

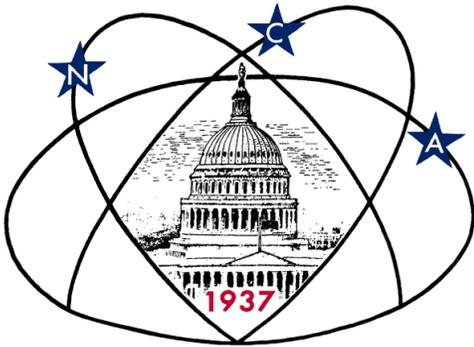
Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

September 2015

Volume 74, Issue 1



Next Meeting

When: Sat. Sept 12th, 2015

Time: 7:30 pm

Where: UMD Observatory

Speaker: Margaret M. McAdam

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Directions to Dinner/Meeting

Our time and location for dinner with the speaker before this meeting is 5:30 pm at "The Common," the restaurant in the UMD University College building located at 3501 University Blvd.

The meeting is held at the UMD Astronomy Observatory on Metzger Rd about halfway between Adelphi Rd and University Blvd.

Need a Ride?

Please contact Jay Miller, 240-401-8693, if you need a ride from the metro to dinner or to the meeting @ observatory. Please try to let him know in advance by e-mail at rigel1@starpower.net.

Observing after the Meeting

Following the meeting, members and guests are welcome to tour through the Observatory. Weather-permitting, several of the telescopes will also be set up for viewing.

Aqueous Alteration on Asteroids: Linking the Mineralogy & Spectroscopy of Primitive Carbonaceous Meteorites

Margaret M. McAdam, University of Maryland

Some primitive carbonaceous meteorites have interacted (sometimes extensively) with liquid water on their parent bodies soon after formation. The water reacted with the initially dry materials to produce phyllosilicates, detectable by Earth-based spectroscopy. The variability in the observed distribution of phyllosilicates probably reflects the uneven distribution of water in the early Solar System.

Laboratory measurements have been made of the spectra and mineralogy of a large collection of five different groups of carbonaceous meteorites. These groups display a wide range of initially accreted water ice, as well as other initial materials.

The degree of alteration (amount of phyllosilicates and/or amorphous material) in the meteorites are found to correlate with mid-infrared (MIR) vibrational features in their spectra; but, they are not strongly correlated with the visible/near-infrared features in their spectra.

These results have been applied to the spectra of asteroids in an effort to quantify and map the amount of water in small bodies within the asteroid belt.



*Courtesy Maggie McAdam
Spectroscopic Instruments*

continued on page 2

Reminder

After the meeting, everyone is invited to join us at Plato's Diner in College Park. Plato's is located at 7150 Baltimore Ave. (US Rt. 1 at Calvert Rd.), just south of the university's campus. What if it's clear and you want to stick around and observe? No problem -- just come over when you're through. This is very informal, and we fully expect people to wander in and out.

Sheet Silicates

Sheet silicates (also called layer silicates, phyllosilicates and, formerly, disilicates) contain a central silicon atom surrounded by 4 oxygen atoms. Silicate molecules are linked to others by one of the peripheral oxygen atoms, forming a 2-dimensional "sheet." Although minerals from this composition can be soft (like talc, in which water molecules can be trapped between the sheets), they can be enduring. They resist erosion, pressure & high temperatures and are, therefore, frequently found in soil as well as sedimentary & metamorphic rocks. Examples of phyllosilicates include mica, clay, serpentine, smectite and bentonite. One of the phyllosilicates discovered on Mars was smectite.

This Summer...



Courtesy CA Brooks

NCA participated in Astronomy Day on the National Mall. One of the attendees was caught looking through NCA member Guy's "Pink Candy Scope."



composition of meteorites and asteroids using near- and mid-infrared spectroscopy.

As part of her PhD thesis research, she has used the Stratospheric Observatory for Infrared Astronomy (SOFIA) to study main-belt asteroids, and she recently had the opportunity to fly with the telescope out of Palmdale CA. In addition to having a passion for science, she also works on equality issues in science, including teaching-as-research projects in the classroom, and campus wide projects. She also works to inspire the next generation of planetary scientists by participating in outreach events, such as the New England Air Museum's annual Space Expo.



