

# Star Dust

Newsletter of National Capital Astronomers, Inc.

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

June 2018

Volume 76, Issue 10

**Celebrating 81 Years  
of Astronomy**

## Next Meeting

**When:** Sat. June 9th, 2018

**Time:** 7:30 pm

**Where:** UMD Observatory

**Speakers:** Science Fair  
Winners

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## Directions to Dinner/Meeting

Our time and location for dinner with the Science Fair Winners before this meeting is 5:30 pm at **Azteca Restaurant and Cantina** at 9505 Baltimore Avenue (Route 1), College Park, MD 20740 across from the Honda dealership.

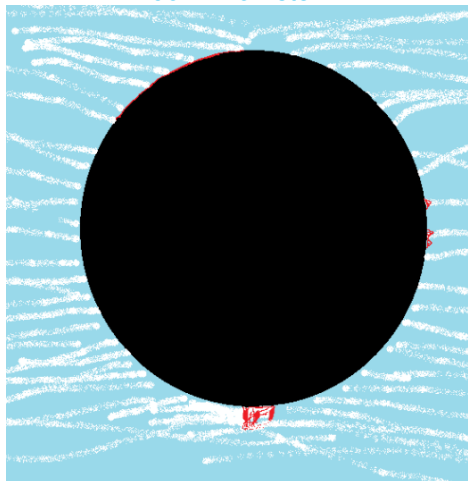
The National Capital Astronomers meeting is held at the UMD Astronomy Observatory on Metzert Rd about halfway between Adelphi Rd and University Blvd.

## 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



Drawing of the 2017 Solar Eclipse by Guy Brandenburg

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 2018 Winners

(in alphabetic order)

**Justin Chen** - Analyzing the Relation between Coronal Mass Ejections and Sunspots

**Shreeya Khurana** - A Comparison of Models that Predict Magnetopause Location Changes

**Shawn Zao and Cato Wang** - Statistical Analysis of Radial Velocity and Transit Photometry Methods of Exoplanet Detection

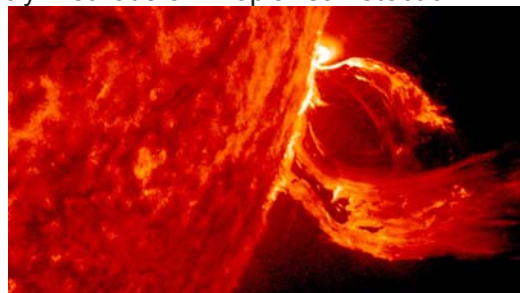


Image Credit: NASA/SDO

## Recent Astronomy Highlights

### Jupiter Captured an Interstellar Asteroid?

Last year an asteroid named Ouamumua became the first visitor from another star system to be detected by astronomers as it passed through our system. Now astronomers report that they have detected such an interstellar asteroid that was captured by Jupiter. The astronomers believe this to be the case because the asteroid, named 2015 BZ509, is in a retrograde orbit around Jupiter. Speculation is that the asteroid came to our system when the Sun was still in its stellar nursery, close to its sibling stars, allowing for easier transfer of such asteroids from one star system to another. More information is available at - [arxiv.org/pdf/1805.09013.pdf](https://arxiv.org/pdf/1805.09013.pdf)

### Possible New Galaxy Discovered Orbiting the Milky Way

Either a dwarf elliptical galaxy or a globular cluster, the recently discovered Hydrus 1 lies 90,000 light years from Earth, between the Large and Small Magellanic Clouds in a stream of neutral hydrogen known as the Magellanic Bridge. Ultra-faint and only a little over 300 light years in diameter, Hydrus 1 was imaged by the Dark Energy Camera on Chile's Blanco Telescope. A preliminary study of some of Hydrus 1's stars shows that it may be rotating, something not seen before in dwarf galaxies. For more information, see - [arxiv.org/pdf/1804.06430.pdf](https://arxiv.org/pdf/1804.06430.pdf)

