

Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

June 2015

Volume 73, Issue 10

Next Meeting

When: Sat. June 13th, 2015

Time: 7:30 pm

Where: UMD Observatory

Speaker: Science Fair Winners!

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Directions to Dinner/Meeting

The **June pre-meeting dinner**, to which the winners and their parents are invited, will be held at **Three Brothers Pizza** in Beltsville, MD.

The address is **10961 Baltimore Avenue** (aka Route 1), just south of Powder Mill Road. We've reserved the back room; everyone is welcome (no additional reservations are required) so please plan to arrive before about 5:30.

The meeting is held at the UMD Astronomy Observatory on Metzert 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.

Science Fair Winners

John Hornstein

Each spring, the NCA sends judges to local regional science fairs in order to identify good projects in astronomy.

Our awards consist of:

- A certificate
- An invitation to speak at our June meeting
- One year of free membership in the NCA
- A one year subscription to Sky & Telescope

Congratulations to the following 2015 winners (in alphabetical order):

Elias Applebaum (Eastern Middle School)

Mirror, Mirror: Solving the Turned-Down Edge Optical Defect in Parabolic Reflecting Telescopes

Isaac Applebaum (Eastern Middle School)

Mirror, Mirror: Solving the Turned-Down Edge Optical Defect in Parabolic Reflecting Telescopes

Shraeya Madhu (Poolesville High School)

Ferrying the Fluid

Mithi Penaranda (St. Timothy Catholic School)

Can you Spot the Sunspot?

Marinna Rodarte (Nativity School)

Reach for the Stars [Parallax]

Kennedy Salamat (North Bethesda Middle School)

Effect of Solar Mass Loss on the Orbital Stability of Lagrangian Points L1, L2, L4 and L5 in Sun-Earth System

Tanya Vorder Bruegge (Holy Cross Academy)

Are the Stars Going Out?

P. J. Whitworth (Our Lady of Good Counsel School)

Light Pollution in Our Eye

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.

Captain Neutron Meets Hard Science



© 2014 CLAY YOUNT




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Sky Watchers

Summer Schedule

June

2	12:19 pm – Full Moon , Global. Other Moon Names: <i>Full Strawberry Moon (Native American - for the time of ripening fruit), Full Rose Moon (Europe)</i>
6	9:00 pm - Exploring the Sky , Local. Features: <i>Jupiter, Venus & Vega</i>
8-17	Evening – Globe at Night , Global. Features: <i>Constellation Boötes (N. Hemisphere) & Scorpius (S. Hemisphere)</i>
14	10:00 pm – Planets , N. Hemisphere. Mercury 0.04° north of Moon
20	8:00 pm – Planets , N. Hemisphere. Jupiter 5° north of Moon
21	12:39 pm – Summer Solstice , N. Hemisphere. 
22 (peak)	2:00 am – Meteors , N. Hemisphere. <i>Boötids (northwest sky).</i>
30	Evening – Planets , N. Hemisphere. Venus & Jupiter appear < 1° apart (look in western sky after sunset)

Times EDT

continued on page 3

Major Tom Rides Again



Courtesy Chris Hadfield

Commander Chris Hadfield made a video in May 2013 as his goodbye to the International Space Station (ISS). He used [David Bowie's "Space Oddity"](#) and had legal rights to post the ISS version for 1 year (after which, YouTube removed it).

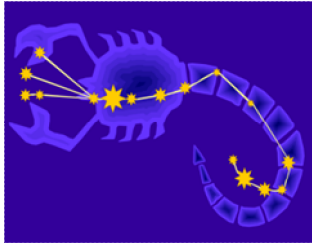
However, in late 2014, Hadfield announced that (after a somewhat lengthy legal rights process) the video would be available again with a 2-year agreement. If you haven't seen it, here's your last chance!

So, with over 25 million views, here is Cmdr. Hadfield's *ISS Oddity*. <https://youtu.be/KaOC9danxNo>.

