

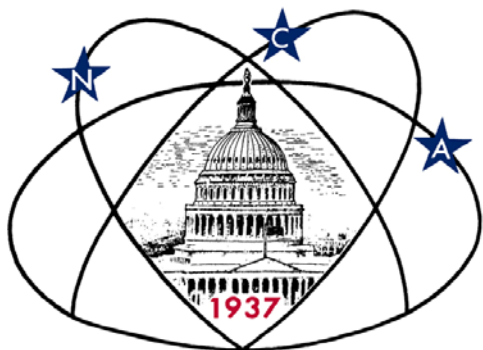
Star Dust

National Capital Astronomers, Inc.

April 2009

Volume 67, Issue 8

<http://capitlastronomers.org>



Next Meeting

When: Sat. Apr. 14, 2009
Time: 7:30 pm
Where: UM Observatory
Speaker: Rachel Osten,
STScI

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Directions to Dinner/Meeting

Members and guests are invited to join us for dinner at the Garden Restaurant located in the UMUC Inn & Conference Center, 3501 University Blvd E. The meeting is held at the UM 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.

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.

Apr. 2009: Dr. Rachel Osten Space Telescope Science Institute The Uses of Stellar Flares

Abstract: Flares on stars in the cool half of the HR diagram occur as the result of the dynamic rearrangement of magnetic fields. Stellar flares have now been detected over 12 orders of magnitude in wavelength/energy/frequency. I'll describe what is known and unknown about stellar flares, on what kinds of stars they occur (flaring stars are not necessarily flare stars!), and what uses stellar flares have for understanding both the structure and dynamics of the star's atmosphere and their impact on the surrounding stellar environment, including planet formation and habitability.

Biography: Dr. Rachel Osten is an astronomer at the Space Telescope Science Institute (STScI), working on the COS+STIS spectrographs team, where she is responsible for the calibration of the STIS spectrograph once it is repaired.

From Sept. 2005 - Aug. 2008 she held a Hubble Fellowship at the University of Maryland and NASA/GSFC. For the 3 years before that, she was a Jansky Fellow at the National Radio Astronomy Observatory in Charlottesville, and before that she was a graduate student at the University of Colorado, Boulder, where she obtained her degree in 2002.

Dr. Osten's research interests revolve around stars, and understanding the structure and dynamics of the outer atmospheres of cool stars. She uses an observational approach, with emphasis on multiwavelength observations and on timing/spectroscopy. She has observed with telescopes as varied as the Arecibo Telescope in Puerto Rico, the Giant Metrewave Radio Telescope in India, the Hubble Space Telescope, the Chandra X-ray Observatory, and the Swift Satellite.

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Thank you!

Science News

Thank you Nancy Grace Roman for finding these articles.

Hubble Telescope Finds Carbon Dioxide on an Extrasolar Planet

NASA News [hqnews@mediaservices.nasa.gov] Dec. 9, 2008

NASA's Hubble Space Telescope has discovered carbon dioxide in the atmosphere of a planet orbiting another star. This breakthrough is an important step toward finding chemical biotracers of extraterrestrial life.

The Jupiter-sized planet, called HD 189733b, is too hot for life. But the Hubble observations are a proof-of-concept demonstration that the basic chemistry for life can be measured on planets orbiting other stars. Organic compounds also can be a by-product of life processes and their detection on an Earth-like planet someday may provide the first evidence of life beyond our planet.

Previous observations of HD 189733b by Hubble and the Spitzer Space Telescope found water vapor. Earlier this year, Hubble found methane in the planet's atmosphere.

"The carbon dioxide is the main reason for the excitement because, under the right circumstances, it could have a connection to biological activity as it does on Earth," said Mark Swain, a research scientist at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "The very fact we are able to detect it and estimate its abundance is significant for the long-term effort of characterizing planets to find out what they are made of and if they could be a possible host for life."

Europa Probe

Florida Today March 11, 2009

Europa was selected by NASA as the target for its next flagship mission in the quest to determine if humanity is alone in the universe. While "NASA has a long haul to get the potentially \$3 billion mission off the ground, including the time it will take before a probe could get there, the mission will add to the historic accomplishments of NASA's planetary probes that are taking us where humans cannot go and unlocking the most ancient mysteries of our neighborhood.

ALCON EXPO 2009

Date: Sunday August 2nd through Saturday August 8th, 2009

Place: Hofstra University on Long Island, New York

Sponsored by: Amateur Observers' Society of NY, Inc.

