

Star Dust

Newsletter of National Capital Astronomers, Inc.

capitalastronomers.org

October 2014

Volume 73, Issue 2

Next Meeting

When: Sat. Oct. 11th, 2014

Time: 7:30 pm

Where: UMD Observatory

Speaker: Marc J. Kuchner

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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 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.

Disk Detective

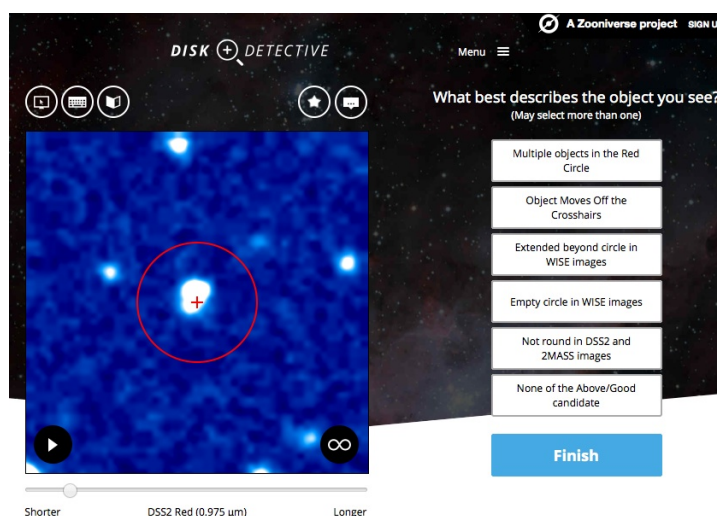
Finding Planetary Systems through Citizen Science

Marc J. Kuchner, NASA's Goddard Space Flight Center

Abstract: Have you discovered a planetary system today? If not, don't worry. The Disk Detective project (DiskDetective.org) is scouring the data archive from NASA's WISE mission to find new planetary systems, homes of planetary systems and advanced extraterrestrial civilization candidates. Volunteers on this new citizen science website have already performed more than 800,000 classifications of WISE sources, searching a catalog that is 8 times the size of any previous survey.

Volunteers have worked with GSFC to write observing proposals and prepare for observing runs on telescopes at Mts. Palomar and Hopkins as well as in Argentina.

Want to join the search? Come to this month's talk and hear all about the science of dusty disks and what has been discovered so far!



Disk Detective Courtesy Marc Kuchner

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.

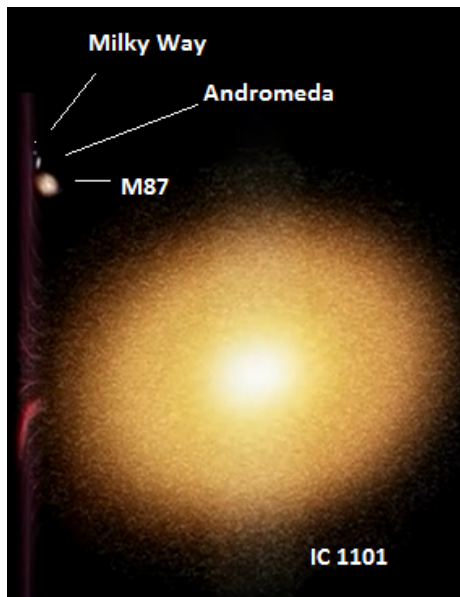
C/2012 K1 PanSTARRS



Courtesy Rolando Ligustri

Discovered in May 2012 with the PanSTARRS telescope (Mt. Haleakala, Hawaii) at 19.7 magnitude, K1's projected orbit is about 400,000 years (so, see it now!). It will be visible through Spring 2015.

