17	Full Moon, Supermoon and Partial Lunar Eclipse – 10:36 p.m. More information on the partial eclipse can be found at eclipse.gsfc.nasa.gov/LEplot/LEplot2001/LE2024Sep18P.pdf .
9/18	The Moon and Neptune will appear very close to each other. In fact, the DC area is near the southern edge of the region that will see an actual lunar occultation of the ice-giant planet. Another such occultation will occur on November 11 th .
10/8	The Draconids Meteor Shower peaks in the evening with approximately 10 meteors/hour. A first-quarter Moon will largely not interfere. The best time to view this meteor shower is usually in the early evening, unlike with other meteor showers when it is during the pre-dawn hours of the night.

All times are in EDT (Eastern Daylight Savings Time)

President's Corner – continued from page 3

eliminate actual paper membership forms, though people can continue to pay with check, PayPal, credit card, as usual.

5. The board also voted to oppose the current plan to cut down over 1000 trees and install night-time lighting at the Rock Creek Park Golf Course, which is less than a mile from the location where we hold Exploring the Sky.

6. As NCA president, I testified on behalf NCA, along with a host of wildlife experts, as well as (later on) supporters of the plan who were quite effectively mobilized by NLT. The current plan, as slightly edited, was approved, and barring some sort of legal miracle, the bulldozers and chain saws will be out there quite soon. The good news is that they have already agreed to cut off the lights at dusk when it is known that flocks of migrating birds are expected, and during other events, including Exploring the Sky. I will credit Mike Stachowicz, who was shepherding the plan through, for suggesting that something could definitely be done about the incredibly blue-bright lights from the Rock Creek Tennis Center, roughly a mile south of the golf course. And all these years I thought it was a used car lot!

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Star Dust is published ten times yearly September through June, by the National Capital Astronomers, Inc. (NCA).

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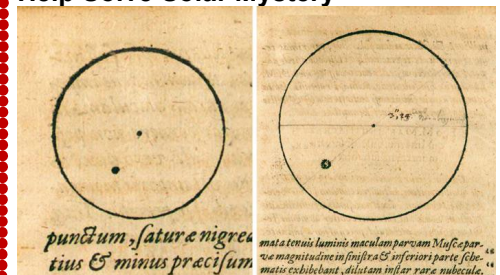
Editorial Advisors:

- James Kaiser
- Jeffrey Norman
- Brian Tomich
- Elizabeth Warner
- Marjorie Weissberg

Electronic Distributor: Elizabeth Warner

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

Oldest Known Sunspot Sketches Help Solve Solar Mystery



Johannes Kepler's sketches of sunspots, Image Credit - Kepler, J. 1609, Phaenomenon singulare seu Mercurius in Sole, Thomae Schureri, Lipsiae

Johannes Kepler made the earliest known sketches of sunspots using a camera obscura, a small hole in a wall to allow sunlight into a room where it would shine on a piece of paper on which a tracing could be made. Modern-day astronomers, using those simple tracing as well as Galileo's later drawings, along with statistical analysis, have determined that the solar cycles leading up to the Maunder Minimum, an approximately seven-decade-long era in which sunspots were far less common, had roughly the same duration as cycles at other times. There had previously been speculation, based on tree-ring data that there had been an extremely short and an extremely long cycle leading up to the Maunder Minimum. More information on the study is available at www.eurekalert.org/news-releases/1052675

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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