Courtesy NASA/Jim Ross/Carla Thomas
Stratospheric Observatory for Infrared Astronomy (SOFIA)

Suit 'Boot

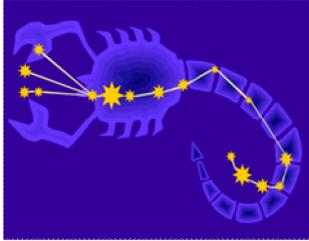
Smithsonian's Kickstarter campaign, "Reboot the Suit," to save Neil Armstrong's spacesuit, was a success. There were over 9,000 donations, raising \$720,000 (\$500,000 was the target). Armstrong wore the suit for his Apollo 11 moonwalk in July, 1969. In addition, the surplus will fund the preservation of Alan Shepard's spacesuit from the 1961 Mercury mission (the first crewed spaceflight).



Courtesy NASM

Exploring the Sky

“Exploring the Sky” is an informal program that, for over 60 years, has offered monthly opportunities for



anyone in the Washington area to see the stars and planets through telescopes from a location within the District of Columbia.

Presented by the National Park Service and National Capital Astronomers, sessions are held once a month, from April through November (unless it's raining or cloudy), in the field at the corner of Glover & Military Roads near the Rock Creek Park Nature Center in Washington, DC. Beginners (including children) and experienced stargazers are all welcome—and it's free!

More telescopes are always welcome; so, please bring one if you have one! If you don't have a telescope, the program can always use NCA members' expertise to answer questions and explain observations.

Hosted by: [National Capital Astronomers, Inc](#) and [Rock Creek Park](#)

2015 Observation Dates for Autumn

5 Sep (8:00 pm) - Cassiopeia level with Polaris; Vega overhead

17 Oct (7:30 pm) - Perfect crescent moon; Vega overhead

7 Nov (7:00 pm) - Pleiades and winter constellations appear

Sky Watchers

Autumn Schedule

September

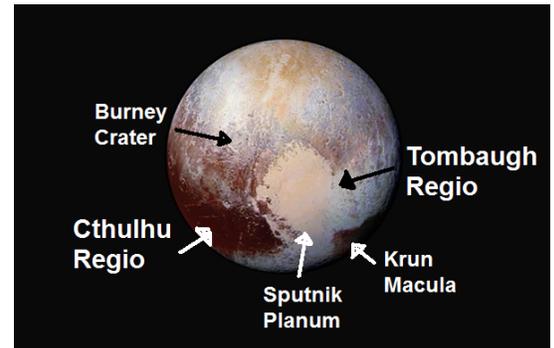
3-12	Evening – Globe at Night , Global. Features: <i>Constellation Cygnus</i> (N. Hemisphere) & <i>Sagittarius</i> (S. Hemisphere)
14	7:27 am – Moon at apogee (252,565 miles from Earth). Global.
15	2:00 am - Planets , N. Hemisphere. Mercury 5° south of Moon
18	11:00 pm - Planets , N. Hemisphere. Saturn 3° south of Moon
19	 International Astronomy Day! Global.
21	Evening – Planets , N. Hemisphere. Venus brightest (mag. - 4.8)
23	4:21 am – Autumnal Equinox , N. Hemisphere. 
27	7:27 am – Moon at perigee (221,753 miles from Earth). Global. 6:49 pm – Full Moon (moonrise time), N. Hemisphere. Other Moon Names: <i>Harvest Moon</i> , <i>Full Corn Moon</i> (<i>corn, squash, beans & rice are ready for harvest</i>)
27-28	Overnight – Total Lunar Eclipse , N. & S. Hemispheres. <i>Washington, DC viewing: 9:07 pm (beginning), 10:47 pm (maximum eclipse), 12:27 am (end)</i>

Times EDT

This Summer...

The Pluto Fly-by revealed that there are no “Mi-go” cities or other evidence of imminent Earth invasion by “the Old Ones.”

Although the IAU will be approving the final selections, the New Horizons crew is already informally using many feature names proposed in Spring's global naming contest.



Courtesy NASA (image), OurPluto.com (names)

Jerome Schnall (1916 – 2015)

Guy Brandenburg
(w/ Michael Chesnes)

Born August 15, 1916, Jerome “Jerry” Schnall passed away on May 5, 2015 at the ripe, old age of 98. The exact cause of death is unknown, although he suffered from Parkinson’s disease and other ailments as he got older. His memory seemed to be getting worse (to those of us other telescope-makers who used to visit him from time to time).