Galactic Perspectives



• *Disk Detective – continued from page 1*

• **Biographical Sketch:**

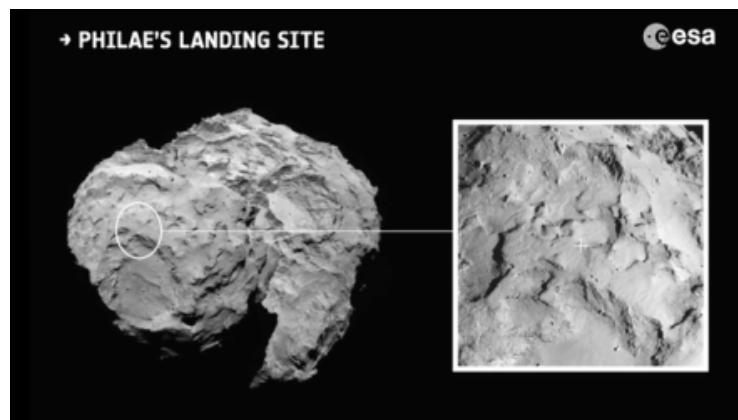
• Marc Kuchner is an astrophysicist known for his work on images and imaging of disks and exoplanets. Together with Wesley Traub, he invented the band-limited coronagraph, a design for the proposed Terrestrial Planet Finder (TPF) telescope as well as the James Webb telescope (JWST). He is also known for his novel supercomputer models of planet-disk interactions and for the development of the ideas of ocean, carbon and helium planets.



• Kuchner received his bachelor's degree in physics from Harvard in 1994 and his PhD in astronomy from California Institute of Technology (Caltech) in 2000. His doctoral thesis advisor was "Pluto killer" Michael Brown. After he earned his PhD, Kuchner studied at the Harvard-Smithsonian Center for Astrophysics and at Princeton University as a Michelson Fellow and Hubble Fellow, respectively. Kuchner was awarded the 2009 SPIE early career achievement award for his work on coronagraphy. He currently serves as principal investigator of the popular citizen science website, DiskDetective.org, and frequently answers the "Ask Astro" questions in *Astronomy* magazine.

Rosetta & Philae

• The Rosetta probe (ESA) was launched in March 2004 with the mission of investigating comet behavior and composition as a lens back into time (about 5 billion years) to the formation of the Solar System. The probe established orbit around Comet 67P/Churyumov-Gerasimenko in August of this year.



Courtesy ESA
Comet 67P

continued on page 4

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



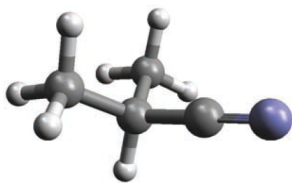
the District of Columbia. Presented by the National Park Service and National Capital Astronomers, sessions are held in Rock Creek Park once each month on a Saturday night from April through November, Beginners (including children) and experienced stargazers are all welcome—and it’s free!

For more information, check:

National Capital Astronomers, Inc:
<http://capitalastronomers.org/>

Rock Creek Park:
<http://www.nps.gov/rocr/planyourvisit/expsky.htm>

Building Blocks in Space



Isopropyl Cyanide
 Courtesy Le Point.Fr

In a gaseous, star-generating area in the constellation Sagittarius, the branched-carbon molecular chain, isopropyl cyanide ($i\text{-C}_3\text{H}_7\text{CN}$), was discovered via the ALMA Observatory by its radio wave signature. Branched molecules are critical for life as we know it (e.g., for amino acids). This finding supports the hypothesis that branched molecules are formed early in stellar formation. So far, this is one of the largest molecules (the other is propyl cyanide) found in star-forming clouds.

Sky Watchers

Autumn Schedule

October

17	12:00 am – Planets , N. Hemisphere. Moon 5° south of Jupiter
18	7:30 pm - Exploring the Sky , Local. Features: <i>Vega & Possible Mars Meteor Crash</i>
20-21	Pre-dawn – Meteors , N. & S. Hemisphere (look up & southeast in N. Hemisphere). <i>Orionids</i>
23	6:00 pm – Solar Eclipse (partial, up to 80%), N. Hemisphere.
24	5:57 pm – New Moon , Global.
25	12:00 pm – Planets , N. Hemisphere. Moon 1° north of Saturn
26	12:00 pm – Asteroids , N. Hemisphere. (in conjunction w/ Sun). <i>Pallas</i>
28	9:00 am – Planets , N. Hemisphere. Moon 7° north of Mars

Times EDT

November

1	7:00 pm EDT - Exploring the Sky , Local. Features: <i>Pleiades and Winter Constellations</i>
3	1:00 am – Planets , N. Hemisphere. Mercury 5° north of Spica
16-17	Pre-dawn – Meteors , N. & S. Hemisphere (look up & east). <i>Leonids</i>

Times EST (EDT is until Nov. 2nd)

Rosetta & Philae – continued from page 2

Rosetta will attempt to make history on November 12th when it will release Philae, a lander that is destined to attach to the surface of the comet at a predetermined location referred to as "Site J." Attachment will be via a harpooning technique. Philae has a 64-hour battery and Site J will provide light for recharging.

