

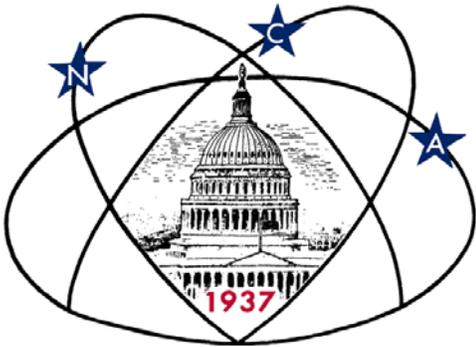
Star Dust

Newsletter of National Capital Astronomers, Inc.

capitlastronomers.org

October 2013

Volume 72, Issue 2



Next Meeting

When: Sat. Oct. 12, 2013

Time: 7:30 pm

Where: UMD Observatory

Speaker: Sarah Brown

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Directions to Dinner/Meeting

Our new location for dinner with the speaker before each meeting is at Mulligan's Grill and Pub on the UM Golf Course. Mulligan's is one intersection closer to the observatory on Route 193 than UMUC. One turns on to "Golf Course Road" and drives a few hundred feet to the golf course building, where "Mulligan's Grill and Pub" is located.

The dinner menu can be downloaded from <http://mulligans.umd.edu/>

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 at the observatory. Please try to let him know in advance by e-mail at rigel1@starpower.net.

This month:

The Back Door to Astronomy

Large-scale, computer-aided searches

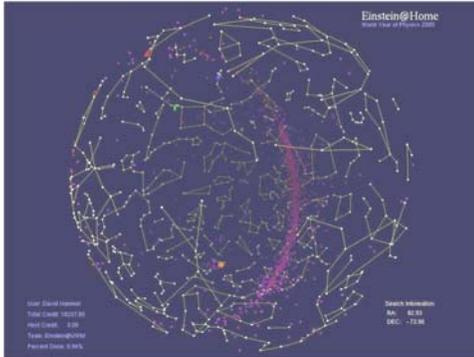
Ms. Sarah E. Brown
NCA

This month, Ms. Sarah Brown will discuss large-scale computer-aided searches in astronomy, which takes advantage of an enormous asset (networked privately owned computers) to do astronomical exploration requiring super-computer level computational capabilities. She will explain the goals and successes of three computer projects using the Berkeley Open Infrastructure for Network Computing [BOINC] process. These projects use publicly volunteered computer capacity to search stellar databases for pulsars and other phenomena, and map the Milky Way galaxy. It has successfully discovered new types of Pulsars (millisecond binary) and other phenomena. Ms. Brown calls her presentation "The Back Door to Astronomy", because she was serendipitously introduced to BOINC after seeing the [Search for Extra Terrestrial Intelligence](#) screen saver. Curious, she put the process on her computer and went on to learn more about astronomy at the University of Maryland and CBT/on-line university courses. She then returned to engage in other BOINC projects that have found many pulsars, mapped parts of the Milky Way and stellar threads, explored for gravity waves from significant celestial events, and extended our scientific understanding.

"...she was serendipitously introduced to the Berkeley Open Infrastructure for Network Computing [BOINC] after seeing the Search for Extra-terrestrial Intelligence screen saver."

Ms. Brown eventually found that her desire to explore the data through these BOINC projects (collected by radio telescopes throughout the world) exceeded her ability to purchase increasingly powerful/expensive commercial computers, so now she builds them. While the BOINC processing of signals will be discussed in this presentation, computers and computer systems will not.

continued on page 2



*Einstein@home screen saver
(courtesy of Sarah Brown)*

According to Bruce Allen, Director of Einstein@home, the program searches for pulsar gravitational radiation via downlink telemetry from LIGO (the Laser Interferometer Gravitational-Wave Observatories), the Arecibo Array & the Fermi satellite.

Want your computer's idle time to be part of the exploration?

<http://einstein.phys.uwm.edu/>

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.

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.