Jerry was named Jerome by the doctor who delivered him. He was raised in New York City (the Bronx & Manhattan) but lived most of his life in DC, never quite losing that New York accent. During WW II he attended MIT, while simultaneously employed as a civilian for the Navy. Jerry was also instrumental in changing the insulation on board navy vessels from flammable cork to fireproof asbestos. He later worked for the US Patent Office as a patent examiner.

Starting in 1992, Jerry taught me how to make two telescope mirrors (an f/8 six-incher and an f/6 eight-inch). He was an unpaid volunteer leader of the Washington DC amateur telescope-making (ATM) class, under the sponsorship of the National Capital Astronomers (NCA), and he was already in his mid-70s at that point. He took over that workshop from Hoy Walls in about 1968, and passed it along to me around 2000 or so, roughly 32 years later. Currently ATM classes are held at the Chevy Chase Community Center (CCCC) on Connecticut Ave., NW.

Jerry happened upon NCA by chance when he stayed late one evening at the old Bureau of Standards building on Van Ness Street. NCA was meeting in a closed auditorium and Jerry said that it seemed like a secret society to him when he first encountered it. That was when Jerry Schnall became a member of NCA.

Along with Bob Bolster, Jerry was one of several people in ATM class who created small Maksutov telescopes by hand. He worked on his Mak from approximately 1960 to 1968, then gave it to Michael Chesnes about 10 years ago. It has a 5.7-inch clear aperture, and the metal tooling for the various surfaces is likely to be still in the CCCC. Jerry said he didn’t use a wedge meter, but measured the wedge by hand with calipers as he worked on the corrector, which must have taken both precision and tenacity. He also stated that he used the 5.7-inch Maksutov at *Exploring the Sky* events. Jerry had a 7-inch Maksutov in progress, but its whereabouts are unknown.

Jerry went on road trips (many with Bob McCracken & Bob Bolster) to observe astronomical events as well. One of those solar eclipse events was clouded out and Bob Bolster has a priceless photo of Jerry’s facial expression when it happened.

Although, Jerry felt an affinity for his Jewish heritage, he was a Unitarian as a young man and an atheist afterward. He was not close to the rest of his family and never married. However, he spent a lot of

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

• **ISSN: 0898-7548**

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• NCA members able to receive Star Dust,
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• U.S. Mail, can save NCA a considerable
• amount of money on the printing and
• postage in the production of Star Dust (the
• NCA’s single largest expense), save some
• trees and have one-click access to all the
• embedded links in the document. If you can
• switch from paper to digital, please contact
• Henry Bofinger, the NCA Secretary-
• Treasurer, at hbofinger@earthlink.net

Thank you!

This Summer...



Courtesy @KojoShow via Twitter

• NCA member Elizabeth (with her handy
• celestial globe) explains the meaning of
• the “dog days” of summer on the DC-
• based, Kojo Nnamdi Show.

Occultation Notes

- D following the time denotes a disappearance, while R indicates that the event is a reappearance.
- When a power (x; actually, zoom factor) is given in the notes, the event can probably be recorded directly with a camcorder of that power with no telescope needed.
- 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.
- 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".
- Sometimes the Watts angle (WA) is given; it is aligned with the Moon's rotation axis and can be used to estimate where a star will reappear relative to lunar features. The selenographic latitude is WA -270. For example, WA 305 - 310 is near Mare Crisium.

Mid-Atlantic Occultations

David Dunham

Asteroidal and Planetary Occultations

Date	Day	EDT	Star	mag.	Asteroid	dmag	dur.	Ap.	Location, Notes
Sep 14	Mon	2: 57	2UC41524279	12.2	Emma	2.4	5	8	w&nVA, MD, DC, NJ
Sep 20	Sun	5: 23	4U561039715	13.1	Jani na	2.3	1.4	9	WV, nVA, MD, NJ; DC?
Sep 22	Tue	5: 20	2UC41011854	13.2	Di otima	0.8	7	10	wNC, VA, seMD; DC?
Sep 23	Wed	6: 24	SAO 58611	7.5	Tana	8.7	2	2	nwFL, sGA, sSC
Oct 2	Fri	5: 50	TYC13211496	12.1	Asterope	1.4	7	8	nWV, nVA, sMD; DC?
Oct 4	Sun	20: 43	4U343191438	13.0	Uni tas	0.7	4	9	WV, MD, nVA, DC, NJ
Oct 10	Sat	1: 55	4U479011188	12.6	Daphne	1.0	25	9	OH, WV, w&cVA, eNC