Similar to other extraterrestrial landings, there will be a bit of a wait to confirm that the landing deployment was successful. It will take a little over 28 minutes for the confirmation signal to arrive back on Earth.

Philae will be released at 3:35 am EST, approximately 14 miles from the comet, and attempt to attach at 10:30 am EST.

Perspective of a Vatican Astronomer

Jesuit brother, Guy Consolmagno, is an astronomer and curator of the Vatican meteorite collection. After graduating from MIT and engaging in post-doctorate work at the Harvard College Observatory, he joined the Peace Corps in Africa where he shared his knowledge about astronomy with others. He found that even the poor and/or suffering enjoyed astronomy. In regard to the inevitable question about the conflict between science and religion, Brother Guy states that the issues are mostly between fundamentalists on both sides. He stated on Connecticut radio station WHDD that "Fundamentalism is a sign of fear."



Brother Guy and one of the Vatican Observatories.
Schmidt, Cart du Ciel & other telescopes are available.

The link below is for the TEDx talk on "Science & Faith" given by Brother Guy. He is also co-author of the book, 'Would You Baptize an Extraterrestrial?' Additionally, for his work contributing to the knowledge of meteorites and asteroids, Brother Guy has been honored by the International Astronomical Union by designating the name of Asteroid 4597 as "Consolmagno."

TEDx Talk:

http://youtu.be/kmU2qDbP_Tk?list=PLsRNoUx8w3rMqx1LYBtxXHFc6vfpI-19V

twitter: [@VaticanObserv](https://twitter.com/VaticanObserv)

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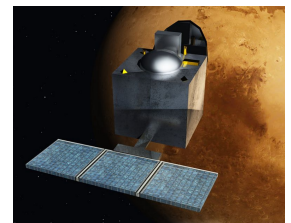
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• switch from paper to digital, please contact
• Henry Bofinger, the NCA Secretary-
• Treasurer, at hbofinger@earthlink.net

Thank you!

Mangalyaan

• India's first craft has arrived at Mars.
• Officially called the "Mars Orbiter
• Mission," the satellite reached Mars orbit
• on September 23rd at 10 pm EDT. The
• cube shape of the craft is similar in
• design to the Indian Research Space
• Organization's lunar orbiter,
• Chandrayaan 1.

• The other
• name for the
• Mars Obiter
• Mission is
• "Mangalyaan,"
• Hindi for
• "Mars Craft."



(cc)
Mangalyaan

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

2014	EDT/	dur.	Ap.					
Date	Day	EST	Star	Mag	Asteroid	dmag	s	Location, Notes
Oct 16	Thu	4: 27	2UC31618313	13.3	Nanon	0.9	7 10	NJ, MD, nVA, WV; DC?
Oct 20	Mon	0: 00	2UC32135015	13.2	Portlandia	0.6	4 10	NJ, nDE, nMD, sPA
Oct 22	Wed	5: 17	TYC14121176	11.9	Benda	3.8	2 7	nMD, sPA; DC, nVA?
*** Dates and times above are EDT, those below are EST ***								
Nov 3	Mon	2: 33	TYC17481857	9.4	Auricula	6.9	2 4	cVA, cWV, neKY, slN
Nov 4	Tue	0: 57	2UC32808063	13.0	2001 QE298	9.6	7 9	TNO, N. America?
Nov 5	Wed	21: 08	2UC38196158	12.4	Ottilia	1.6	7 8	VA, wNC; sMD, DC?
Nov 8	Sat	17: 38	SAO 75737	8.8	Erika	4.3	6 3	nMDal t7, Sn-8; sNE