### Evidence that the First Stars Had Formed by the Time the Universe was 250 Million Years Old

Astronomers report that the Atacama Large Millimeter Array (ALMA) has detected the signature of oxygen in an ancient galaxy designated MACS1149-JD1 that existed near the beginning of the Universe. Since oxygen forms in stars, this indicated that the first stars must have formed by 250 million years after the Big Bang, a time that is less than 2% of the current age of the Universe. More information can be found at - [arxiv.org/pdf/1805.05966.pdf](https://arxiv.org/pdf/1805.05966.pdf)

*continued on page 4*

## Different Views of the Great American Eclipse

- Without a doubt, one of the biggest astronomical events of the past year was the total solar eclipse on August 21, 2017. Past issues of Star Dust contain a number of stories from NCA members of their experiences of that event. Below are a few more ways of looking back at the eclipse.
- A spectacular eclipse picture, created by Jerry Lodriguss, is at - [www.astropix.com/eclipse/2017\\_Total\\_Solar\\_Eclipse\\_HDR\\_Corona.html](http://www.astropix.com/eclipse/2017_Total_Solar_Eclipse_HDR_Corona.html) (Thanks to Guy Brandenburg for pointing out this picture.)
- Google requested that people take pictures of the eclipse and send them in. To see the results of those efforts, go to [eclipsemega.movie/](http://eclipsemega.movie/)
- NASA's Earth Polychromatic Imaging Camera (EPIC) on the Deep Space Climate Observatory (DSCOVR) took images of the shadow of the Moon as it crossed the United States. Those images, made into a brief video, can be seen at - [www.nasa.gov/image-feature/goddard/2017/nasas-epic-view-of-2017-eclipse-across-america](http://www.nasa.gov/image-feature/goddard/2017/nasas-epic-view-of-2017-eclipse-across-america)
- Speaking of the Moon's shadow, an article was just published in Geophysical Research Letters confirming theorized effects of an eclipse on the atmosphere. The theory, first proposed in the 1970s, is that the cooling of the atmosphere by the fast-moving shadow of the Moon will draw in the air ahead of the shadow, causing a wave in the upper atmosphere. Such waves can have effects around the globe as confirmed by the fact that the writers of the paper detected the wave in Brazil nearly an hour after the eclipse. More information, as well as a video of the atmospheric motions during and after the eclipse, can be found at - [www.sciencenews.org/article/great-american-solar-eclipse-wave-atmosphere?mode=magazine&context=2738](http://www.sciencenews.org/article/great-american-solar-eclipse-wave-atmosphere?mode=magazine&context=2738)

## Upcoming Eclipses

- The coming **total solar eclipse of Monday, April 8, 2024** will be the only total solar eclipse visible in Mexico, the United States and Canada this century. In the United States, the path of totality will stretch from Texas up to Maine. A map of the totality path can be found at - [eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2024Apr08Tgoogle.html](http://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2024Apr08Tgoogle.html)
- And even before the total solar eclipse of 2024, there will be an **annular solar eclipse on Saturday, October 21, 2023** across parts of the western United States. An annular eclipse is one in which the Moon is farther away from Earth, therefore it is too small to completely cover the Sun. Instead when the Moon is centered over the Sun, the outer parts of the Sun appear as a ring. A map of the eclipse path is at - [eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2023Oct14Agoogle.html](http://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle2001/SE2023Oct14Agoogle.html)
- Upcoming total solar eclipses outside of the US include one on **July 2, 2019**, visible in the Southern Pacific and parts of South America, another on **December 14, 2020**, visible in the Southern Pacific and parts of South America and Antarctica, and one on **December 4, 2021** visible in the South Atlantic as well as parts of Antarctica and South Africa.

## Exploring the Sky



“Exploring the Sky” is an informal program that, for 70 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!

