

STAR DUST

March 2008

Volume 66, Issue 7

MARCH 2008: DR. DRAKE DEMING, GSFC INFRARED LIGHT FROM EXTRASOLAR PLANETS

SPECIAL POINTS OF INTEREST:

- > Check out Nancy Grace's summaries of *Science* articles pp1, 6, 7.
- > What are you reading? Charles sent us his book list, p7.
- > Want to visit other local clubs? See the Local Astronomy Events on p3.
- > Who's in charge of the club? Find out on p4.
- > Not sure how to get to the dinner or meeting? Directions on p5.

Contents:

| | |
|------------------------|---|
| March Speaker | 1 |
| Belted Satellites | 1 |
| Calendar of Events | 2 |
| Occultations List | 3 |
| Officers | 4 |
| About the Club | 4 |
| Directions | 5 |
| A Void Within the Void | 6 |
| What are you reading? | 7 |
| Odd Little Stars | 7 |
| Membership Form | 7 |

Investigators using the Spitzer Space Telescope have detected thermal radiation emitted by planets orbiting nearby stars. These planets range in size from worlds larger than Jupiter, down to the size of Neptune. The Spitzer teams exploit the mutual eclipses of the planets and their stars in transiting systems, in order to reconstruct the broad band infrared spectra of these worlds. I will describe what we have learned from Spitzer, and how we expect the James Webb Space Telescope to take us to the detection of planets approaching the Earth in size.



Dr. Drake Deming is a planetary scientist and infrared astronomer at NASA's Goddard Space Flight Center. Dr. Deming earned a bachelors degree in mathematics from the University of Chicago in 1970, and his doctorate in astronomy

from the University of Illinois at Champaign-Urbana in 1976. He spent four years teaching astronomy at the University of Maryland, and joined the scientific staff of NASA's Goddard Space Flight Center in 1980. For the past 10 years, his research has focused on attempts to directly detect and characterize the "hot Jupiter" class of extrasolar planets. His quest succeeded with the detection of thermal emission from the extrasolar planet HD 209458b, using the Spitzer Space Telescope in 2005.

Dr. Deming is also the Principal Investigator for EPOCh (Extrasolar Planet Observation and Characterization)



which is observing extrasolar planets using the Deep Impact spacecraft as part of the EP-OXI mission.

Drs. Lisse (l) and Deming (r) review an Earth Observing sequence for EPOCh at a recent meeting at UM.

BELTED SATELLITES

From paper by Sébastien Charnoz, André Brahic, Peter C. Thomas, Carolyn C. Porco

[*Science*, 7 Dec 2007](#)

Two small satellites within Saturn's rings, Pan, in the Encke gap, and Atlas, just outside the A ring, have strange flying saucer shapes. The satellites are each quite elliptical and they

also have unusual ridges as equatorial belts. The ridges are in the same plane as Saturn's rings and the width of each ridge equals the extent to which each satellite moves up and down through the ring plane. The authors show by mathematical simulations that both the flatness of the satellites and their equa-

torial rings can be explained by the accretion of ring particles. In addition, the nearly circular orbit of Pan leads to an even height of the equatorial belt; the eccentricity of Atlas' orbit explains the fact that the bulge is thicker on the trailing edge.

[NGR]

Lunar Occultation of Saturn 1997

This is one of my favorite shots. Also one of my luckiest! The camera advance stopped working and I only got three frames off the roll!

Photo by Elizabeth W.

date: 11 Nov 1997

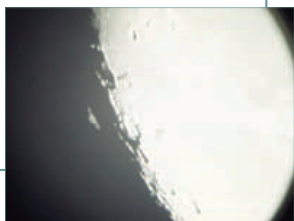
location: Melton Obs, Columbia, SC

setup: 26mm eyepiece projection through 16" f/19 cassegrain

film: Fuji Provia

exposure: 1 sec.

[online](#)

**April Newsletter**

We are looking for observing reports, astronomy equipment/book/product reviews, *How I Got Into Astronomy* stories, photo submissions (like above!), astropoems, and anything else astro-related.

Please send submissions to
warnerem@astro.umd.edu

CALENDAR OF EVENTS**NCA Mirror- and Telescope-making**

Classes: Fridays, March 7, 14, 21 and 28, 6:30 to 9:30pm 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. 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 8:00pm. (Nov.-Apr.) or 9:00pm (May-Oct.). There is telescope viewing afterward if the sky is clear.