2024		Star		Asteroidal Occultations		dur.		Ap.	
Date	Day	EDT	Cat.	Mag.	Asteroid # Name	dmag	s	"	Location
Sep 7	Sat	1:03	UC4	10.9	8845 1990 RD	6	1.5	5	sePA, CMD, DC, n-scVA
Sep 7	Sat	2:48	TYC	10.6	34381 2000 RW55	10	0.4	5	CNC, eVA, SMD, CDE, NJ
Sep 8	Sun	0:50	TYC	11.6	1203 Nanna	3	5	4	scNY, nc-swPA, seOH
Sep 9	Mon	5:56	TYC	9.8	1387 Kama	9	0.3	4	MT, WV; SYK, Ph, PA
Sep 11	wed	1:36	UC4	11.8	23120 Paulallen	5	0.7	6	G1, Ls, VA; wd, Ap, MD
Sep 12	Thu	1:20	TYC	10.4	1036 Ganymed	0.5	5	4	wNY, nc-sePA, eMD, DE
Sep 13	Fri	21:11	TYC	11.4	3122 Florence	3	0.3	8	eVA; Cm, MD; sw-neNJ
Sep 20	Fri	5:34	TYC	9.3	1496 Turku	8	0.3	3	Cc, OH; Hb, PA; NYC; LI
Sep 22	Sun	6:32	TYC	10.5	704 Interamnia	2.3	8	5	soH, VA, MD, DC-Sun-5
Sep 24	Tue	4:51	TYC	12.1	56227 1999 JT23	7	0.4	7	nMB, WV; Wm, nE1, MD
Sep 25	wed	4:59	UC4	12.4	4006 Sandler	5	0.5	7	wv, Wm, MD; Wm, DE; CNJ
Sep 26	Thu	20:42	TYC	9.1	4510 Shawna	6	0.8	4	Fb, LP, MD; nSt, Md, VA
Sep 27	Fri	5:14	UC4	12.2	34934 6689 P-L	8	0.3	7	HT, nWm, MD; swm, DE
Sep 30	Mon	3:57	UC4	12.2	218 Bianca	1.0	4	6	SMD, ec-scVA, WNC
Oct 1	Tue	21:56	TYC	9.7	73961 1997 WP25	9	3	4	AC, NJ; MS, PL, MD; eVA
Oct 2	wed	0:12	UC4	12.2	246 Asporina	1.2	5	6	cPA, CMD, DC, n+cVA
Oct 4	Fri	4:59	UC4	13.0	238 Hypatia	1.0	7	8	Cc+soH, MD, nVA, DC
Oct 5	Sat	3:20	TYC	10.2	1337 Gerarda	6	4	4	nw-seOH, nWV, c+seVA
Oct 5	Sat	21:50	TYC	10.2	12429 1995 WH7	9	0.7	4	sCC, OH; Pb, Sb, PA; NY
Oct 8	Tue	3:46	TYC	12.1	93 Minerva	2.0	6	6	wNC, sw-ecVA, SMD, DE
Oct 8	Tue	20:37	UC4	11.4	Neptune	.04	36m	9	Europe, e.N. America
Oct 8	Tue	21:33	HIP	8.5	3914 Kotogahama	8	1.2	2	LP, Gn, NY; Wr, PA; OH
Oct 10	Thu	5:33	UC4	12.2	8316 Wolkenstein	6	0.5	6	nVA, DC, MD RUWE 5.3
Oct 12	Sat	0:56	TYC	7.3	134421 1998 QT2	11	0.7	2	SNM, Mf, Mv, PA; Cl, OH
Oct 12	Sat	3:48	HIP	8.2	1957 Angara	8	1.4	2	BA, Fd, MD; Mb, WV; soH
Oct 12	Sat	21:33	TYC	12.5	44511 2002 TJ147	7	0.5	8	WP, NY; Cw, PA; Ht, MD

Lunar Grazing Occultations

Date	Day	EDT	Star	Mag	% alt	CA	Place or Dist. from Greenbelt
Sep 24	Tue	5:21	SAO 77509	8.5	54-	72	7N 77 km in az. 163 deg.
Sep 25	wed	2:05	54 Aurigae	6.0	44-	25	10N seLesbg, VA; sc1rkgb, nE1drbg, MD