Back Door to Astronomy – continued from page 1

Her path into astronomy consists of standard intellectual quests, volunteered computational time, and addresses such as the following: what those pretty screen savers represent, astronomy studies, tracking radio telescope observations on star charts, studying RF system gains & losses (from stars, through the ISM, telescope & amplifier gains, data storage and processing for distribution, the amateur Large-Scale Computer-Aided Search processing system), and the final disposition of the results. She also volunteers computer time toward systems designed to measure gamma rays and gravitational waves originating from deep space phenomena.

Biographical Sketch

Ms. Brown is a native of Kansas, raised in São Paulo Brazil, a Vietnam Veteran, and worked for: Motorola Communications as a Senior Program manager for 23 years, Gibbs & Hill Inc. as a system design team manager, and the Department of Defense, Fort George Meade for 25 years. She earned a Masters of General Administration from the University of Maryland UC and Masters of Science of Strategic Intelligence from the Joint Military Intelligence College. She is a senior member of IEEE.



S. Brown and Einstein...@home

Exploring the Sky is an informal program that, for over sixty 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.

Sessions are held in Rock Creek Park once each month on a Saturday night from April through November,



starting shortly after sunset. We meet in the field just south of the intersection of Military and Glover Roads NW, near the Nature Center. A parking lot is located next to the field. Beginners (including children) and experienced stargazers are all welcome—and it's free!

Questions? Call the Nature Center at (202) 895-6070 or check the Internet sites:

www.nps.gov/rocr/planyourvisit/expsky.htm
www.capitalastronomers.org

A presentation of the National Park Service and National Capital Astronomers

~~ Open Competition ~~

NASA's Mars 2020 Mission Investigations

<http://soma.larc.nasa.gov/mars2020/index.html>

Pre-proposal Conference:

October 8, 2013

Notice of Intent Due Date:

October 15, 2013

Electronic Proposals Due:

December 23, 2013

Sky Watchers

Autumn Schedule

October

5	7:30 pm – Exploring the Sky , Rock Creek Park. During the Government Shutdown, national park activities are suspended. For more park information, see: http://www.interior.gov/index.cfm
12	All day – Fall 2013 Astronomy Day , Everywhere. Theme: “ <i>Bringing Astronomy to the People</i> ” https://www.astroleague.org/all/astroday/astrodayform.html
12	All Night – International Observe the Moon Night (InOMN) , Everywhere. http://observethemoonnight.org/
20-21 (peak)	Early am – Orionid Meteor Shower , Northern Hemisphere. http://solarsystem.nasa.gov/planets/orionids.cfm

November

2	Sunset (5:06 pm) – Open House & Star Party , Hopewell Observatory. Features: <i>Jupiter, Venus, Mars & deep sky objects</i>
2	7:00 pm – Exploring the Sky , Rock Creek Park. Features: <i>Pleiades & Winter Constellations</i> http://www.nps.gov/rocr/planyourvisit/expsky.htm

Hopewell Tour and Star Party

Saturday, Nov. 2, 2013 • Observatory opens at about 5:00 pm
Bull Run Mountains, Haymarket, VA
Guy Brandenburg

Everyone is invited to an Open House and Star Party at Hopewell Astronomical Observatory. Hopewell is a private, independent observatory association, located on about 4 acres atop a ridge in the Bull Run Mountains, about 6 miles northwest of Haymarket, Virginia. We'll open the observatory before sunset (5:06 pm), and stay open until everyone leaves; come whenever you like and stay as late as you want! The Moon won't be visible at all, because new Moon occurs on the very next day. Jupiter will rise around 9:30 pm

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Hot Dirt at Rocknest

aka: Volatile, Isotope, and Organic Analysis of Martian Fines with the Mars Curiosity Rover

Science 27 September 2013: vol. 341 no. 615

DOI: 10.1126/science.1238937

L. A. Leshin et al.

Abstract

Samples from the Rocknest aeolian deposit were heated to ~835°C under helium flow and evolved gases analyzed by Curiosity's Sample Analysis at Mars instrument suite. H₂O, SO₂, CO₂, and O₂ were the major gases released. Water abundance (1.5 to 3 weight percent) and release temperature suggest that H₂O is bound within an amorphous component of the sample. Decomposition of fine-grained Fe or Mg carbonate is the likely source of much of the evolved CO₂. Evolved O₂ is coincident with the release of Cl, suggesting that oxygen is produced from thermal decomposition of an oxy-chloride compound. Elevated δD values are consistent with recent atmospheric exchange. Carbon isotopes indicate multiple carbon sources in the fines. Several simple organic compounds were detected, but they are not definitively Martian in origin.