Lunar Grazing Occultations

Date	Day	EDT	Star	Mag	% alt	CA	Location & Remarks
Sep 17	Thu	20: 17	ZC 2130	7.6	19+	13	4S Wal krsvl, Westmstr, Herefrd, MD
Sep 27	Sun	22: 14	X 316	9.4	OE	37	90U RoanokRap, NC; Wnsor, Hamptn, VA
Oct 4	Sun	1: 45	ZC 944	5.9	56-	25	8N S. Hill, StonyC, Yorktn, Exmor, VA
Oct 5	Mon	7: 20	I lambda Gem	3.6	44-	68	4S Luray, Quantico, VA; La Plata, MD

Interactive detailed maps at <http://www.iota.timerson.net/>

Total Lunar Occultations

Date	Day	EDT	Ph Star	Mag	% alt	CA	Sp.	Notes
Sep 19	Sat	22: 32	D 24 (Sco)	4.9	37+	4	59N G8	Azimuth 243, ZC 2399
Sep 19	Sat	22: 36	D ZC 2396	6.7	37+	3	40S A3	Az. 244, close double?
Sep 21	Mon	22: 35	D ZC 2680	5.6	57+	19	82S K0	Close double??
Sep 21	Mon	23: 34	D ZC 2686	5.1	58+	10	31N B9	Az. 236, close double??
Sep 22	Tue	19: 16	D rho 1 Sgr	3.9	67+	31	87N F0	Sun -3, ZC 2826, double?
Sep 24	Thu	2: 03	D ZC 2995	6.1	79+	6	78S K1	Az. 245, close double?
Sep 25	Fri	0: 35	D ZC 3137	6.7	87+	30	86S K0	
Sep 25	Fri	1: 45	D ZC 3145	7.0	88+	21	25N F5	
Sep 25	Fri	19: 44	D ZC 3270	5.8	93+	23	64S K3	Sun altitude -10 deg.
Sep 26	Sat	22: 30	D ZC 3431	6.6	98+	42	88N F2	
Sep 27	Sun	21: 32	D SAO 109110	9.0	63E	29	81U G5	Lunar eclipse, partial
Sep 27	Sun	21: 55	D SAO 109126	7.2	18E	33	68U G5	
Sep 27	Sun	22: 04	D X 00316	9.4	4E	35	85U	NC, VA graze
Sep 27	Sun	22: 31	R X 00316	9.4	OE	39	86U	Axis Angle 204 deg.
Sep 27	Sun	22: 36	R SAO 109110	9.0	OE	40	77U G5	Total lunar eclipse
Sep 27	Sun	22: 44	D X 55078	10.8	OE	41	77U	NC graze; close double
Sep 27	Sun	22: 55	R SAO 109126	7.2	OE	42	69U G5	Axis Angle 253 deg.
Sep 27	Sun	23: 20	D SAO 109144	8.6	OE	46	75U G5	
Sep 27	Sun	23: 16	R X 55078	10.8	OE	45	84U	AA 207; close double
Sep 30	Wed	4: 15	R xi Arietis	5.5	93-	57	88N B7	AA 279, ZC354, close dbl?
Sep 30	Wed	4: 59	R SAO 92948	7.3	93-	51	75S G0	Axis Angle 262 degrees
Sep 30	Wed	5: 08	R VW Arietis	6.7	93-	50	50S F0	AA 237, ZC 360
Oct 2	Fri	7: 18	R 75 Tauri	5.0	75-	51	67S K2	Sun +2, ZC 667, close dbl
Oct 2	Fri	10: 03	D Aldebarn	0.9	74-	21	-76S K5	Sun +32, AA 107, ZC 692
Oct 2	Fri	11: 00	R alpha Tau	0.9	74-	10	85S K5	Sun +40, Az. 283, ZC 692
Oct 3	Sat	3: 23	R SAO 94476	7.8	66-	53	21S B9	
Oct 3	Sat	5: 07	R SAO 94513	7.9	66-	67	15S K2	
Oct 3	Sat	5: 51	R 111 Tauri	5.0	65-	69	35S F8	ZC 806
Oct 4	Sun	0: 45	R SAO 95354	7.5	56-	14	39S A0	Az. 79, mg2 8.9 2" PA160
Oct 4	Sun	6: 28	R ZC 970	6.3	55-	69	82N G9	Sun altitude -8 degrees
Oct 5	Mon	3: 47	R ZC 1091	6.5	45-	38	77N K5	maybe close double?
Oct 5	Mon	7: 31	R I lambda Gem	3.6	44-	68	16S A3	Sun+4, ZC1106, VA/MDgraze
Oct 6	Tue	4: 56	R SAO 97556	7.6	35-	41	63N F5	