Lunar Grazing Occultations

2014	EDT	Star	Mag	% alt	CA	Location & Remarks
Oct 12	Sun	1: 04 SAO 93927	7.5	83- 44	8N	Chrl tsv, Qantco, VA; Brndywi n, MD
Oct 14	Tue	6: 42 ZC 975	6.8	63- 66	3S	Scotl and, Loganvill e, PA; Sun -7
Oct 14	Tue	6: 42 X 87071	8.0	63- 66	3S	*Chstfl d, Saluda, Chncotg, VA; Sn-7
Oct 15	Wed	4: 37 ZC 1091	6.5	54- 54	2N	*Wil msprt&Scrntn, PA; Crnwal, NY
Oct 28	Tue	20: 57 SAO 161582	7.0	27+ 12	6S	*Ashl nd, VA; StMryC, MD; Lauri l, DE
Oct 31	Fri	22: 17 SAO 164404	8.1	61+ 30	7S	*Hopwl Ob, Strl g, VA; Ol ny, Twsn, MD

Interactive detailed maps at <http://www.timerson.net/IOTA/>, no expedition planned from DC area

Total Lunar Occultations

2014	EDT	Ph Star	Mag	% alt	CA	Sp.	Notes
Oct 11	Sat	23: 38 R 63 Tauri	5.6	83- 28	7S	A1	ZC 650, Term. Dist. 9"
Oct 12	Sun	0: 40 R SAO 93913	7.0	83- 40	80S	F6	Mag2 10, sep ". 2, PA109
Oct 12	Sun	1: 48 R SAO 93938	6.9	83- 52	35S	K5	
Oct 12	Sun	1: 53 R SAO 93934	7.5	83- 53	71S	G5	
Oct 12	Sun	3: 38 R SAO 93962	7.0	82- 67	50N	F7	Close double?
Oct 13	Mon	5: 29 R 115 Tauri	5.4	73- 69	39S	B5	ZC 814, close double
Oct 13	Mon	6: 53 R ZC 823	6.7	73- 60	33N	A2	Sun -5, Mag2 10, 3", PA129
Oct 14	Tue	1: 47 R ZC 944	5.9	64- 33	85N	A6	close equal dbl, "0.5
Oct 14	Tue	5: 34 R SAO 95554	7.6	63- 69	52N	G7	Mag2 9 sep. 47" PA 129
Oct 14	Tue	6: 20 R ZC 970	6.3	63- 68	65S	G9	Sun alt. -12 deg.
Oct 15	Wed	0: 00 R ZC 1073	5.9	55- 4	45S	M2	Azimuth 71 degrees
Oct 15	Wed	2: 07 R SAO 96496	7.9	55- 27	49S	G5	maybe close double?
Oct 15	Wed	3: 12 R SAO 96566	7.8	54- 39	2S	F8	Termator Distance 17"
Oct 15	Wed	4: 58 R ZC 1091	6.5	54- 58	32N	K5	maybe close double??
Oct 15	Wed	6: 58 R SAO 96652	7.3	53- 68	69S	F2	Sun altitude -4 deg.
Oct 15	Wed	9: 49 R lambda Gem	3.6	53- 45	60N	A3	Sun +26, ZC 1106, dbl?
Oct 16	Thu	5: 57 R ZC 1212	7.3	44- 58	56N	A5	maybe close double?
Oct 17	Fri	4: 11 R SAO 98144	7.9	35- 31	35N	G5	
Oct 17	Fri	4: 18 R FX Cancri	6.7	35- 32	53N	M3	ZC 1320
Oct 17	Fri	5: 04 R SAO 98146	7.7	35- 40	47S	F5	maybe close double?
Oct 19	Sun	5: 32 R ZC 1519	6.5	18- 25	63S	F6	Mag2 9 sep. 58", PA 10
Oct 28	Tue	19: 16 D ZC 2680	5.6	26+ 25	64N	K0	maybe close double?
Oct 28	Tue	19: 51 D ZC 2685	6.8	27+ 21	65S	K1	
Oct 28	Tue	20: 46 D SAO 161582	7.0	27+ 13	24S	G3	Az. 232, mg2 10, 69", PA262
Oct 29	Wed	15: 12 D rho 1 Sgr	3.9	36+ 21	33S	F0	Sun+28, ZC2826, close dbl
Oct 30	Thu	19: 05 D SAO 163564	7.3	48+ 36	47S	K4	Sun alt. -12 deg.
Oct 30	Thu	19: 39 D SAO 163584	7.9	48+ 36	74S	G5	
Oct 31	Fri	18: 07 D SAO 164332	7.8	59+ 34	79N	F8	Sun alt. -1 deg.
Nov 1	Sat	17: 53 D Ancha	4.2	70+ 29	22S	G8	Sun+2, ZC3269, theta Aqr
*** Dates and times above are EDT, those below are EST ***							
Nov 2	Sun	19: 14 D ZC 3411	7.2	81+ 38	48N	A2	Mag2 9 sep. ". 3, PA 111
Nov 3	Mon	0: 34 D SAO 146693	7.5	82+ 23	51S	G5	
Nov 3	Mon	18: 58 D ZC 19	7.5	89+ 40	69N	F8	
Nov 4	Tue	0: 52 D BZ Pscium	7.5	90+ 33	78S	M0	ZC 40
Nov 5	Wed	0: 29 D zeta Psc A	5.2	96+ 48	25N	A7	ZC 180, Term. Dist. 14"
Nov 5	Wed	0: 30 D zeta Psc B	6.3	96+ 48	24N	F7	ZC 181, Term. Dist. 14"