The 10-minute, Laurie Leshin podcast about finding water on Mars

(<http://www.sciencemag.org/site/extra/curiosity/index.xhtml>)



cc: CAF
Venable

Hopewell Star Party – continued from page 3

but won't be visible above the trees for a while. Venus will be visible in the west until it sets around 7:20 pm. Mars will rise around 1:30 the next morning, but won't be visible above the trees for another hour or so. There will also be plenty of other deep-sky wonders to view.

Telescopes permanently installed in Hopewell's roll-off-roof observatory building include a 12" homemade Wright-Newtonian, a 14" Celestron Schmidt-Cassegrain, and a 6" refractor. Also, we are recipients of a donated, 14" Dobsonian reflector! No, Hopewell isn't the big, greenish dome you may be able to see approaching the mountain (that's an FAA ATC radar on the next ridge; but, we wish!). Also, if you have a scope too, bring it along! There is a grassy field with plenty of room to set up, and electricity is available (bring your own extension cord).

You are welcome to bring a picnic dinner or snacks; but, there's no running water (bring your own) and sanitary facilities are a composting outhouse. We will provide hot water, instant coffee, tea, and cocoa. Remember to dress warmly because it can be chilly outside on top of the mountain. We do have a heated building to warm up in. Since the site is a clearing in the woods, sturdy shoes are recommended. Also, you'll probably want a flashlight, but please put a RED filter over it

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• links in the document. If you can switch
• from paper to digital, please contact
• Manjunath Rao, the NCA Secretary, at
• kurchi@hotmail.com.

Thank you!



**HOPEWELL
OBSERVATORY**

November 2, 2013 @ sunset

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

2013	EDT/												
Date	Day	EST	Star	mag.	Asteroid	dmag	s	"	Dist.s.of	DC,	km		
Oct 11	Fri	4:10	30 Piscium	4.4	Henan	10.6	2	1	NC,nwSC,nGA,nAL				
Oct 16	Wed	0:29	2UC38377252	13.6	1993 SB	8.6	6	10	TNO N. America?				
Oct 19	Sat	20:26	2UC21170328	11.2	Fides	1.9	4	7	VA,DC,MD,PA,NJ				
Oct 21	Mon	2:43	TYC06460730	9.6	Patroclus	5.1	9	4	NC,VA,TN,KY;SWV?				
Oct 21	Mon	20:21	2UC27171976	12.4	Vundtia	2.7	4	8	TN,NC,VA;MD,DC?				
Oct 22	Tue	0:43	2UC39271426	13.9	2000 WK183	9.1	12	10	TNO N. America?				
Oct 25	Fri	5:40	TYC08650911	8.5C	Ceres	0.3	22	6	MidAtlanticArea				
Oct 26	Sat	6:37	TYC02391504	11.9	Chaldaea	1.6	3	7	OH,MD,nVA,DC,DE				
*** Dates and times above are EDT, those below are EST ***													
Nov 3	Sun	5:45	TYC55000068	10.7	Philippina	3.5	1.5	7	PA,MD,DE;DC,nVA?				
Nov 8	Fri	18:47	TYC62630168	9.8	Ludmilla	4.2	2	4	wNC,seVA;nVA,MD?				