For more details visit: www.alcon2009.org

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X-ray Vision Reveals Intergalactic Medium

Bruce Dorminey ScienceNOW Daily News February 20, 2009

Astronomers are claiming the detection via x-rays of a chunk of the universe's ordinary matter. Unlike the famous "dark matter" whose gravity is thought to hold the galaxies together, this more mundane form of missing matter is the stuff of normal atoms. The new observations fit well with the standard model of cosmology and could help test ideas about large-scale structures in the universe.

Three ingredients make up the universe. Normal atomic matter accounts for less than 5%, according to analysis of the microwave afterglow of the big bang. About 22% of the universe consists of mysterious dark matter--weighty stuff whose gravity appears to keep the stars from flying out of galaxies and to hold clusters of galaxies together but that has never been directly observed. A whopping 73% of the universe consists of bizarre space-stretching dark energy that's accelerating the expansion of the universe.

Even most of the ordinary matter is still missing. About half of ordinary matter has formed stars and is clearly visible. Most of the rest, which floats between galaxies, is ionized gas that is hard to see. Since 2000, astronomers have caught patches of this "warm-hot intergalactic medium" (WHIM) by, for example, spotting clouds of oxygen VI--oxygen stripped of five of its eight electrons--as they absorb the ultraviolet wavelengths in the light from quasars far behind them. But most WHIM is still unaccounted for, in large measure because the ions that trace the hotter stuff, such as oxygen VII, absorb x-rays. Because the oxygen VII is so diffuse, it is extremely difficult to detect whether x-rays have been absorbed by the gas.

Now David Buote, an astrophysicist at the University of California, Irvine, and an international team report the detection of x-rays absorbed by such missing ordinary matter. Using NASA's Chandra telescope and the European Space Agency's XMM-Newton, the team spotted this gas along a portion of the Sculptor Wall, part of a large assemblage of galaxies some 400 million light-years away. Oxygen VII between the galaxies absorbed x-rays coming from an energetic galaxy behind the Sculptor Wall. Buote gives their detection a 99.7% chance of being correct.

Controversial Claim of Liquid Water on Mars

AP March 11, 2009

Did NASA's Phoenix Mars lander find evidence of liquid water before it froze to death? Some scientists think so. In a provocative new paper, 22 members of the mission argue that droplets seen on Phoenix's leg were from liquid water that splashed during landing, but other team members say the images are too fuzzy to support the extraordinary claim. 'It's highly unlikely that that's the explanation,' said Michael Hecht of NASA's Jet Propulsion Laboratory, which managed the \$475 million mission. 'It's just water vapor moving around. It's an ordinary, unexciting explanation.'

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 and Expeditions

Dr. David Dunham

Asteroidal Occultations

| Date | Day | EDT | Star | mag. | Asteroid | dmag | s | " | Location |
|--------|-----|-------|-------------|-------|-------------|------|----|----|------------------|
| Apr 5 | Sun | 0:07 | TYC13270398 | 11.9 | Anacostia | 1.9 | 4 | 8 | sOH,swV,sVA,neNC |
| Apr 8 | Wed | 5:52 | SAO 139862 | 8.3 | 1990 MG | 8.4 | 1 | 2 | DE,MD,sPA;nVA? |
| Apr 10 | Fri | 2:29 | TYC02750523 | 11.9 | Oulu | 3.3 | 7 | 8 | nWV,nVA,DC,MD,DE |
| Apr 11 | Sat | 3:07 | TYC03090045 | 10.4 | 1988 VQ2 | 6.7 | 1 | 4 | DE,MD,VA,DC? |
| Apr 11 | Sat | 4:57 | SAO 186235 | 7.2 | Violetta | 9.2 | 2 | 2 | s&wNC,neTN,cenKY |
| Apr 12 | Sun | 5:55 | 2UC24238648 | 12.4C | Siwa | 0.4 | 5 | 8 | PA,NJ;MD,VA? |
| Apr 16 | Thu | 1:31 | SAO 117555 | 10.3 | Lacadiera | 3.5 | 12 | 4 | nOH,nPA,seNY,CT |
| Apr 22 | Wed | 0:03 | 2UC27673371 | 12.2C | Adelheid | 0.6 | 8 | 8 | nNJ,nePA,sNY;MD? |
| Apr 28 | Tue | 20:49 | TYC18600881 | 11.5 | Aurora | 2.2 | 6 | 7 | swPA,MD,nVA,DC |
| Apr 30 | Thu | 1:44 | 2UC21784766 | 12.8C | Oppavia | 1.1 | 5 | 9 | DE,MD,DC,nVA |
| May 1 | Fri | 23:39 | TYC49791058 | 11.2 | Aemilia | 1.7 | 10 | 7 | DE,MD,DC,nVA,OH |
| May 4 | Mon | 4:58 | 2UC24370330 | 13.9 | 2002 GP32 | 13.9 | 7 | 10 | TNO Americas |
| May 5 | Tue | 2:41 | SAO 119797 | 8.4 | Goldschmidt | 6.8 | 6 | 2 | NY,wMA,CT,RI |
| May 10 | Sun | 4:39 | TYC73911960 | 10.4 | Laura | 5.3 | 6 | 5 | OH,w&nPA,NY |