Explanations & more information is at <http://iota.jhuapl.edu/exped.htm>. David Dunham, dunham@starpower.net, phone 301-526-5590

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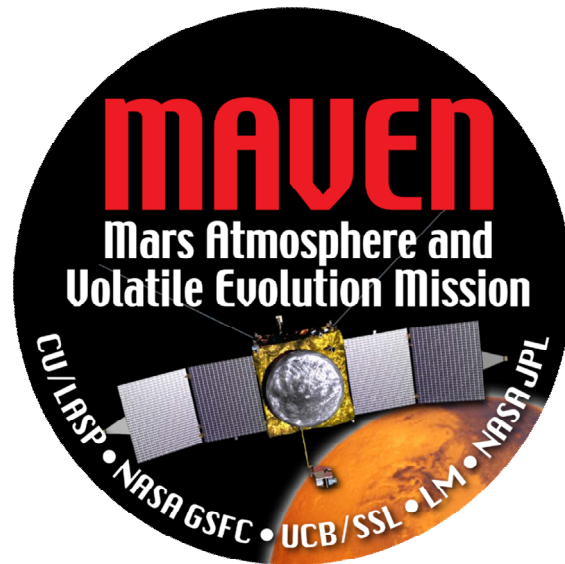
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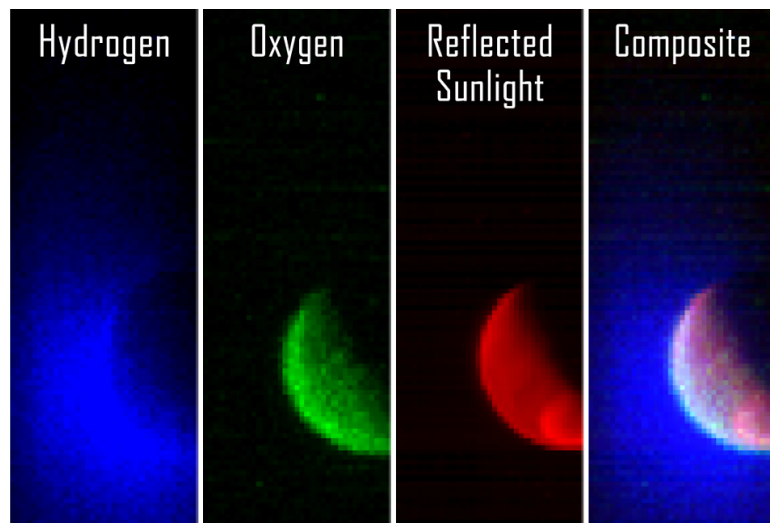
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Planetary Destinations