Lunar Total Occultations

2024	Date	Day	EDT	Ph Star	Mag	% alt	CA	Sp.	Notes
Sep 6	Fri	11:33	D	Spica =	1.0	11+	16	40S	B1 Sun+51, ZC1925, c1oseDb1?
Sep 6	Fri	12:31	R	alpha Vir	1.0	12+	25	-67S	B1 Sun+56, Axis Angle 251
Sep 9	Mon	20:06	D	pi Scorpii	2.9	37+	18	28S	B1 Sun -9, mg2 12 dT +4m03s
Sep 9	Mon	20:44	R	= ZC 2287	2.9	38+	13	-26S	B1 Azimuth 220, AxisAng 209
Sep 13	Fri	20:01	D	SAO 188688	7.7	78+	21	58N	G8 Sun alt. -9 deg.
Sep 13	Fri	21:07	D	SAO 188724	7.7	78+	24	49N	F5 c1ose double??
Sep 13	Fri	23:16	D	60 Sgr	4.8	79+	21	25N	G8 ZC2914, SpectroscopicBin
Sep 18	wed	20:57	R	ZC 81	6.4	99-	15	21S	K4 Az 98, AA 201, TrmDist 3"
Sep 19	Thu	3:53	R	ZC 104	5.7	98-	48	29S	K2 AA 206, Tmd 9", c1oseDb1
Sep 21	Sat	4:44	R	ZC 397	7.5	85-	67	85N	B9 =componentDb1, dTime +6s
Sep 22	Sun	2:35	R	9 Tauri	6.7	76-	59	90N	A2 ZC 521
Sep 22	Sun	6:09	R	SAO 76103	7.9	75-	67	31S	A9 Sun-10, c1ose double
Sep 22	Sun	7:18	R	Electra	3.7	75-	55	63N	B6 Sun +4, ZC 537
Sep 22	Sun	7:27	D	Alcyone	2.9	75-	54	-82S	B7 Sun +5, AA95, ZC552, db1??
Sep 22	Sun	7:57	R	Merope	4.1	75-	47	65S	B6 Sun +11, ZC 545
Sep 22	Sun	8:39	R	Alcyone	2.9	74-	40	86S	B7 Sun +19, ZC552, c1oseDb1?
Sep 22	Sun	9:18	R	Atlas	3.6	74-	32	59S	B8 Sun +26, ZC 560, specBin.
Sep 24	Tue	5:17	R	SAO 77495	8.1	54-	70	35S	A0 =comp.db1, dTime=0.8s
Sep 25	wed	0:43	R	49 Aurigae	5.3	45-	10	75N	A0 Azimuth 62 deg, ZC 1008
Sep 25	wed	2:03	R	SAO 78580	7.3	44-	23	33S	A2
Sep 25	wed	2:10	R	54 Aurigae	6.0	44-	25	22N	B7 ZC1022, MDgraze, db, dT-5s
Sep 25	wed	3:18	R	25 Gem	6.5	44-	37	65N	G5 ZC1026, mg2 12, dT +26s
Sep 28	Sat	5:24	R	SAO 98567	7.5	16-	27	85N	A3
Oct 8	Tue	19:38	D	SAO 185508	8.4	32+	16	69N	K5
Oct 9	wed	19:42	D	ZC 2688	7.0	41+	20	48N	G6
Oct 12	Sat	19:33	D	ZC 3143	7.8	73+	27	62S	K1
Oct 12	Sat	22:40	D	SAO 164449	7.2	74+	28	42N	F0 mg2 11 sep 2" dTime -6s
Oct 13	Sun	1:29	D	SAO 164516	6.9	75+	8	67S	K3 Azimuth 239 degrees
Oct 14	Mon	0:31	D	ZC 3303	6.4	84+	28	87N	F2
Oct 14	Mon	19:39	D	chi Aqr	4.9	91+	26	42S	M3 ZC3421, c1oseDb1? Needobs
Oct 14	Mon	20:20	D	ZC 3422	6.7	91+	33	31N	F0

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

2024-2025 Officers

President:

Guy Brandenburg
gfbrendenburg@yahoo.com
 202-635-1860 (leave message)

Vice-President:

Carl Biagetti
carlbiagetti@gmail.com
 301-655-2762 (message or text)

