

# Star Dust

Newsletter of National Capital Astronomers, Inc.

[capitalastronomers.org](http://capitalastronomers.org)

June 2016

Volume 74, Issue 10

## Next Meeting

**When:** Sat. June 11th, 2016

**Time:** 7:30 pm

**Where:** UMD Observatory

**Speakers:** Science Fair  
Winners!

## Table of Contents

Science Fair Winners.....	1
Sky Watchers.....	2
June Elections.....	4
Bring your Astrophotos.....	4
Occultations.....	5
Mars Viewing.....	6
Calendar.....	7

## 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 a large table; everyone is welcome (no additional reservations are required); please plan to arrive at about 5:30 pm or before.

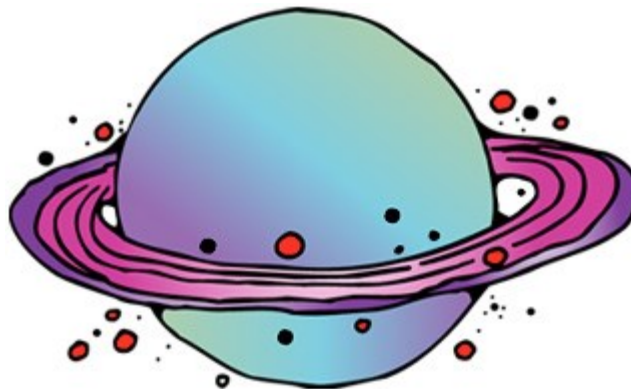
The meeting is held at the UMD Astronomy Observatory on Metzger Rd about halfway between Adelphi Rd and University Blvd.

## 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](mailto:rigel1@starpower.net).

## 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 2016 winners (in alphabetical order):

**Joy Anyanwu** (Roberto Clemente Middle School)

*Solar Cycle Effect on Coronal Mass Ejection Speed*

**Kun Do** (Thomas Wootton High School)

*Relationship between Sunspot Group Area and Solar Flare X-ray Flux*

**Shreeya Khurana** (Takoma Park Middle School)

*Geomagnetic Storms*

**Lara Ojha and Anika Seth** (Takoma Park Middle School)

*Is There A Relationship Between Coronal Mass Ejections and High Energy Solar Radiation?*

**Shreya Vangara** (Poolesville High School)

*Predicting Cosmic Ray Flux*

### 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.

#### Rocket Girls

Everyone has heard of the “[Rocket Boys](#)” of West Virginia, who were inspired by the 1957 Sputnik launch. However, in the 1940s, a team of scientists & mathematicians (later to become JPL) started working on a project to carry the US into space, to the Moon and to Mars. Many of the team members were women who performed the necessary math calculations with only pencils, graph paper and analytical prowess. They are the original “*Rocket Girls*.” Nathalia Holt tracked the women down and has told their stories in her book, which was released in April.

***“There is hardly a mission that you can find in NASA that these women haven’t touched.”***

*(Nathalia Holt, author of Rise of the Rocket Girls: The Women Who Propelled Us, from Missiles to the Moon to Mars)*




Courtesy JPL/Caltech

Some of the many women mathematicians (the rocket girls referred to as “human computers”) who launched JPL’s satellite and planetary endeavors (1953).

## Sky Watchers

## Summer Schedule

### June

17	6:00 am - <b>Planets</b> , N. Hemisphere. Mars 7° south of Moon
18	8:00 pm - <b>Planets</b> , N. Hemisphere. Saturn 7° south of Moon
19	5:00 pm – <b>Planets</b> , N. Hemisphere. Mercury 4° north of Aldebaran
20	7:02 am – <b>Full Moon</b> , Global. Other Moon Names: <i>Full Strawberry Moon (Native American - for the time of ripening fruit), Full Rose Moon (Europe)</i>  6:34 pm – <b>Summer Solstice</b> , N. Hemisphere. 
25	9:00 pm - <b>Planets</b> , N. Hemisphere. Neptune 1.2° south of Moon
27-30	Evening – <b>Globe at Night</b> , Global. Features: <i>Constellation Hercules (N. Hemisphere) &amp; Scorpius (S. Hemisphere)</i>
28	7:00 pm - <b>Planets</b> , N. Hemisphere. Uranus 3° north of Moon