Hosted by: [National Capital Astronomers, Inc](http://www.capitalastronomers.org) and [Rock Creek Park](http://www.nps.gov/rocr/planyourvisit/expsky)

### 2018 Exploring the Sky Sessions

- 14 Jul 9:00 pm – Jupiter, Saturn, M13
- 11 Aug 8:30 pm – Jupiter, Saturn, M13
- 1 Sep 8:00 pm – Jupiter, Saturn, Mars
- 6 Oct 7:30 pm – Saturn, Mars
- 17 Nov 7:00 pm – Saturn, Mars, Uranus, Moon

More information can be found at NCA’s web site, [www.capitalastronomers.org](http://www.capitalastronomers.org) or the Rock Creek Park web site, [www.nps.gov/rocr/planyourvisit/expsky.htm](http://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](http://www.astronomyindc.org)

**Planning an astronomy adventure over the Summer? If so, and if there’s a story to tell, please consider sharing it with your fellow NCA members in issues of next year’s Star Dust. The submission deadline for September’s Star Dust, is August 21st.**

**Clear Skies!**

## Sky Watchers

### Summer Overview

Venus continues to dominate the early evening sky as it rises toward its maximum elongation on August 18. Jupiter, Saturn and Mars will be up for most of the night throughout the Summer. Mercury joins Venus in the evening sky for the first half of Summer before transitioning to the morning sky in early August.

### Late June

6/21	Summer Solstice – 6:07 a.m.
6/27	Saturn at Opposition and closest to Earth.
6/28	Full Moon. 12:53 a.m. Known as the Strawberry Moon because it is around the time that fruit is ripening.

### July

7/12	Mercury at Greatest Eastern Elongation. The planet will be at 26.5 degrees from the Sun and at its highest in the sky at sunset.
7/27	Full Moon. 4:22 p.m. Known as the Buck Moon because it is when male deer begin growing new antlers.
7/27	Mars at Opposition and closest to Earth.
7/28, 29	Peak of the Delta Aquarids Meteor Shower – 20 meteors/hour. Unfortunately, this year’s peak will be during a night with an almost full moon. Best viewing in the hours before dawn.

### August

8/12, 13	Peak of the Perseids Meteor Shower – 60 meteors/hour. Viewing conditions should be ideal with a crescent moon setting early that night. Best viewing in the hours before dawn.
8/17	Venus at greatest Eastern Elongation. The planet will be 45.9 degrees from the Sun and at its highest in the sky at sunset.
8/26	Full Moon. 7:27 a.m. Known as the Sturgeon Moon because that is the time of year when the fish was caught in abundance by Native Americans.
8/26	Mercury at Greatest Western Elongation. The planet will be 18.3 degrees from the Sun and at its highest in the sky before dawn.

*Times in EDT*

(Correction: In the May 2018 issue of Star Dust, the Full Moon was listed as taking place on 5/19 instead of the correct date of 5/29. Apologies for any confusion to all lunar observers.)



# Almost Heaven Star Party 2018

Guy Brandenburg

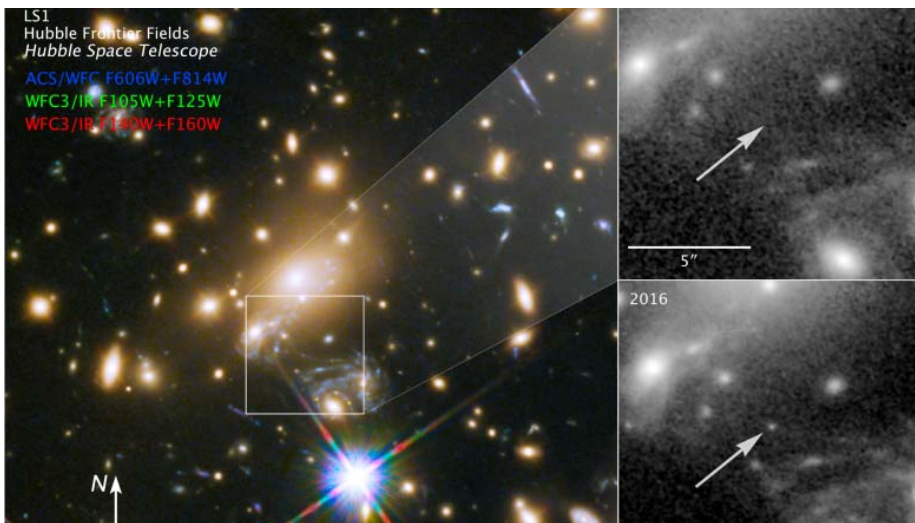
If you like to observe stars and galaxies under truly dark skies but don't want to travel to the Rockies or to deserts overseas, consider attending the Almost Heaven Star Party, which is held in the late summer at a site formerly known as "The Mountain Institute" right next to Spruce Knob — the highest point in West Virginia.