Sky Watchers – continued from page 2

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 Summer and Autumn

- 6 June (9:00 pm) - Jupiter and Venus setting; Vega
- 11 July (9:00 pm) - Summer Triangle; Saturn near Scorpius
- 15 Aug (8:30 pm) - Andromeda rising; Mercury setting
- 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

Summer Schedule

July

1	Evening – Planets , N. Hemisphere. Venus & Jupiter appear < 1° apart (look in western sky after sunset) 10:20 pm – Full Moon , Global. Other Moon Names: <i>Full Buck Moon</i> (for the time bucks grow new antlers), <i>Full Thunder Moon</i>
6	4:00 pm – Planets , Global. Earth at aphelion (94.5 million miles from Sun) Evening – Planets , N. Hemisphere. Pluto visibility greatest (mag. 14.1 in Constellation Sagittarius)
7-16	Evening – Globe at Night , Global. Features: <i>Constellation Boötes</i> (N. Hemisphere) & <i>Scorpius</i> (S. Hemisphere)
9	Evening – Planets , N. Hemisphere. Venus brightest (mag. - 4.7)
11	9:00 pm - Exploring the Sky , Local. Features: <i>Summer Triangle</i> , <i>Saturn</i> & <i>Scorpius</i>
31	6:43 am – Blue Moon , Global. Second full moon in the same month



Times EDT

August

5-14	Evening – Globe at Night , Global. Features: <i>Constellation Cygnus</i> (N. Hemisphere) & <i>Sagittarius</i> (S. Hemisphere)
13 (peak)	Pre-dawn – Meteors , N. Hemisphere. <i>Perseids</i> (northeast sky)
15	8:30 pm - Exploring the Sky , Local. Features: <i>Andromeda</i> & <i>Mercury</i>
29	2:35 pm – Super Moon , Global. (Full Moon close to Earth appears larger than usual) Other August Full Moon Names: <i>Full Blueberry Moon</i> , <i>Full Green Corn Moon</i> , <i>Full Sturgeon Moon</i>

Times EDT



International Observe the Moon Night

September 19th, 2015

observethemoonnight.org/

June Election Information

John Hornstein

Although the NCA elections are a month away, following is an early list of candidates, appointments and policy questions for consideration.

Executive Officers

<u>Position</u>	<u>Current</u>	<u>Candidate(s)</u>
President	Alexander Klein	Joseph Morris
Vice President	John Hornstein	John Hornstein
Secretary-Treasurer	Henry Bofinger	Henry Bofinger
Assistant Secretary-Treasurer	Jeff Norman	Jeff Norman

Trustees

<u>Current</u>	<u>Candidate(s)</u>
Harold Williams (to June 2016)	Harold Williams (to June 2020)
Benson Simon (to June 2017)	N/A
Joe Morris (to June 2018)	Andrew Seacord (to June 2018)
Wayne Warren (to June 2019)	N/A

Appointed Officers and Committee Heads

<u>Committee</u>	<u>Officer/Head</u>	<u>Contact Information</u>
Exploring the Sky	Jay Miller	rigel1@starpower.net
Telescope Making	Guy Brandenburg	gbrandenburg@yahoo.com 202-635-1860
NCA Webmaster	Elizabeth Warner	warnerem@astro.umd.edu
Star Dust Editor	CA Brooks	NCAstardust@gmail.com

Policy Decisions

<u>Topic</u>	<u>Policy</u>
Science Fairs	The NCA <ul style="list-style-type: none"> • should • should not continue judging at the local regional science fairs.

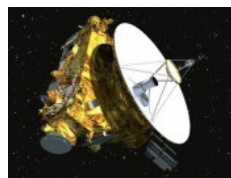
Note: Before the show-of-hands vote, members are welcome to argue for or against a policy position.