Times EDT

### July

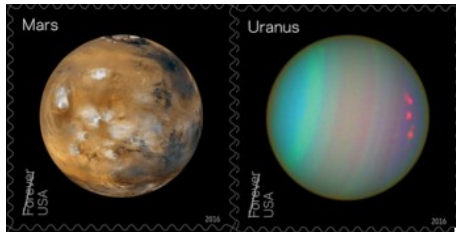
1-6	Evening – <b>Globe at Night</b> , Global. Features: <i>Constellation Hercules (N. Hemisphere) &amp; Scorpius (S. Hemisphere)</i>
9	9:00 pm - <b>Exploring the Sky</b> , Local. Features: <i>Summer Triangle, Moon &amp; Jupiter</i>
16	1:00 am - <b>Planets</b> , N. Hemisphere. Saturn 3° south of Moon
19	6:57 pm – <b>Full Moon</b> , Global. Other Moon Names: <i>Full Buck Moon (for the time bucks grow new antlers), Full Thunder Moon</i>
28-31	Evening – <b>Globe at Night</b> , Global. Features: <i>Constellation Cygnus (N. Hemisphere) &amp; Sagittarius (S. Hemisphere)</i>

Times EDT

*continued on page 3*

### New USPS Stamps Honoring Planetary Discoveries

The US Postal Service released new 'forever' stamps on May 31<sup>st</sup>, honoring NASA's exploration of the Solar System. The series is called "View of Our Planets" and includes: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus & Neptune.



Courtesy USPS©/Antonio Alcalá  
USPS Mars & Uranus stamp images.

During the historic fly-by in July 2015, New Horizons spacecraft carried a cancelled 1991 stamp with it called "Pluto: Not Yet Explored." Now, USPS



Courtesy CollectSpace.com  
1991 Pluto Stamp.

has issued a "Pluto – Explored!" stamp series that is available for online purchase.



Courtesy USPS©/Antonio Alcalá  
2016 Pluto Stamps.

Sky Watchers – continued from page 2

## Sky Watchers

## Summer Schedule

### August

6	8:30 pm - <b>Exploring the Sky</b> , Local. Features: <i>Andromeda &amp; Mercury</i>
9-13 (peak)	Pre-dawn – <b>Meteors</b> , N. Hemisphere. <i>Perseids</i> (northeast sky)
18	5:27 am – <b>Full Moon</b> , Global. Other Moon Names: <i>Full Blueberry Moon, Full Green Corn Moon, Full Sturgeon Moon</i>

Times EDT

### 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 in Rock Creek Park once each month on a Saturday night from April through November, Beginners (including children) and experienced stargazers are all welcome—and it's free!

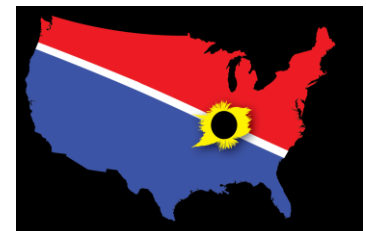
### 2016 Observation Dates

- 4 June (9:00 pm) – Vega & 3 planets
- 9 July (9:00 pm) – Summer Triangle, Moon & Jupiter
- 6 August (8:30 pm) – Andromeda & Mercury
- 3 September (8:00 pm) – Mars, Saturn, Antares & Vega
- 1 October (7:30 pm) – Summer Triangle
- 5 November (7:00 pm) – Pleiades & Winter Constellations

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

## The Great North American Eclipse

Aug 21<sup>st</sup> 2017



[www.greatamericaneclipse.com/](http://www.greatamericaneclipse.com/)

# June Election Information

*John Hornstein,  
Reporting for the Nominating Committee*

Following is a list of candidates and appointments for consideration before the June meeting.