The views from the sites towards the south are astonishing because you are looking DOWN towards the center of the Milky Way. The closest light dome, from Moorefield WV, is really very small. When the skies are clear, and the Milky Way is overhead, extending from the southern to the northern horizon, an amazing number of Messier objects can be seen with your naked eyes. Unfortunately, the location has unpredictable orogenic weather and can be very dewy at times, even if it's clear — unlike out West. So, it's best to be prepared.

I have found the organizers and attendees to very nice and friendly. The long weekend of the Star Party allows you to have a fairly civilized camping experience. RVs are welcome, and so are tent campers. If you want to cook your own food, great. Or you can eat the rather tasty meals provided by the Institute staff at the main yurt for \$35/day. There is a limited number of bunk beds in some cabins, but don't count on being able to get one since they go fast.

The organizers (NOVAC) have organized quite a variety of daytime activities on or off site: visiting Green Bank's NRAO, spelunking, geology hikes, numerous talks on various topics astronomical, and even an antique steam railroad ride.

If you go, make a careful list and be sure you have EVERYTHING you need, because the nearest store is at least 90 minutes away. You can NOT register on site, nor drive in after dark. This year, the event is September 7-11. The FAQs page is [www.ahsp.org/frequently-asked-questions/](http://www.ahsp.org/frequently-asked-questions/). And the overall site is [AHSP.org](http://AHSP.org).



An ancient star, dubbed Icarus, was visible to the Hubble Telescope only in 2016 when it was gravitationally lensed over 2000 times. See article to right. Image Credit – NASA, ESA and P. Kelly (University of Minnesota)

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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
- 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](mailto:hbofinger@earthlink.net)

**Thank you!**

- *Recent Astronomy Highlights – continued*
- *from page 2*

## Hubble Sees Ancient Star

- It's a shot that took most of the life of the
- Universe to arrange. Nine billion years
- ago a blue supergiant star, dubbed
- Icarus, formed and shined for a few tens
- of millions of years. Four billion years
- later, a star moving through an ancient
- galaxy temporarily lined up in a place
- that caused it to gravitationally lense
- some of the passing light from Icarus in
- the direction of Earth even before our
- planet was formed. And in 2016, the
- Hubble Telescope took images, showing
- Icarus magnified 2000 times (see
- pictures to left). Icarus happens to be in
- the same galaxy as the Refsdahl
- supernova, a supernova that has been
- seen several times over recent decades
- due also to gravitational lensing. More
- information is at -

- [arxiv.org/pdf/1706.10279.pdf](http://arxiv.org/pdf/1706.10279.pdf)

## 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 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

		Asteroidal, Planetary, and TNO Occultations									
Date	Day	EDT	Star	Mag.	Asteroid	dmag	s	Location	dur. Ap.		
Jun 24	Sun	0:46	4U323100075	13.7	Jiangxi	2.3	3	12 sePA, nMD; DC, nVA?			
Jun 29	Fri	3:06	4U395118841	12.6	Ninina	1.3	8	10 NJ, MD, DC, n&wVA			
Jul 1	Sun	1:45	4U348187982	11.7	Achaemenides	6.1	3	7 PA, MD, VA; NJ, DC?			
Jul 3	Tue	1:42	TYC03730179	11.4	Crescentia	1.5	6	7 ne-sPA, wMD, wVV			
Jul 5	Thu	1:47	PPM 733925	9.7	Saturn	0.0	100m	8 Americas			
Jul 8	Sun	1:28	see below	14.8	Quaoar	4.3	49	13 TNO Canada; nUSA?			
Jul 9	Mon	21:42	TYC56530622	11.4	Lotis	2.6	8	7 sNJ, DE, nMD, sPA			
Jul 13	Fri	0:25	TYC17391134	11.7	Ekard	1.4	5	7 eNC, seVA, seMD, NJ			
Aug 15	Wed	1:29	4U341187633	12.9	Pluto	1.6	123	11 e&swUSA, Mexico			
Sep 6	Thu	20:34	iota Aquarii	4.3	Zelima	9.3	4	1 seSC, seNC; seMA?			