Lunar Grazing Occultations

| Date | Day | EDT | Star | Mag | % alt | CA | Location |
|--------|-----|-------|-----------|------|-------|--------|------------------------------------|
| Apr 22 | Wed | 9:10 | Venus | -4.7 | 8- | 42 27S | n.Columbus &s.of Cleveland,OH |
| May 1 | Fri | 22:31 | 73 Cancri | 7.6 | 52+ | 45 16N | Barboursville & Richmond, VA |
| May 1 | Fri | 22:46 | SAO 98365 | 7.9 | 52+ | 42 16N | nearCharlottesville. & BassLake,VA |

Total Lunar Occultations

| DATE | Day | EDT | Ph Star | Mag | % alt | CA | Sp. | Notes |
|--------|-----|-------|--------------|-----|-------|----|---------|-------------------------|
| Apr 4 | Sat | 2:10 | D theta Cnc | 5.3 | 68+ | 19 | 64S K5 | ZC1275, mag3 10 72" |
| Apr 9 | Thu | 23:26 | R 75 Vir | 5.5 | 99- | 29 | 63N K1 | WA 335,ZC1944,term.d.9" |
| Apr 10 | Fri | 4:51 | R ZC 1960 | 6.7 | 99- | 18 | 77N K3 | WA 317,dbl,TermDist 15" |
| Apr 12 | Sun | 1:50 | R SAO 183377 | 7.4 | 92- | 25 | 23S F2 | Close double |
| Apr 15 | Wed | 3:07 | R SAO 186222 | 7.5 | 70- | 15 | 28N F5 | Azimuth 145 deg. |
| Apr 15 | Wed | 3:53 | R SAO 186243 | 8.2 | 70- | 20 | 77S K2 | Close double?? |
| Apr 17 | Fri | 4:59 | R ZC 2895 | 7.8 | 52- | 21 | 82S B8 | |
| Apr 18 | Sat | 4:44 | R SAO 163770 | 7.9 | 42- | 16 | 44S K4 | |
| Apr 26 | Sun | 18:04 | D Alcyone | 2.9 | 4+ | 44 | 29S B7 | Sun+20,ZC 552=eta Tau |
| Apr 26 | Sun | 18:53 | R Alcyone | 2.9 | 4+ | 34 | -64S B7 | Sun+11,ZC 552=eta Tau |
| Apr 26 | Sun | 19:07 | D Atlas | 3.6 | 4+ | 32 | -5S B8 | Sun +8,ZC 560=27 Tau |
| Apr 26 | Sun | 19:22 | R Atlas | 3.6 | 4+ | 29 | -33S B8 | Sun +5,ZC 560=27 Tau |
| Apr 26 | Sun | 22:00 | D ZC 587 | 6.2 | 5+ | 2 | 88S K0 | Azimuth 301 deg. |
| Apr 27 | Mon | 21:18 | D ZC 745 | 7.3 | 11+ | 20 | 79S K0 | |
| Apr 28 | Tue | 20:35 | D SAO 77880 | 8.0 | 19+ | 40 | 72N F6 | Sun -8, close double |
| Apr 28 | Tue | 21:24 | D ZC 918 | 7.0 | 19+ | 30 | 27S K0 | |
| Apr 28 | Tue | 21:35 | D SAO 77932 | 8.0 | 19+ | 29 | 61N A5 | |
| Apr 28 | Tue | 23:06 | D OX Gem | 7.6 | 20+ | 12 | 46N M0 | Az. 293, SAO 78029 |
| Apr 30 | Thu | 0:11 | D ZC 1100 | 8.2 | 31+ | 10 | 79N K | Az.291 |
| Apr 30 | Thu | 21:17 | D ZC 1223 | 7.7 | 40+ | 51 | 21S F8 | |
| May 1 | Fri | 23:16 | D ZC 1360 | 7.4 | 53+ | 36 | 83S K0 | |
| May 2 | Sat | 23:38 | D ZC 1472 | 8.1 | 64+ | 37 | 57S G0 | |
| May 3 | Sun | 22:09 | D SAO 118518 | 7.7 | 74+ | 52 | 81S A2 | |
| May 4 | Mon | 22:15 | D ZC 1688 | 6.4 | 83+ | 48 | 49N G9 | mg2 9 5",PA280; NJgraze |
| May 5 | Tue | 23:06 | D ZC 1788 | 6.8 | 90+ | 42 | 85N G0 | |
| May 6 | Wed | 1:44 | D SAO 138830 | 7.2 | 91+ | 26 | 67N K0 | May be close double |
| May 6 | Wed | 3:15 | D 21 Vir | 5.5 | 91+ | 11 | 57N A0 | Az. 248, ZC 1800 |
| May 10 | Sun | 0:44 | R 2 Scorpii | 4.5 | 99- | 24 | 49N B2 | WA333,ZC2268,TmD14",3*s |