The World At Night
TWAN

www.twanight.org/

First Pluto Close-up



Courtesy NASA/JPL

New Horizons Spacecraft
July 14th, 2015 – 7:49 am EDT

pluto.jhuapl.edu/

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Please Get Star Dust Electronically

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Thank you!



INTERNATIONAL
YEAR OF LIGHT
2015



UNESCO's 2015 International Year Theme is **"Light and Light-Based Technologies."** A segment of this theme has been allocated to the night sky, including star gazing, dark sky awareness issues, cosmic radiation and the centenary anniversary of the general theory of relativity.

www.light2015.org/Home/CosmicLight.html

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

2015							dur.	Ap.	
Date	Day	EDT	Star	Mag	Asteroid	dmag	s	"	Location, Notes
Jun 9	Tue	22:57	4U504052955	12.4	Thetis	0.8	4	8	PA, MD, DC, DE; nVA?
Jun 18	Thu	3:59	4U426132440	12.9	Bail lauda	3.4	7	9	eNC, eVA, MD, NJ; DC?
Jun 22	Mon	3:18	TYC05241996	11.6	Jovi ta	2.7	11	7	e&nVA, MD, wPA; DC?
Jul 15	Wed	2:47	TYC68450189	11.0	Pushkin	5.4	4	8	ePA, MD, WV; DC, VA?
Jul 24	Fri	22:39	4U378106316	12.1	Bressol e	3.0	5	8	PA, wMD, WV; nVA?
Aug 14	Fri	1:45	TYC05271259	9.6	Rhodesi a	5.5	3	4	NJ, MD, DC, nVA, HI
Aug 24	Mon	22:14	SAO 144876	8.4	1998 FH113	7.3	2	2	sePA, MD, nVA; DC?
Sep 9	Wed	4:22	TYC69710358	11.1	Aeterni tas	1.4	5	8	wSC, NC, seVA; sMD?
Sep 14	Mon	2:57	2UC41524279	12.2	Emma	2.4	5	8	w&nVA, MD, DC, NJ

Lunar Grazing Occultations

2015									
Date	Day	EDT	Star	Mag	% alt	CA	Location & Remarks		
Jun 22	Mon	21:39	SAO 118638	7.3	37+ 30	ON	Emi tsbg, Wstmnstr, &neBal tmr, MD		
Jul 10	Fri	4:28	SAO 92942	7.6	33- 31	OS	Barborsvl &Sbri dg, VA; Cl intn, MD		