## Executive Officers

Position	Current	Candidate(s)
President	Joseph Morris	Joseph Morris
Vice President	John Hornstein	John Hornstein
Secretary-Treasurer	Henry Bofinger	Henry Bofinger
Assistant Secretary-Treasurer	Jeff Norman	Jeff Norman

## Trustees

Current	Candidate(s)*
Harold Williams (to June 2016)	Harold Williams (to June 2020)
Benson Simon (to June 2017)	N/A
Joe Morris (to June 2018)	N/A
Wayne Warren (to June 2019)	N/A

\* Note: Only one Trusteeship opening occurs each year.

## Appointed Officers and Committee Heads

Committee	Officer/Head	Contact Information
Exploring the Sky	Jay Miller	jhmiller@me.com
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

## Bring Your Astrophotos 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 photos of astronomical objects \*\**

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## Please Get Star Dust Electronically

• NCA members able to receive Star Dust,  
 • the newsletter of the NCA, via e-mail as a  
 • PDF file attachment, instead of hardcopy via  
 • 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  
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 • switch from paper to digital, please contact  
 • Henry Bofinger, the NCA Secretary-  
 • Treasurer, at [hbofinger@earthlink.net](mailto:hbofinger@earthlink.net)

*Thank you!*

## ALCon - Washington DC



**August 10 – 13, 2016**

• *The Annual Astronomical League  
 • Convention includes space exploration  
 • & astronomy talks, special tours, an  
 • awards banquet, "Star-B-Que" and  
 • more!*

**Hosted by NOVAC and the  
 Astronomical League**

<https://Alcon2016.astroleague.org>



## 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

2016							dur.	Ap.	
Date	Day	EDT	Star	Mag	Asteroid	dmag	s	"	Location, Notes
Jun 17	Fri	23:29	4U335080241	12.7	Germania	0.5	18	9	NJ,MD,DC,PA;nVA?
Jun 25	Sat	2:46	TYC62853840	11.4	Dermott	3.8	3	6	seNY,e&sPA;MD?
Jul 4	Mon	23:59	4U427064017	13.4	Corduba	1.2	12	11	PA,OH;MD,DC,nVA?
Jul 8	Fri	23:34	TYC52140031	10.6	Rhodia	2.2	4	5	nVA,WMD,swPA;DC?
Jul 18	Mon	22:12	SAO 183499	9.1	Mars		1435	10	eUSA,eCanada
Jul 21	Thu	3:42	2UC28448068	11.8	Camilla	1.2	19	7	NJ,DE,MD,DC,VA
Jul 28	Thu	2:55	TYC57070927	11.6	Eudora	1.0	11	7	NJ,MD,DC,n&wVA
Aug 19	Fri	21:22	2UC27737945	12.3	Camilla	1.1	29	8	PA,WMD,WV;DC?
Aug 27	Sat	0:29	SAO 126327	7.5	Io	2.9	28	2	eIA,MO,OK,CTX

### Lunar Grazing Occultations

2016									
Date	Day	EDT	Star	Mag	% alt	CA	Location & Remarks		
Jun 11	Sat	21:36	SAO 118753	8.3	47+ 41	3N	Potomac&UpperMarlboro, MD;DC		
Jul 19	Tue	3:20	43 Sgr	4.9	99+ 21	27S	Aquia,VA;Brandywine,KentIs,MD		
Jul 29	Fri	3:29	80 Tauri	5.6	24- 14	-1S	*Myrsvil,MD;RedLion,Potstn,PA		
Jul 29	Fri	3:39	81 Tauri	5.5	24- 15	-1S	*Danvil,Chestr,VA;AsategIs,MD		
Jul 29	Fri	6:07	Aldebaran	0.9	23- 28	3N	ElPaso,TX;Edmnd,OK;StLouis,MO		
Aug 22	Mon	2:14	ZC 202	6.9	81- 45	7N	Woodbridg,MtVernn,VA;Largo,MD		
Aug 22	Mon	5:28	ZC 212	7.2	80- 55	7N	Lynchbg,Ladysmth,VA;RockPt,MD		
Aug 27	Sat	2:47	ZC 934	6.4	26- 9	5N	*wrightsville,VA;Calif.,MD		
Aug 27	Sat	4:50	ZC 951	6.6	25- 33	6N	*4 Oaks,Aydlett,sCorolla,NC		