Secretary-Treasurer:

Jim Simpson
simpsonj@verizon.net
 240-232-2820

Asst. Secretary-Treasurer:

Jeffrey B. Norman
jeffreynorman@comcast.net

Trustees:

- Benson Simon (2025)
- Michael Brabanski (2026)
- Bernard Kaufman (2027)
- Chong Wang (2028)

Appointed Officers and Committee Heads:

Exploring the Sky

Jay Miller
jhmiller@me.com

Telescope Making

Guy Brandenburg
gfbrendenburg@yahoo.com
 202-635-1860 (leave message)

Star Dust Editor

Todd Supple
NCAStardust@gmail.com
 240-687-8193

NCA Webmaster

Elizabeth Warner
warnerem@astro.umd.edu
 301-405-6555

Social Media

Facebook: [NatCapAstro](#)
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President's Corner – continued from page 4

7. On August 10, we had two different public viewing events. Chong Wong organized the first event, at Great Falls National Park in Maryland, which involved looking at both the Sun and the Moon. The second one was the August Exploring the Sky event located near picnic area 13 and Glover Road, just south of Military Road, which has been spearheaded for many years by Jay Miller. Thanks, Jay, for your perseverance!

8. The following night (August 11-12) was supposed to be the peak of the annual Perseid meteor shower, and the NLT was kind enough to allow some folks to walk onto the course and try to observe the event. Unfortunately, the clouds did not cooperate; nobody saw more than 3 meteors. Next year, who knows what the place will look like?

9. A handful of volunteers (including myself) sorted, vetted, and sent out over ten thousand eclipse glasses, most of them never used, to a group called Eclipses with a Cause. I am still receiving boxes of additional eclipse glasses and have several thousand more in my basement.

10. Milt Roney has generously volunteered to take over the coordination and judging of science fairs. Thanks, Milt!

11. Elizabeth Warner has begun the process of finding qualified volunteers for help with our website and web presence, including Facebook. Thanks, Elizabeth!

12. Chong Wong is taking care of coordination with the Night Sky Network and with Washington Meetup, as well as welcoming new members – which are all incredibly important to this organization and to the mutual enjoyment of astronomy! Thanks, Chong!

Upcoming events and announcements:

1. Please consider joining the NCA listserv by sending an email to capitalastronomers-subscribe@groups.io. We are trying to figure out how to make it as easy as possible to be part of our listserv and you can get announcements or ask questions. If you are receiving this newsletter but aren't on the list, we will add you automatically. If you don't want to read it, just unsubscribe.

2. Exploring the Sky, usual location (between Military Road and Rock Creek Picnic Grove 13 and the Nature Center / Planetarium:) Saturday, September 7, starting at 8 pm. Volunteers with or without scopes are needed!

3. The following afternoon, another Exploring the Sky: Solar AND lunar observing at Great Falls NP (MD) Tavern, September 8 from 4 to 6 pm, i.e. daylight, MacArthur Blvd. If you are bringing a scope, you get in free.

4. NCA monthly meeting and lecture, hybrid (zoom and in person at the University of Maryland Observatory), Saturday, September 14, starting at 7:30 pm. After the meeting, anybody interested in further discussion and a late dinner will be invited to join some of us at a local restaurant of our choice on Baltimore Avenue (Route 1) in College Park.

5. **Eisenhower Under the Stars**, Friday, Sept. 13, 7:30-9:30 pm, Dwight Eisenhower Memorial, 540 Independence Ave. SW, Washington (across from NASM). Sponsored by the Trust for the National Mall. Link: nationalmall.org/calendar/eisenhower-under-the-stars-2024.