Further explanations & more information is at <http://iota.jhuapl.edu/exped.htm>
David Dunham, dunham@starpower.net

Hopewell Observatory Open House

Guy Brandenburg

- All members of NCA and their friends & family are invited to the Fall 2015 astronomical open house at Hopewell, about 30 miles west of the Beltway on Bull Run "Mountain" – a ridge that overlooks Haymarket, VA where US-15 meets I-66. The event is on the evening/night of September 19/20,

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September 19th, 2015

Dues Time!

John Hornstein

If it is September, it must be Dues Time again at the NCA. Dues are still only \$10 for adults and \$5 for students. It's the best bargain anywhere.

At the meeting, you can give your dues to Henry Bofinger, NCA's Secretary-Treasurer, or to any of the other officers of the NCA. If you want to pay by mail, contact Henry via his email address or phone number listed in *Star Dust* under '2015-2016 Officers' (see left side of this page).



Jerry Schnall – continued from page 4

time with McCracken & Bolster. Jerry said that he and Bob McCracken would sometimes talk on the phone for long periods of time.

In fact, Jerry was one of the founding members and builders of the small, local, group-owned observatory called Hopewell in Northern Virginia, and made the third-largest contribution of labor and money to that project after Bolster and McCracken.

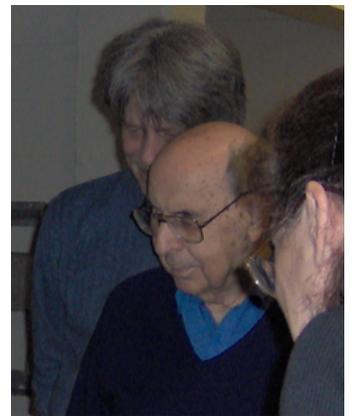
Jerry never had a very demonstrative or flashy personality. However, he was proud of a speech on ATM he wrote for a continuing education class at Howard University. Michael thinks that, because Jerry was shy, it meant a lot to him. In addition to astronomy, Jerry liked ham radio and photography. He had some homemade equipment for both hobbies at his place on Quebec street. He was proud of his stereo equipment, and enjoyed books and documentaries from science popularizers such as George Gamow and Jacob Bronowski.

Before the significant impact of Parkinson's disease, Jerry could fix almost anything! However, most memorable of his tasks are that first, Jerry probably saved a lot of sailors' lives during WW II (as their ships were no longer dangerous firetraps) and second, Jerry taught a lot of folks how to make telescopes!

Hopewell Observatory – continued from page 5

right before the Autumnal Equinox & during *International Observe the Moon Night*. Our biggest aperture is 14" and the longest scope is 90"; but, you can bring your own telescope, too. If the sky is clear, you'll enjoy observing the Moon, star clusters in the Milky Way, and more. You can even stay until the wee hours to observe Mars, Venus & Jupiter. Bring a picnic dinner, if you like.

Warning: We do have drinking water (and will have hot water for tea, cocoa & coffee) and we do have hand sanitizer. We do **not** have running water; and, our "toilet" is of the composting variety.



*Courtesy Guy Brandenburg
 Jerry Schnall*

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Hopewell – continued from page 6

The drive is about an hour from DC; and, you'll have to hike about 100 yards from where you park. However, the entire observatory was hand-built by the labor of its founders, rather than by paid contractors (see the *Jerome Schnall* article on pages 4 & 6 of this newsletter). So, come out and enjoy the sky in the midst of their creation!

You can find detailed directions and a map to the observatory on my blog:

bit.ly/1NScOLj

The submission deadline for the October issue of Star Dust is Sept. 25th.