\* No expedition currently planned from the DC region

### Total Lunar Occultations

2016									
Date	Day	EDT	Ph Star	Mag	% alt	CA	Sp. Notes		
Jun 14	Tue	1:40	D ZC 1850	6.5	67+ 7	53S	K0 Az. 259, close double?		
Jun 18	Sat	0:19	D 49 Librae	5.5	95+ 33	73S	F7 ZC 2291 /ZC2715		
Jun 22	Wed	5:10	R ZC 2865	5.7	96- 23	80N	K0 Sun -6, Axis Angle 273		
Jun 26	Sun	5:56	R phi Aqr	4.2	65- 45	45S	M2 Sun +1 deg., ZC 3412		
Jul 7	Thu	21:36	D SAO 118138	7.1	15+ 13	14N	M3 Sun alt. -11, Az. 272		
Jul 12	Tue	0:14	D ZC 1920	6.6	51+ 6	83S	K0 Azimuth 257 degrees		
Jul 12	Tue	21:18	D ZC 2016*	6.7	60+ 37	74N	A0 Sun alt. -8 deg.		
Jul 12	Tue	23:15	D 95 Vir*	5.5	60+ 22	28N	F2 ZC 2022		
Jul 15	Fri	0:50	D eta Librae	5.4	78+ 16	57S	A6 ZC 2247		
Jul 19	Tue	3:13	D 43 Sgr	4.9	99+ 22	36S	K0 ZC2814,dbl?,TmD4,MDgrz		
Jul 27	wed	1:17	R ZC 368	6.2	47- 6	59N	K2 Az83, mg2 10 1.5" PA141		
Jul 29	Fri	2:25	R 71 Tauri	4.5	24- 2	71S	F0 Az72, ZC 661,close dbl?		
Jul 29	Fri	3:22	R theta1 Tau	3.8	24- 13	63N	G7 Az. 80,ZC 669,mg2 7 .2"		
Jul 29	Fri	3:25	R theta2 Tau	3.4	24- 13	84N	A7 Az. 80,ZC 671,close dbl		
Jul 29	Fri	3:51	R 81 Tauri	5.5	24- 18	18S	A5m ZC 678, VA/seMD graze		
Jul 29	Fri	4:06	R ZC 677	4.8	23- 21	31N	A6 close dbl? OH,WPA graze		
Jul 29	Fri	4:18	R ZC 680	6.5	23- 23	51N	F5 mag2 8 sep. .3" PA 297		
Jul 29	Fri	4:38	R 85 Tauri	6.0	23- 27	48S	F4 ZC 682, close double		
Jul 29	Fri	5:42	R ZC 685	6.6	23- 39	54N	F0 Sun alt. -5 deg.		
Jul 29	Fri	6:06	D Aldebaran=	0.9	23- 43	-38N	K5 Sun -1, AA 34, ZC 692		
Jul 29	Fri	6:53	R alpha Tau	0.9	23- 52	44N	K5 Sun +8, TX,OK,MO graze		
Jul 30	Sat	3:30	R 117 Tauri	5.8	15- 5	46S	M1 Azimuth 72, ZC 820		
Jul 31	Sun	5:42	R 20 Gem	6.9	7- 19	47S	G8 Sun -5, ZC 1002		
Jul 31	Sun	5:43	R 21 Gem	6.3	7- 19	48S	F6 Sun-5,ZC1003,close dbl?		
Aug 8	Mon	21:18	D SAO139556*	7.7	34+ 22	79S	G0		
Aug 8	Mon	22:01	D SAO139567*	7.8	34+ 14	54S	K2 Azimuth 247 deg.		
Aug 12	Fri	20:01	D ZC 2441	6.6	71+ 32	81S	G0 Sun alt. 0 deg.		
Aug 16	Tue	22:29	D ZC 3019	5.8	98+ 31	89N	K0		
Aug 24	wed	0:09	R ZC 462	6.0	61- 8	72S	B8 Az. 81, close double??		
Aug 25	Thu	3:49	R 48 Tauri*	6.3	48- 41	90S	F5 ZC 626		
Aug 25	Thu	6:06	R Hyadum I	3.7	47- 63	77S	G8 Sun -5, ZC 635, double?		
Aug 27	Sat	4:05	R X84696*	9.4	26- 24	58S			
Aug 27	Sat	4:45	R ZC 944	5.9	26- 32	74S	A6 ZC944,mg2 7.2 .3" PA144		
Sep 4	Sun	19:55	D 72 Vir	6.1	12+ 16	70N	F2 Sun-5,ZC1937,mg2 11 29"		
Sep 8	Thu	20:30	D 24 Sco	4.9	45+ 27	70S	G8 ZC 2399		