Recent Astronomy Highlights – continued from page 4

Earliest Galaxies Likely Not as Massive as Previously Believed

In the past couple years, images taken by the James Webb Space Telescope of the far-distant early Universe seemed to show galaxies much bigger than astronomers had believed would be possible based on standard cosmology models. But a recent study seems to indicate that, at least in the cases of some of those early galaxies, their sizes are actually much smaller than originally believed. The original size calculations were based on the assumption that most of the light from the galaxies was from stars. However, closer examination shows that much of that light seems to have been radiated as a result of accretion of matter onto black holes within those galaxies. Accounting for this light leaves those galaxies appearing more in line with the expected sizes. More information is at webbtelescope.org/contents/news-releases/2024/news-2024-134.

Calendar of Events

NCA Telescope Making, Maintenance, and Modification Workshop

(TM3W) (previously the NCA Mirror- or Telescope-making Classes): *The Chevy Chase Community Center has reopened and classes have resumed.* Classes will be Tuesdays and Fridays, from 6:00-9:00 pm at the Chevy Chase Community Center (intersection of McKinley Street and Connecticut Avenue, N.W.) Please contact instructor Guy Brandenburg at 202-635-1860 (leave message) or at gbrandenburg@yahoo.com if you plan to attend. Info is at guysmathastro.com.

Open House talks and observing at the University of Maryland Observatory in College Park are temporarily suspended. When they resume, they will be on the 5th and 20th of every month at 8:00 pm (Nov.-Apr.) or 9:00 pm (May-Oct.). Updates are posted at www.astro.umd.edu/openhouse.

Next NCA Meeting: 12 October at 7:30 p.m. Benedikt Diemer (UMD)
Where to Look for Dark Matter

The APS Mid-Atlantic Senior Physicists Group: Wednesday, Sept. 18th at 1:00 p.m., Dr. Peter Plavchan, George Mason University, will give a talk entitled "The NASA Landolt mission". 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 is at [apsphysics.zoom.us/meeting/register/tZErdeGpqzkgG9INft9YnOmt_nW2wSnsKL4c](https://apsphysics.zoom.us/join/zoom/register/tZErdeGpqzkgG9INft9YnOmt_nW2wSnsKL4c).

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

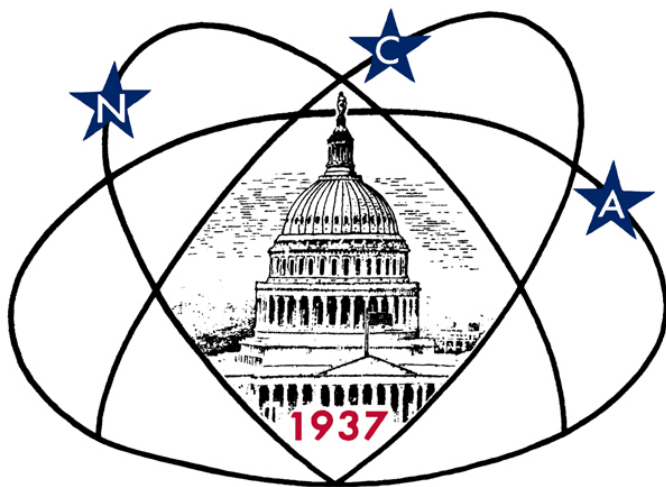
\$ 15 – 1 year Individual/Family
\$ 35 – 3 years Individual/Family
\$ 5 – 1 year Student
\$200 -- Life Member

(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** and
- 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 87 Years of Astronomy



Image Credit – X-ray: NASA/CXC/SAO; Infrared: NASA/ESA/CSA/STScI; Image Processing: NASA/CXC/SAO/J. Major, S. Wolk

As a part of the celebration of the Chandra X-ray Telescope's 25th anniversary, NASA released 25 images, including the composite one shown above. Chandra's contribution to the image is the purple arc at the top, showing auroral X-ray emissions at Jupiter's north pole, while Hubble provided the infrared image of the planet. All of the anniversary images are available at www.nasa.gov/missions/chandra/25-images-to-celebrate-nasas-chandra-25th-anniversary/.

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

Next NCA Meeting:
2024 Sept. 14th
7:30 pm
Dr. Raman Sundrum

- *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.

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