Dinner with NCA members and speaker: Saturday, March 8 at 5:30 P.M., preceding the meeting, at the [Garden Restaurant](#) in the

University of Maryland University College Inn and Conference Center. See map and directions on [Page 5](#).

Upcoming NCA Meetings at the University of Maryland Observatory

Saturdays

[March 8, 2008,](#)

Dr. Drake Deming, GSFC/NASA, "Infrared Light From Extrasolar Planets"

[April 12, 2008,](#)

Dr. Alycia J. Weinberger, DTM/CIW, "What are planets made of? Exploring the composition of protoplanetary disks"

[May 10, 2008,](#)

Dr. Xiaolei Zhang, GMU, "Gravitational Density Waves in Galaxies"

[June 14, 2008,](#)

Dr. Harold Williams, Montgomery College, *tbd*

**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) and also save some trees.

If you can switch from paper to digital, please contact Michael L. Brabanski, the NCA Secretary-Treasurer, at mlbrabanski@verizon.net or 301-649-4328 (h).

Thank you!

MEETING VIDEOS

Those who attend the meetings have probably noticed that Jay Miller records the talks. While the main purpose is to produce a DVD to assist the reviewer of the talk, he also makes several extra copies. While he claims not to be Spielberg, if there is a lecture you've missed or one you want to look at again, members can contact Jay to borrow a copy.

rigel1@starpower.net

Mid-Atlantic Occultations and Expeditions

by Dr. David Dunham

Asteroidal Occultations

| 2008 | EST/ | Planet or | dur. | Ap. | | | | | |
|--|------|-----------|-------------|------|------------|------|----|-----|--------------------|
| Date | Day | EDT | Star | Mag | Asteroid | dmag | s | in. | Location |
| Mar 8 | Sat | 23:42 | TYC60840700 | 11.2 | Maria | 1.9 | 4 | 6 | sNJ, nMD, sPA, OH |
| Mar 8 | Sat | 23:57 | PPM 95551 | 9.8 | Kuma | 7.6 | 2 | 4 | NJ, nePA, wNY, ON |
| *** Dates and times above are EST, those below are EDT *** | | | | | | | | | |
| Mar 12 | Wed | 2:15 | TYC55271139 | 11.2 | Delia | 3.3 | 5 | 7 | DE, MD, swPA, nOH |
| Mar 18 | Tue | 2:38 | TYC55230275 | 11.6 | Industria | 0.5 | 8 | 8 | DE, MD, sPA, nOH |
| Mar 19 | Wed | 1:42 | TYC49120990 | 12.7 | Oriola | 1.3 | 4 | 10 | s&wMD, nVA, swPA |
| Mar 22 | Sat | 19:19 | 2UC38560249 | 13.3 | 1998 WA25 | 10.3 | 8 | 11 | TNO N.Amer.? |
| Mar 23 | Sun | 21:06 | 2UC36082861 | 12.2 | Aspasia | 0.9 | 12 | 9 | NJ, MD, PA, DC, WV |
| Mar 24 | Mon | 4:36 | TYC49500135 | 11.1 | Tatjana | 2.5 | 8 | 7 | s&wNC, nSC, eTN |
| Mar 25 | Tue | 0:39 | 2UC40006780 | 13.4 | Dejopeja | 1.0 | 7 | 12 | nOH, w&sMD, nVA |
| Apr 4 | Fri | 0:53 | TYC49431006 | 11.6 | Praxedis | 2.8 | 4 | 8 | neNC, VA, WV, nOH |
| Apr 4 | Fri | 21:26 | TYC19140606 | 10.2 | Robelmonte | 5.8 | 2 | 4 | sOH, swVA, n&eNC |
| Apr 6 | Sun | 23:21 | SAO 139528 | 7.2 | Chaplin | 9.2 | 2 | 2 | neNC, sVA, WV, KY |

Lunar Grazing Occultations

| DATE | Day | EDT | Star | Mag | % alt | CA | Location |
|--------|-----|-------|------------|-----|--------|-----|----------------------------------|
| Mar 29 | Sat | 5:03 | SAO 186536 | 7.5 | 56- 18 | 1S | Gaithrsbg, Greenbelt, Bowie, MD |
| Apr 7 | Mon | 20:27 | ZC 387 | 6.9 | 5+ 15 | 15N | Cleveland, OH; York, PA |
| Apr 8 | Tue | 20:04 | SAO 76046 | 7.1 | 11+ 32 | 12N | Sun-5; HighBridge&Metuchen, NJ |
| Apr 8 | Tue | 22:24 | 18 Tauri | 5.7 | 12+ 8 | 14N | Alntown&Plymouth, PA; Marltn, NJ |
| Apr 10 | Thu | 21:23 | 136 Tauri | 4.6 | 30+ 43 | 14N | Hershey, PA; Wilmington, DE; sNJ |
| Apr 11 | Fri | 22:10 | 39 Gem | 6.2 | 41+ 46 | 15N | Richmond & Chesapeake, VA |
| Apr 12 | Sat | 1:22 | SAO 79052 | 8.8 | 43+ 11 | 12N | Verona & Bass Lake, VA |