\* 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>.

## 2015-2016 Officers

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 202-675-1075

### Asst. Secretary-Treasurer:

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- Harold Williams (2016)
- Benson Simon (2017)
- Andrew Seacord (2018)
- Wayne Warren (2019)

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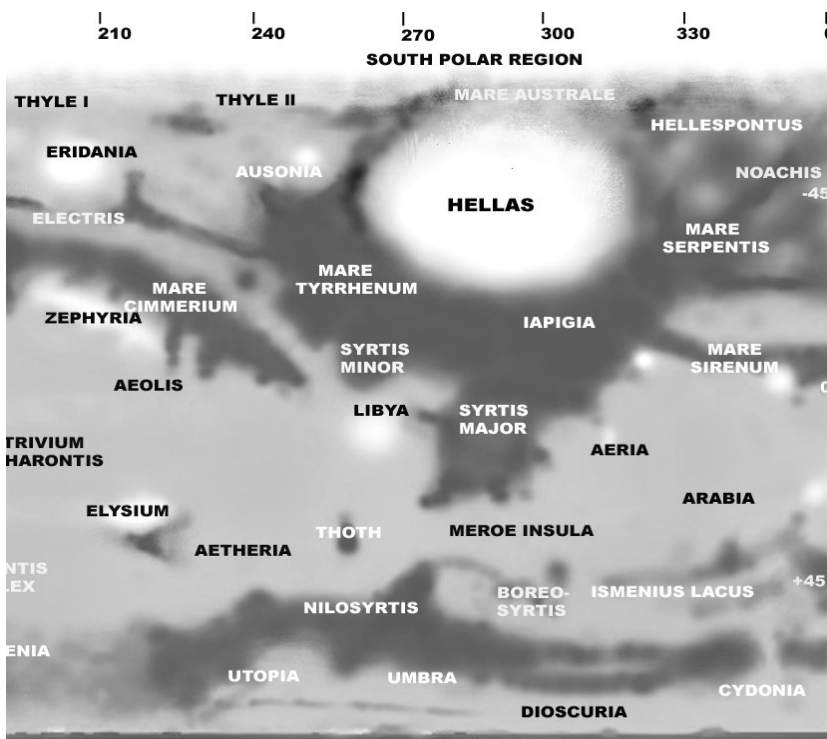
## Mars Viewing

Mars was in opposition (to the Sun) on May 22<sup>nd</sup> and closest to Earth (0.5 AU) on May 30<sup>th</sup>. However, there's still time to get a relatively close view of the planet. Observers using 4-inch telescopes or larger will be able to see features like the northern polar ice cap, Syrtis Major, Solis Lacus and the Hellas basin.



Courtesy NASA/JPL-Caltech

The relative size of Mars (compared to the Moon) during spring & summer 2016.