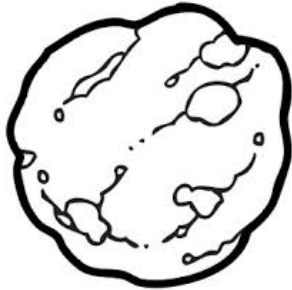
A few days before Mangalyaan (India) arrived to orbit Mars and after a 10-month journey, the Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft (US) also arrived. MAVEN will be the first craft tasked with exploring the upper atmosphere. Over its 1-year mission, it will provide valuable information on the planet's evolution through climactic events and enhance preparation for human missions to Mars scheduled to commence in the 2030s.

MAVEN has already transmitted images of atmospheric gas behaviors resulting from the breakdown of carbon dioxide and water. In orbit at almost 23 miles from Mars, the craft has revealed oxygen and hydrogen behaviors in the atmosphere, showing that oxygen is held nearer to the planet surface and hydrogen is in the upper atmosphere.



Courtesy Laboratory for Atmospheric and Space Physics,
 University of Colorado; NASA

“Univofutah”



Last month, the Minor Planet Center (Massachusetts) of the International Astronomical Union renamed Asteroid 391795 (2008 RV77) in the main asteroid belt. The asteroid was discovered by University of Utah astronomer Patrick Wiggins; so, naturally, the new asteroid name is in honor of the university.

The submission deadline for the November issue of Star Dust is Oct. 26th.

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).
- **Open house & Star Party at Hopewell Observatory**, Sat. Oct. 18, starting at 6:30 pm, Haymarket, VA. For directions, contact Guy at gfbrandenburg@yahoo.com.
- **Mid-Atlantic Senior Physicists Group:** “Quantum Computing” with Mark Heiligman (IARPA), Wed. Oct. 22, at 1 pm at the American Center for Physics (1st floor conference room). <http://www.aps.org/units/maspg/>
- **NASA Goddard Visitors Center:** Monthly Model Rocket Launch, Sun. Nov. 2, at 12:45 pm, ICESat Road, Greenbelt, MD.
- **Owens Science Center Planetarium:** “The Rainbow Universe,” Fri. Nov. 14, at 7:30 pm; \$5/adult; \$3/students/senior/teachers/military; children under 3 free. Doors open 7:15 for pre-show activities. www1.pgccps.org/howardbowens
- **Upcoming NCA Meetings** at the University of Maryland Observatory:
 - **8 Nov:** Gail Zasowski (Space Telescope Science Institute), “The Apache Point Observatory Galactic Evolution Experiment (APOGEE).”

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.?

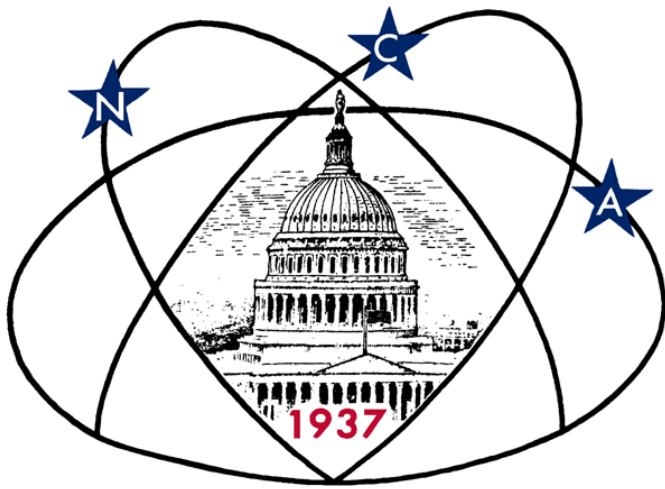
Are you interested in volunteering for: Telescope making, Exploring the Sky, Star Dust, NCA Officer, etc.?

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
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Alexandria, VA 22314

First Class
Dated Material



Next NCA Meeting:
2014 October 11th
7:30 pm
@ UMD Observatory

**Dr. Marc J.
Kuchner**

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