- Event details at [www.asteroidocculatation.com/](http://www.asteroidocculatation.com/) except for:
- July 8: Iesi a. obspm. fr/lucky-star/predictions/singl e.php?p=8136
- Aug 15: occultations.org/campaigns/

### Lunar Grazing Occultations

Date	Day	EDT	Star	Mag	% alt	CA	Location, Notes
Jul 2	Tue	0:14	delta Cap	2.9	86- 14	6S	Cary, Lucama, Willow Creek, NC
Jul 8	Sun	5:52	mu Ceti	4.3	28- 43	6N	MyrtleBeach, SC; Wilmington, NC
Jul 10	Tue	4:35	Aldebaran	0.9	11- 7	-1S	Green Bay, WI; Mackinaw City, MI
Jul 25	Wed	1:45	mu Sgr	3.8	94+ 20	-4N	Herndon, VA; Bethesda, Laurel, MD
Jul 26	Thu	1:22	omi cronSgr	3.8	98+ 26	4S	Mrtnsb, WV; Thrmnt, MD; Lncstr, PA
Aug 30	Thu	6:00	SAO 109873	7.4	86- 45	12N	Woodbdg, VA; Harwod, Stevnsvl, MD
Sep 6	Thu	6:19	ZC 1205	6.3	15- 38	10N	Stonewall, Oilvl, AshlndMal l, VA