Explanations & more information are at <http://iota.jhuapl.edu/exped.htm>.
David Dunham, dunham@starpower.net, phone 301-220-0415

Timing equipment and even telescopes can be loaned for most expeditions that we actually undertake; we are always shortest of observers who can fit these events in their schedule, so we hope that you might be able to. Information on timing occultations is at <http://iota.jhuapl.edu/timmg920.htm>. Good luck with your observations.

A Standing Invitation to Suggest Speakers and Topics for NCA Meetings

John Hornstein

Is there a local speaker on astronomy whom you would like to hear? Have you come across a news item about a new result that you would like to learn more about? Is there some phenomenon on which you would like an update?

If so, send your suggestion to me, at jshgwave@yahoo.com, and we'll try to implement it at a future NCA meeting.

Calendar of Events

NCA Mirror- and Telescope-making Classes: Fridays, Apr. 3, 10, 27, and 24, 6:30 to 9:30 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 gfbrendenburg@yahoo.com. In case there is snow, 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). There is telescope viewing afterward if the sky is clear.

Dinner: Saturday, Apr. 11 at 5:30 pm, preceding the meeting, at the [Garden Restaurant](#) in the University of Maryland University College Inn and Conference Center.

ALCON, the Astronomical League convention, will be at Hofstra University on Long Island this year. The meeting is joint with ALPO and AAVSO and is from 2-8 August. Hofstra is near New York City. Their web site is www.alcon2009.org. There are a number of interesting side tours.

Upcoming NCA Meetings at the University of Maryland Observatory

Apr. 11, 2009

Dr. Rachel Osten, Space Telescope Science Institute
The Uses of Stellar Flares

May 9, 2009

Dr. Tom Armstrong, Naval Research Laboratory
Interferometric Imaging at Visible Wavelengths: Why, How, and Initial Results

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All members receive Star Dust, the monthly newsletter announcing NCA activities. The basic dues cover an electronic copy of Star Dust; paper copies are \$10 extra. You may also choose to get Sky & Telescope magazine at the discounted rate of \$33.

| | |
|------------------------------|-------|
| Student Membership | \$ 5 |
| Paper copy of Star Dust..... | \$10 |
| Sky & Telescope..... | \$33 |
| Total..... | _____ |

| | |
|-----------------------------------|-------|
| Individual/Family Membership..... | \$10 |
| Paper copy of Star Dust..... | \$10 |
| Sky & Telescope..... | \$33 |
| Total..... | _____ |

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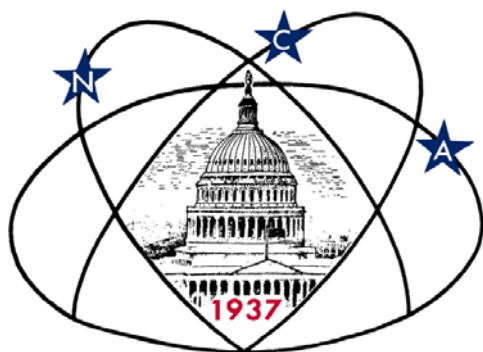
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First Class

Dated Material



Next NCA Mtg:

Apr. 11

7:30 pm

@ UM Obs

Dr. Rachel Osten

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