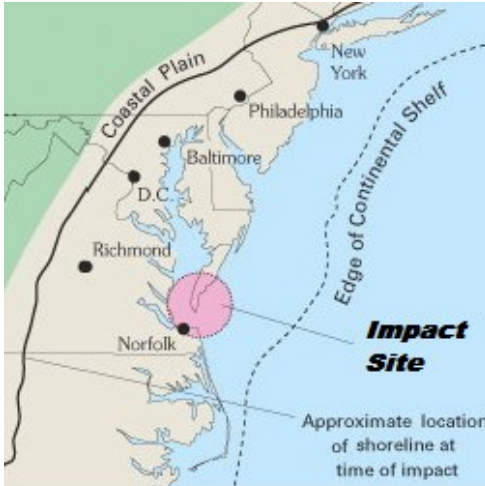


Courtesy NASA/JPL, USGS, [SEDS USA](#)

A few Mars surface features to observe this summer.

For a full surface map of Mars, click [here](#).

**Chesapeake Fireball**



Courtesy USGS

The 2<sup>nd</sup> annual Asteroid Day is June 30<sup>th</sup>. With that in mind, the east coast is home to the largest known impact site in the United States and the sixth largest in the world: the Chesapeake Bay Crater. The fireball struck about 36 million years ago and helped shape the bay.

**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 [gbrandenburg@yahoo.com](mailto:gbrandenburg@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](http://www.astro.umd.edu/openhouse)
- **Phoebe Waterman Haas Public Observatory** at the National Air & Space Museum, Solar viewing, Wed. - Sun., 12 - 3 pm (11 am - 3 pm, Jun.-Jul.) (weather permitting).
- **Astronomy Festival on the National Mall:** Fri. June 10, 6 - 11 pm at the Washington Monument. Hosted by [Hofstra University](http://Hofstra University).
- **Mid-Atlantic Senior Physicists Group:** "The Secret Lives of Solar Prominences" with Holly Gilbert (GSFC). Wed. June 15<sup>th</sup>, at 1 pm at the American Center for Physics (1<sup>st</sup> floor conference room). [www.aps.org/units/maspg/](http://www.aps.org/units/maspg/)
- **Howard Astronomical League** "The Great Solar Eclipse of 2017" with Chris Todd (President, HAL). Wed. June 16, at 7 pm at the Robinson Nature Center, 6692 Cedar Lane, Columbia, MD 21044. [www.howardastro.org/](http://www.howardastro.org/)
- **2<sup>nd</sup> Annual Asteroid Day:** Thurs. June 30, worldwide. [www.asteroidday.org/](http://www.asteroidday.org/)
- **ALCon:** Wed. - Sat., Aug. 10-13, 9 am - 8 pm at the National Rural Electric Cooperative Association (NRECA) Headquarters, VA (near Ballston).

**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.?

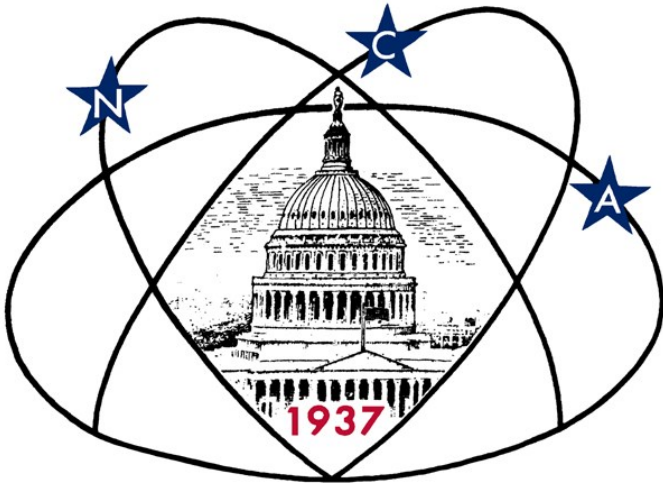
Are you interested in volunteering for: Telescope making, Exploring the Sky, Star Dust, NCA Officer, etc.?

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:*

**2016 June 11<sup>th</sup>**

**7:30 pm**

**@ UMD Observatory**

**Science Fair  
Winners**

## **Inside This Issue**

Science Fair Winners.....	1
Sky Watchers.....	2
June Elections.....	4
Bring Your Astrophotos.....	4
Occultations.....	5
Mars Viewing.....	6
Calendar.....	7