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

Total Lunar Occultations

2015									
Date	Day	EDT	Ph Star	Mag	% alt	CA	Sp.	Notes	
Jun 20	Sat	21:35	D SAO 98621	8.0	20+ 19	66S	A5	Sun altitude -10 deg.	
Jun 22	Mon	21:33	D X120230	8.0	37+ 32	12N	F0	Sun-10, D -2s from next	
Jun 22	Mon	21:33	D SAO 118638	7.3	37+ 32	12N	F0	X120230 1.2", PA 123 dg.	
Jun 23	Tue	20:59	D ZC 1708	6.2	46+ 41	90N	F7	Sun alt. -5 deg.	
Jun 24	Wed	23:57	D ZC 1814	6.7	56+ 16	54N	K5	mg10 stars 57" & 165"	
Jun 28	Sun	23:00	D theta Lib	4.1	90+ 34	47N	K0	ZC 2271, close double?	
Jul 6	Mon	2:52	R 67 Aquari i	6.4	78- 36	28S	A0	ZC 3334	
Jul 10	Fri	3:44	R ZC 350	7.6	33- 23	17N	G5	MD graze	
Jul 10	Fri	4:32	R SAO 92942	7.6	33- 32	5S	B9		
Jul 10	Fri	4:39	R xi Arietis	5.5	33- 33	69S	B7	ZC 354; close double??	
Jul 10	Fri	5:12	R SAO 92948	7.3	33- 39	43S	G0	Sun altitude -7 deg.	
Jul 11	Sat	3:41	R ZC 475	7.5	23- 15	53N	A0	Azimuth 84 degrees	
Jul 12	Sun	5:14	R ZC 627	6.6	14- 23	84N	K1	Sun altitude -7 deg.	
Jul 26	Sun	23:33	D SAO 159919*	7.2	78+ 25	71N	F5		
Jul 27	Mon	0:42	D SAO 159935	7.2	78+ 16	65S	A0		
Jul 28	Tue	21:13	D SAO 161255	7.4	92+ 27	56N	B2	Sun -9, close double??	
Jul 29	Wed	0:05	D Y Sgr	5.8	93+ 31	35N	F8	ZC2658, spec. binary	
Jul 30	Thu	0:25	D rho1 Sgr	3.9	98+ 33	43N	F0	ZC2826, close double?	
Aug 1	Sat	23:27	R ZC 3270	5.8	96- 24	72S	K3	Axis Angle 249 degrees	
Aug 3	Mon	2:58	R ZC 3431	6.6	89- 46	75S	F2		
Aug 5	Wed	6:10	R SAO 109791	7.7	69- 56	84S	G5	Sun altitude -1 deg.	
Aug 7	Fri	4:26	R ZC 454	5.6	47- 45	55N	K3		
Aug 8	Sat	3:43	R ZC 592	7.7	36- 29	87N	G5		
Aug 9	Sun	4:17	R ZC 741	5.5	26- 26	84N	K1	Close double?	
Aug 11	Tue	5:28	R SAO 96138*	9.0	10- 37	85N	F8	Sun altitude -9 deg.	
Aug 20	Thu	20:51	D 2 Li brae	6.2	33+ 22	70N	G7	Sun alt. -11, ZC 2060	
Aug 20	Thu	21:46	D ZC 2064	6.3	33+ 13	38N	F4	Az. 243, mg2 8 1.1", PA91d	
Aug 22	Sat	19:08	D 49 Li brae	5.5	52+ 35	38N	F7	Sun+8, ZC2291, m2 11, 141"	
Aug 23	Sun	23:10	D ZC 2441	6.6	63+ 18	50N	G0		
Aug 24	Mon	23:30	D ZC 2578	6.5	73+ 22	50N	A1		
Sep 1	Tue	2:17	R ZC 109	6.4	91- 52	46S	K0		
Sep 2	Wed	1:56	R ZC 269	7.0	83- 46	29S	K0	Mg2 12 sep. 18", PA 278	
Sep 2	Wed	5:58	R ZC 283	6.6	82- 52	43N	M0	Sun altitude -8 degrees	
Sep 5	Sat	0:38	R Aldebaran	0.9	52- 8	61N	K5	Az. 76, ZC 692=alphaTau	
Sep 6	Sun	5:22	R ZC 858	7.0	39- 52	42S	M*		
Sep 7	Mon	2:19	R SAO 95745	7.6	30- 8	51N	A2	Azimuth 74 degrees	
Sep 7	Mon	3:07	R SAO 95771	7.3	30- 17	74S	K0	Mag2 11 sep. 24", PA 24	
Sep 7	Mon	3:19	R SAO 95791	7.9	30- 19	49N	K0		
Sep 7	Mon	5:24	R ZC 1011	7.3	29- 43	57N	K0		
Sep 8	Tue	2:47	R SAO 96848	7.1	21- 4	45N	K0	Azimuth 71 degrees	
Sep 9	Wed	6:11	R SAO 97756	7.9	13- 31	20S	K0	Sun altitude -7 degrees	
Sep 9	Wed	6:14	R ZC 1257	7.3	13- 32	33N	K0	Sun altitude -6 degrees	
Sep 10	Thu	4:50	R SAO 98382	7.3	7- 6	42S	K0	Azimuth 79 degrees	

*The star is in the Kepler 2 exoplanet search program so lightcurves of the occultation are desired to check for close stellar duplicity.