### Lunar Total Occultations

Date	Day	EDT	Ph Star	Mag	% alt	CA	Sp. Notes
Jun 15	Fri	22:20	D ZC 1186	6.0	7+ 1	74N	K1 Azimuth 294 degrees
Jun 16	Sat	22:03	D ZC 1327*	6.9	15+ 14	48N	F2 Azimuth 281 deg.
Jun 16	Sat	22:55	D X Cancr	6.3	15+ 5	45N	C5 Az. 288 deg., ZC1331
Jun 21	Thu	23:01	D ZC 1923	7.0	67+ 35	87S	K0 mag2 11 sep .3" PA 273d
Jun 21	Thu	23:30	D SAO 139316	7.7	68+ 30	20S	K0
Jun 22	Fri	23:02	D ZC 2035	7.2	77+ 37	26N	K0 mag2 8.1 sep .05" PA132
Jun 23	Sat	1:16	D ZC 2043	6.5	77+ 17	50N	K0 maybe close double?
Jun 23	Sat	1:35	D ZC 2047	6.6	77+ 14	71N	K0 Azimuth 246 deg.
Jun 23	Sat	23:36	D ZC 2148	7.7	85+ 34	68S	B9
Jun 24	Sun	1:47	D ZC 2158	7.5	85+ 17	57N	A0
Jul 2	Mon	0:02	D del Cap	2.9	86- 10	-24S	A5 Az. 120, AxisAngle 160deg
Jul 2	Mon	0:39	R = ZC 3190	2.9	86- 16	34S	A5 Deneb Algedi; NC graze
Jul 3	Tue	5:25	R ZC 3327	6.8	78- 39	16S	K2 Sun altitude -4 deg.
Jul 4	Wed	2:29	R ZC 3446*	7.2	70- 25	49N	K0 mg2 7.6 7" PA147 R+19s
Jul 5	Thu	4:57	R ZC 25	7.4	60- 42	73N	G6 Sun altitude -9 deg.
Jul 10	Tue	4:38	R SAO 94018*	7.2	11- 12	52N	K3 Azimuth 78 degrees
Jul 15	Sun	21:36	D ZC 1529	6.6	12+ 12	36S	G5 Sun -11 deg, Az. 275 deg
Jul 15	Sun	21:48	D SAO 99146	7.7	12+ 10	80N	G5 Azimuth 277 degrees
Jul 18	Wed	21:44	D HY Vir	7.8	42+ 29	84N	F2 SA0139174, mg2 10, sep42"
Jul 21	Sat	20:17	D gamma Lib	3.9	72+ 36	69N	K0 Sun +1, ZC2223, double??
Jul 22	Sun	21:31	D SA0159919*	7.2	81+ 33	48N	F5 Sun altitude -11 deg.
Jul 22	Sun	22:44	D SAO 159935	7.2	81+ 31	72N	A0
Jul 24	Tue	21:41	D ZC 2618	6.4	93+ 27	30S	A2
Jul 30	Mon	2:37	R 50 Aquarii	5.8	95- 37	40S	K0 Axis Angle 228, ZC 3288
Jul 31	Tue	6:19	R psi 1 Agr	4.2	89- 31	73S	K0 Sun alt. +1, ZC 3419
Aug 2	Thu	5:22	R SAO 128965	7.6	74- 51	61N	K0 Sun altitude -9 deg.
Aug 4	Sat	2:23	R ZC 346	7.3	55- 25	84N	A5
Aug 4	Sat	6:41	R xi 2 Ceti	4.3	54- 60	66S	B9 Sun alt. +5, ZC 364
Aug 5	Sun	6:04	R SAO 93398	7.3	43- 57	18S	F5 Sun altitude -2 deg.
Aug 6	Mon	2:04	R ZC 608	6.0	33- 7	42S	F3 Az 76, mg2 9 4", PA222
Aug 6	Mon	3:51	R SAO 93806	7.7	33- 27	81S	A0 probably close dbl
Aug 8	Wed	4:09	R 68 Ori onis	5.8	13- 11	67S	B9 Az 74, ZC 940, double
Aug 17	Fri	22:49	D SAO 159219	7.6	47+ 12	54S	K1 Azimuth 240 degrees
Aug 17	Fri	23:00	D ZC 2200	7.5	48+ 10	72S	K0 Azimuth 242 degrees
Aug 30	Thu	6:29	R ZC 208*	7.0	86- 41	39S	F0 Sun alt. -2 deg.
Sep 1	Sat	2:39	R ZC 444	5.9	69- 43	11S	K6 probably close dbl
Sep 4	Tue	4:13	R SAO 94934	7.3	36- 36	13S	B9
Sep 4	Tue	4:57	R ZC 888	6.0	35- 45	88N	B9 close double
Sep 4	Tue	4:57	R SAO 94948	7.7	35- 45	68S	K0
Sep 4	Tue	6:04	R 57 Ori onis	5.9	35- 57	38S	B2 Sun -7, ZC895, close dbl?
Sep 7	Fri	6:13	R 68 Cancr	7.4	7- 24	46S	B9 Sun -6, ZC 1345, dbl?

\*in Kepler2 program so occultation light curves are sought.

- More, esp. total lunar occultations, at [iota.jhuapl.edu/exped.htm](http://iota.jhuapl.edu/exped.htm)
- David Dunham, [dunham@starpower.net](mailto:dunham@starpower.net)

## 2017-2018 Officers

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- Michael Brabanski (2018)
- Wayne Warren (2019)
- Jack Gaffey (2020)
- Benson Simon (2021)

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## Slate of Officer and Other Board Member Positions for 2018-2019

John Hornstein  
 Reporting for the Nominating Committee

May, 2018

### Executive Officers

Office	Current	Candidate
President	Harold Williams	Harold Williams
Vice President	John Hornstein	John Hornstein
Secretary-Treasurer	Henry Bofinger	Henry Bofinger
Assistant Secretary-Treasurer	Jeff Norman	Jeff Norman

### Trustees

Current	Candidate*
Mike Brabanski (to June 2018)	Mike Brabanski (to June 2022)
Wayne Warren (to June 2019)	N/A
Jack Gaffey (to June 2020)	N/A
Benson Simon (to June 2021)	N/A

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

Elections will be held during the June 9<sup>th</sup> meeting of the National Capital Astronomers.