Total Lunar Occultations

| DATE | Day | EDT | Ph Star | Mag | % alt | CA | Sp. | Notes |
|--------|-----|-------|--------------|-----|---------|-----|-----|---------------------------|
| Mar 9 | Sun | 20:52 | D ZC 163 | 7.3 | 7+ 9 | 60N | F2 | Az278; mg2 10.6 8", PA200 |
| Mar 12 | Wed | 23:32 | D SAO 76472 | 7.2 | 35+ 19 | 88N | G8 | spectroscopic binary |
| Mar 13 | Thu | 19:54 | D ZC 756 | 6.6 | 45+ 72 | 63N | F0 | Sun alt. -9 deg. |
| Mar 13 | Thu | 22:35 | D ZC 773 | 7.0 | 46+ 42 | 82N | F8 | mg2 8.7 sep. 14", PA 352 |
| Mar 15 | Sat | 0:41 | D ZC 958 | 6.7 | 58+ 30 | 61N | K1 | spectroscopic binary |
| Mar 15 | Sat | 20:44 | D 49 Gem | 7.1 | 67+ 77 | 66N | A0 | ZC 1094 |
| Mar 19 | Wed | 21:38 | D 37 Sex | 6.4 | 97+ 44 | 74N | K1 | ZC 1567 |
| Mar 21 | Fri | 1:58 | D upsilonLeo | 4.3 | 100+ 47 | 59S | G9 | ZC 1685, term. dist. 5" |
| Mar 29 | Sat | 4:02 | R SAO 186461 | 7.4 | 55- 12 | 61N | A2 | Az. 117; spec. binary |
| Mar 29 | Sat | 5:03 | G SAO 186536 | 7.5 | 55- 18 | 1S | A3 | graze in Maryland |
| Mar 30 | Sun | 4:47 | R SAO 187716 | 7.2 | 45- 12 | 78S | G6 | Az140; dbl & mg3 8.6, 46" |
| Apr 7 | Mon | 20:19 | D ZC 387 | 6.9 | 5+ 16 | 34N | G5 | Close double; graze, PA |
| Apr 8 | Tue | 19:49 | D SAO 76046 | 7.1 | 11+ 35 | 42N | A0 | Sun -3; graze n. NJ |
| Apr 8 | Tue | 22:00 | D Taygeta | 4.3 | 12+ 12 | 50S | B6 | 19Tau=ZC539; close dbl. |
| Apr 8 | Tue | 22:14 | D Asterope | 5.8 | 12+ 9 | 67S | B8 | 21 Tauri = ZC 542 |
| Apr 8 | Tue | 22:15 | D 18 Tauri | 5.7 | 12+ 9 | 37N | B8 | ZC538; spec.bin; NJgraze |
| Apr 8 | Tue | 22:17 | D ZC 543 | 6.4 | 12+ 9 | 61S | A0 | close dbl?; Pleiades |
| Apr 8 | Tue | 22:21 | D Maia=ZC541 | 3.9 | 12+ 8 | 20S | B8 | close dbl?; NC graze |
| Apr 8 | Tue | 22:22 | D SAO 76152 | 7.2 | 12+ 8 | 7S | B9 | mag.2 9.0 sep.0.2", PA0 |
| Apr 8 | Tue | 22:37 | D ZC 548 | 6.8 | 12+ 5 | 56S | B9 | maybe close double |
| Apr 9 | Wed | 23:03 | D ZC 732 | 7.5 | 21+ 13 | 64S | K3 | Az 294; close double |
| Apr 10 | Thu | 19:52 | D SAO 77621 | 7.5 | 30+ 60 | 48N | M3 | Sun alt. -3 deg. |
| Apr 10 | Thu | 21:12 | D 136 Tauri | 4.6 | 30+ 45 | 35N | A0 | ZC 890; close double |
| Apr 10 | Thu | 21:36 | R 136 Tauri | 4.6 | 30+ 41 | -7N | A0 | graze PA, nDE, sNJ |
| Apr 10 | Thu | 22:38 | D SAO 77753 | 7.2 | 31+ 29 | 73N | G2 | |
| Apr 10 | Thu | 23:55 | D ZC 906 | 6.6 | 32+ 15 | 45N | K1 | Az. 293; close double |
| Apr 11 | Fri | 22:10 | D 40 Gem | 6.4 | 42+ 45 | 61N | B8 | ZC 1062; close double? |
| Apr 11 | Fri | 23:28 | D ZC 1068 | 7.1 | 42+ 30 | 61S | A2 | |
| Apr 11 | Fri | 23:37 | D SAO 78995 | 7.4 | 43+ 29 | 51S | A3 | |