Lunar Grazing Occultations

2013	EDT	Star	Mag	% alt	CA	Location & Remarks
Oct 23	Wed	6:45 ZC 800	7.9	81- 53	3S	*Triangle,VA,BelAltonMD;Sun-8
Oct 26	Sat	1:34 SAO 97211	7.9	56- 21	5N	*Stafford, VA; La Plata, MD
Oct 29	Tue	6:09 SAO 118182	9.2	27- 40	6S	*nRockvill,nBeltsv1,nBowie,MD
Nov 1	Fri	6:30 SAO 138939	9.5	5- 11	-4N	*Manchstr,WhiteHall,BelAir,MD

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

Total Lunar Occultations

2013	EDT/	Ph Star	Mag	% alt	CA	Sp. Notes
Oct 12	Sat	18:47 D ZC 2958	7.7	61+ 34	87N K1	Sun altitude -4 deg.
Oct 12	Sat	21:23 D DabihMinor	6.1	62+ 33	79N B9	ZC 2968 =beta1 Cap, close companion mag. 9.1, separation 0.7" in PA 75, HIP discovery
Oct 12	Sat	21:31 D DabihMajor	3.1	62+ 33	83N A5	ZC 2969 = beta2 Cap, probably a close double, primary a spectroscopic binary
Oct 12	Sat	23:31 D ZC 2972	6.8	63+ 18	14N B3	
Oct 14	Mon	22:28 D ZC 3259	7.4	83+ 44	56N G0	
Oct 14	Mon	23:33 D SAO 145963	7.5	83+ 39	87S A2	
Oct 15	Tue	19:34 D ZC 3381	7.6	90+ 32	62S K5	
Oct 16	Wed	19:13 D 25 Piscium	6.3	95+ 23	63N A1	Sun-10,ZC3515,spec.bin.
Oct 17	Thu	3:21 D ZC 6	6.9	96+ 27	67N G5	
Oct 17	Thu	20:43 D 60 Piscium	6.0	99+ 34	72N G8	ZC 98,TerminatorDst 16"
Oct 21	Mon	1:33 R ZC 505	7.1	95- 64	28S A0	Axis Angle (AA) 213 dg.
Oct 21	Mon	23:26 R ZC 629	7.5	90- 35	74S G5	Probable close double
Oct 22	Tue	1:35 R ZC 643	6.8	89- 58	68S F6	
Oct 22	Tue	21:49 R 104 Tauri	4.9	83- 8	5S G4	Az.72,ZC764,dbl.,TmD 4"
Oct 23	Wed	23:29 R SAO 95127	7.2	75- 17	35N A0	Maybe close double
Oct 24	Thu	3:30 R SAO 95258	7.6	74- 62	68N F8	Maybe close double
Oct 25	Fri	1:27 R SAO 96261	7.7	66- 30	81N K2	
Oct 25	Fri	2:21 R ZC 1057	6.8	66- 40	63N K0	
Oct 25	Fri	4:36 R SAO 96347	8.0	65- 63	87S G5	
Oct 27	Sun	1:34 R SAO 97890	7.3	47- 11	26S K0	Azimuth 83; close dbl??
Oct 28	Mon	7:35 R omega Leo	5.5	36- 59	87S F9	Sun 0,ZC1397,close dbl.
Oct 30	Wed	4:05 R ZC 1594	7.9	19- 8	74N K0	Azimuth 94 deg.
Nov 1	Fri	6:09 R 28 Vir	6.8	5- 7	58S K5	Azimuth 106, ZC 1822
*** Dates and times above are EDT, those below are EST ***						
Nov 8	Fri	16:59 D SAO 163173	7.2	35+ 35	60N F5	Sun altitude -1 degree
Nov 8	Fri	18:05 D SAO 163200	7.9	35+ 33	87S K2	
Nov 8	Fri	20:06 D SAO 163258	8.4	36+ 20	42S G3	
Nov 8	Fri	21:48 D ZC 2936	6.5	36+ 4	24N K0	Azimuth 247 degrees

Explanations & more information is at <http://iota.jhuapl.edu/exped.htm>

David Dunham, dunham@starpower.net, phone 301-526-5590

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- Vega, daughter of the Sky King, weaver extraordinaire...will she ever be allowed to cross the 'Heavenly River' and rejoin Altair, the cow herder and her true love?



cc: <http://www.zerochan.net/1183758>

Star Stories & Stellar Science

Friday, Oct. 11, 2013 • 7:30 p.m.

Howard B. Owens Science Center Planetarium, 9601 Greenbelt Road,
 Lanham MD 20706

Russell Waugh & Patty Seaton

- The Howard B. Owens Science Center staff will host a planetarium program for parents, students, and community members.