Clear Skies!

Calendar of Events

- **NCA Mirror- or Telescope-making Classes:** Tuesdays and Fridays, from 6:30 to 9:45 pm at the Chevy Chase Community Center (intersection of McKinley Street and Connecticut Avenue, N.W.) Contact instructor Guy Brandenburg at 202-635-1860 or email him at gfbrandenburg@yahoo.com.
- **Open house talks and observing at the University of Maryland Observatory** in College Park on the 5th and 20th of every month at 8:00 pm (Nov.-Apr.) or 9:00 pm (May-Oct.). Details: www.astro.umd.edu/openhouse
- **Phoebe Waterman Haas Public Observatory** at the National Air & Space Museum, Solar viewing, Wed. - Sun., 12 - 3 pm (weather permitting).
- **Astronomy Week:** Mon-Sun. Sept 14-20, worldwide.
- **International Observe the Moon Night:** Sat. Sept 19, worldwide. observethemoonnight.org/
- **Hopewell Observatory Open House:** Bull Run Mountain, VA, Sat/Sun. Sept 19/20. bit.ly/1NScOLj
- **Mid-Atlantic Senior Physicists Group:** "Elucidating the Role of Network Structure in Gene Regulation: Connecting Models and Data" with Michelle Girvan (UMD), Wed. Sept 23*, at 1 pm at the American Center for Physics (1st floor conference room). www.aps.org/units/maspg/
* This is the 4th Wed. instead of the 3rd.
- **Upcoming NCA Meetings** at the University of Maryland Observatory:
 - **10 October:** Timothy Stubbs (GSFC), "Meteor Shower Effects on Moon's Atmosphere."



HOPEWELL OBSERVATORY

National Capital Astronomers Membership Form

Name: _____ Date: ___/___/___

Address: _____ ZIP Code: _____

Home Phone: ___-___-___ E-mail: _____ Print / E-mail Star Dust (circle one)

Membership (circle one): Student..... \$ 5; Individual / Family.....\$10; Optional Contribution.....\$__

Please indicate which activities interest you:

- Attending monthly scientific lectures on some aspect of astronomy _____
- Making scientific astronomical observations _____
- Observing astronomical objects for personal pleasure at relatively dark sites _____
- Attending large regional star parties _____
- Doing outreach events to educate the public, such as Exploring the Sky _____
- Building or modifying telescopes _____
- Participating in travel/expeditions to view eclipses or occultations _____
- Combating light pollution _____

Do you have any special skills, such as videography, graphic arts, science education, electronics, machining, etc.?

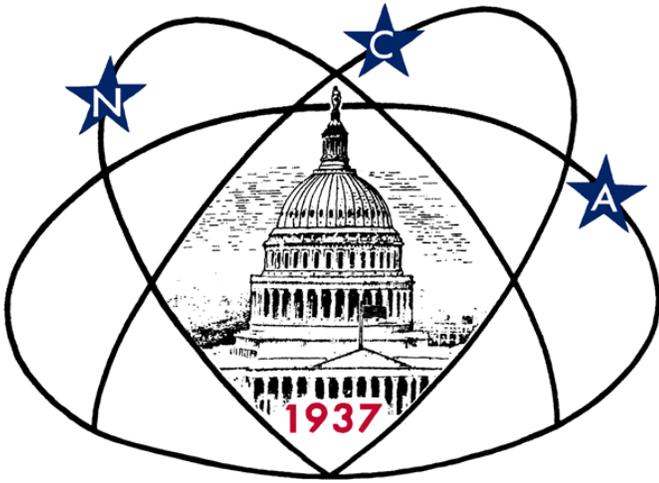
Are you interested in volunteering for: Telescope making, Exploring the Sky, Star Dust, NCA Officer, etc.?

Please mail this form with check payable to **National Capital Astronomers** to:
Henry Bofinger, NCA Treasurer; 727 Massachusetts Ave. NE, Washington, DC 20002-6007

National Capital Astronomers, Inc.

If undeliverable, return to
NCA c/o Elizabeth Warner
400 Madison St #2208
Alexandria, VA 22314

First Class
Dated Material



Next NCA Meeting:
2015 September 12th
7:30 pm
@ UMD Observatory

**Margaret M.
McAdam**

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