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

2014-2015 Officers

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- Harold Williams (2016)
- Benson Simon (2017)
- Joe Morris (2018)

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Bring Your Astro Photos to the Meeting

John Hornstein

Our members make striking photos of astronomical objects, and we all want to see them. Therefore, bring favorite photos that you have made of astronomical objects this year to show at the June meeting. If you bring them on a USB data stick, we can project them from the Observatory's computer. Expect some audience members to come up to you after everyone has shown their photos, to ask you how you made yours.

To save time, please bring only your astronomical objects photos



hubble25th.org/



Publicity image (cc)

**Star Trek 50th Anniversary
 1966 - 2016**

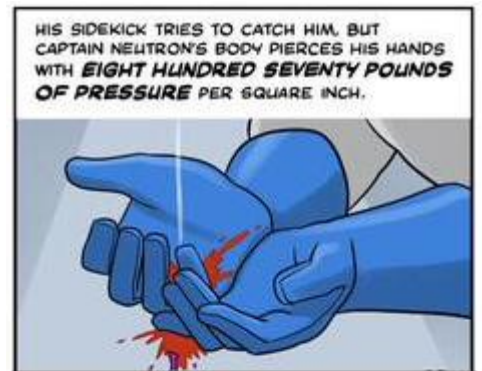
The Great North American Eclipse



August 21st, 2017

www.greatamericaneclipse.com/

Captain Neutron Meets Hard Science – continued from page 2



WWW.HAMLETSOANISH.COM

© Clay Yount (used with permission)

Bugblatter Beast of Traal? No Problem! I've got a Towel!



Courtesy Sam Christoforetti

ISS astronaut, Samantha Christoforetti, is wearing a "Don't Panic" shirt as she reads from *The Hitchhiker's Guide to the Galaxy* and holds a towel. The author of the guide, Doug Adams, is celebrated every May 25th (aka, "Towel Day") as fans carry their space towels, especially fans who are actually in space!

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 Festival on the National Mall:** Fri. June 19, 6 - 11 pm at the Washington Monument.
- **Mid-Atlantic Senior Physicists Group:** "Applications of Quantum Information Science for the Next Decade" with Jacob Taylor (NIST & UMD), Wed. June 24*, 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.
- **Wallops Flight Facility 70th Anniversary Open House,** Sat. June 27, 10 am - 4 pm in Wallops Island, VA. www.nasa.gov/content/wallops-flight-facility-70th-anniversary
- **1st Annual Asteroid Day:** Tues. June 30, worldwide. www.asteroidday.org/
- **Upcoming NCA Meetings** at the University of Maryland Observatory:
13 June: Science Fair Winners, Astrophotography & Elections!

Clear Skies!

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.?

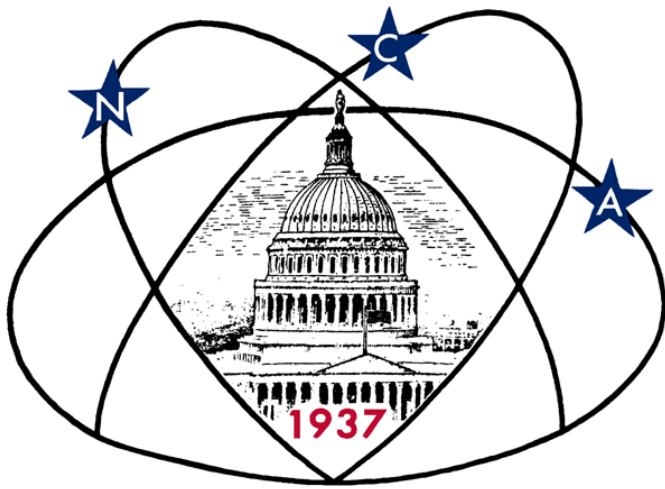
Are you interested in volunteering for: Telescope making, Exploring the Sky, Star Dust, NCA Officer, etc.?

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 June 13th
7:30 pm
@ UMD Observatory

**Science Fair
Winners**

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