- The stars of autumn offer a wealth of mythology from different world cultures. The program will cover several examples, including the celebration of love between the stars Vega (a Weaver Girl) & Altair (a Cowboy) (from the Japanese Tanabata festival) and the resting of the Moon on a bed bound by the four stars in Pegasus (from Hindu astronomy). Modern astronomers have discovered fascinating scientific details about these stars. Come learn to identify these stars and others in the planetarium, listen to their stories, and then discover the intriguing science behind the stars.

- *For more information:*
 Visit the Science Center's website at www1.pgcps.org/howardbowens/, call 301-918-8750, email Russell Waugh at russell.waugh@pgcps.org or email Patty Seaton at patricia.seaton@pgcps.org.

Hopewell Star Party – continued from page 4

(we'll have some red cellophane available as well).

Approximate Location:

38°52'12"N, 77°41'54"W
(~ 45 min from beltway)

For a map & extensive directions, contact:

- Bob Bolster <RBolster@erols.com>
- Guy Brandenburg <gfbrandenburg@yahoo.com>, or
- Jeff Guerber <jeff@guerber.net>

If you get lost, the phone number at the observatory is 703-754-2317.

Clear skies!

Calendar of Events

- NCA Mirror- and Telescope-making Classes: Tuesdays Oct. 1, 8, 15, 22, 29 and Fridays, Oct. 4, 11, 25, 6:30 to 9:45 pm (Oct. 18 until 8 pm) at the Chevy Chase Community Center, at the northeast corner of the intersection of McKinley Street and Connecticut Avenue, N.W. Contact instructor Guy Brandenburg at 202-635-1860 or email him at gfbrandenburg@yahoo.com. Because of the government shutdown, call 202-282-2204 to see if the CCCC is open.
- 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
- NCA Pre-meeting Dinner: Saturday, Oct. 12 at 5:30 pm, preceding the meeting, at [Mulligan's Grill and Pub](#) at the [University of Maryland Golf Course](#).
- Owens Science Center Planetarium: "Star Stories & Stellar Science" Fri. Oct.11 at 7:30 pm; \$5/adult; \$3/students/senior/ teachers/military; children under 3 free. Doors open 7:00 for pre-show activities. www1.pgcps.org/howardbowens
- Upcoming NCA Meetings at the University of Maryland Observatory:
 - 12 Oct: Sarah E. Brown (NCA), *Large-Scale Computer-Aided Searches in Astronomy*
 - 9 Nov: Kent Wood (NRL), *An All-Sky Discovery Machine: A Gamma-Ray Telescope and an Optical Survey Telescope*
 - 14 Dec: Gordon Bjoraker (GSFC), *Water Vapor and Hydrocarbons on the Outer Planets*

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.?

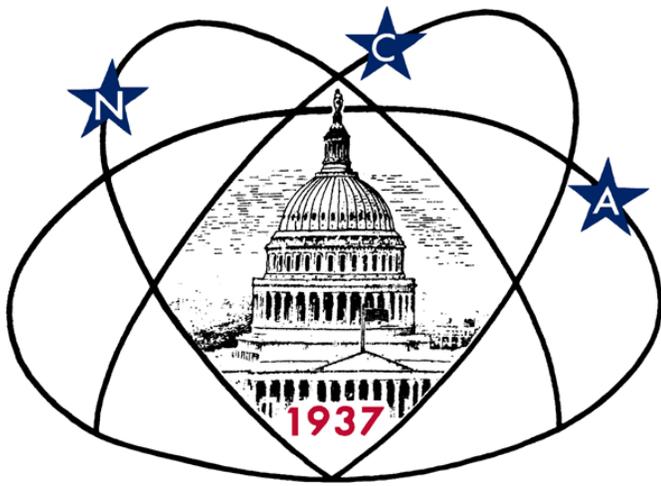
Are you interested in volunteering for: Telescope making, Exploring the Sky, Star Dust, NCA Officer, etc.?

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.

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First Class
Dated Material



Next NCA Meeting:

2013 October 12

7:30 pm

@ UMD Observatory

Ms. Sarah Brown

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