## Bring Your Astrophotos to the June NCA 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 9<sup>th</sup> meeting. Please bring them on a USB data stick. Also, to save time, please have only your photos of astronomical objects on the USB stick. Expect some audience members to come up to you after everyone has shown their photos, to ask you how you made yours.



### Learn the Sky Nights 2018

Do you ever look up at the night sky and wonder about what you see? Which of those lights up there are stars and which are planets? Is that a plane passing over? Or might it be a satellite? Well your chance to finally know the answers to these and other questions is coming this summer. For six Tuesday nights, starting on July 10<sup>th</sup>, Elizabeth Warner will be teaching classes at the University of Maryland Observatory. The beginners course, 7:00 p.m. to 8:30 p.m., will cover such subjects as satellites, reading star charts, understanding telescopes, and the basics of astrophotography. The advanced course, if there is enough interest, will be from 9:00 p.m. until 10:30. In past years, the advanced-course participants observed exoplanet transits and asteroid occultations.

Registration for both classes is now open. Registration forms and additional information can be found at - [www.astro.umd.edu/openhouse/2programs/itsn/Learn\\_the\\_sky18.html](http://www.astro.umd.edu/openhouse/2programs/itsn/Learn_the_sky18.html)

### 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](tel:202-635-1860) or at [gfbrandenburg@yahoo.com](mailto: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](http://www.astro.umd.edu/openhouse)
- **Mid-Atlantic Senior Physicists Group: (Note that this talk is on the second Wed. of the month.)** "Dynamics of the Supercontinent Rodinia" by Chao Liu, Carnegie Institution for Science. Wed., June 13, at 1:00 p.m. at the American Center for Physics (1<sup>st</sup> floor conference room) with Q&A to follow. 1 Physics Ellipse, College Park, MD-- off River Rd., between Kenilworth Ave. and Paint Branch Parkway. [www.aps.org/units/maspg/](http://www.aps.org/units/maspg/)
- **Next NCA Meeting** at the University of Maryland Observatory:  
**8 September: 7:30 p.m**
- **The Astronomical Society of Greenbelt** has meetings and star parties scheduled throughout the summer. Dates, times and locations of events can be found at - [www.greenbeltastro.org/events.shtml](http://www.greenbeltastro.org/events.shtml)
- **2018 Astronomy Festival on the National Mall** – This year’s festival will take place on Saturday, June 23, from 6:00 p.m. to 11:00 p.m. The location is northwest of the Washington Monument at 17<sup>th</sup> Street NW and Constitution Avenue. Some NCA members will have telescopes there.

## 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.?

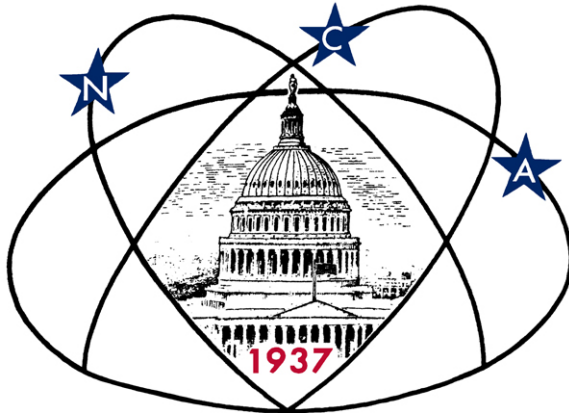
Are you interested in volunteering for: Telescope making, Exploring the Sky, Star Dust, NCA Officer, etc.?

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



*Celebrating 81 Years of Astronomy*

*Next NCA Meeting:*

**2018 June 9<sup>th</sup>**

**7:30 pm**

**@ UMD Observatory**

**Science Fair**

**Winners, Elections**

**and**

**Astrophotographs**

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