LOCAL ASTRONOMY EVENTS

25Feb-8Mar [Globe at Night](#)

Help collect observations to map out light pollution around the world

5 Mar, 8pm [UM Obs Open House](#)

8 Mar, 7:30pm [NCA Mtg](#)

UM Observatory

9 Mar, 7pm [NOVAC Mtg](#)

Enterprise Hall, GMU

12 Mar, 7pm [SAS Mtg](#)

Lord Fairfax Comm. College

12 Mar, 7:30pm [WAS Mtg](#)

Bear Branch Nature Center

20 Mar, 7:30pm [HAL Mtg.](#)

Howard County Dept. of Recreation and Parks

20 Mar, 8pm [UM Obs Open House](#)

27 Mar, 7:30pm [ASG Mtg.](#)

H.B. Owens Science Center

The UM Observatory website maintains a more [complete list of links to local astronomy clubs and space places.](#)



20 Feb 2008 Lunar Eclipse

Elizabeth M Warner

~21:43, 1s

Canon 20Da

152mm f/9 refractor

Explanations & more information is at iota.jhuapl.edu/exped.htm
David Dunham, dunham@starpower.net, phone 301-474-4722

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NCA: SERVING SCIENCE & SOCIETY SINCE 1937

NCA is a nonprofit, membership-supported, volunteer-run, public-service corporation dedicated to advancing astronomy, space technology, and related sciences through information, participation, and inspiration, via research, lectures, presentations, publications, expeditions, tours, public interpretation, and education. NCA is the astronomy affiliate of the Washington Academy of Sciences. NCA is an IRS Section 501(c)(3) tax-deductible organization. All are welcome to join NCA.

SERVICES & ACTIVITIES:

Monthly Meetings feature presentations of current work by researchers at the horizons of their fields. All are welcome; there is no charge.

NCA Volunteers serve in a number of capacities. Many members serve as teachers, clinicians, and science fair judges. Some members observe total or graze occultations of stars occulted by the Moon or asteroids.

Publications received by members include the

monthly newsletter of NCA, *Star Dust*, and an optional discount subscription to *Sky & Telescope* magazine.

Consumer Clinics:

Some members serve as clinicians and provide advice for the selection, use, and care of binoculars and telescopes and their accessories. One such clinic is the semiannual event held at the Smithsonian Institution National Air and Space Museum.

Fighting Light Pollution:

NCA is concerned about light pollution and is interested in the technology for reducing or eliminating it. To that purpose, NCA is an Organization Member of the International Dark Sky Association (IDA).

Classes: Some NCA members are available for educational programs for schools and other organizations. The instruction settings include star parties, classroom instruction, and schoolteacher training programs that provide techniques for teaching astronomy. NCA sponsors a telescope-making class, which is described in

the *Star Dust* "Calendar of Monthly Events."

Tours: On several occasions, NCA has sponsored tours of astronomical interest, mainly to observatories (such as the National Radio Astronomy Observatory) and to the solar eclipses of 1998 and 1999.

Discounts are available to members on many publications, products, and services, including *Sky & Telescope* magazine.

Public Sky Viewing Programs are offered jointly with the National Park Service, and others. Contact: Joe Morris, j.c.morris@verizon.net or (703) 620-0996.

Members-Only Viewing Programs periodically, at a dark-sky site.

NCA Juniors Program fosters children's and young adults' interest in astronomy, space technology, and related sciences through discounted memberships, mentoring from dedicated members, and NCA's annual Science Fair Awards.

capitalastronomers.org/

DIRECTIONS TO DINNER

Members and guests are invited to join us for dinner at the [Garden Restaurant](#) located in the [UMUC Conference Center](#), 3501 University Blvd.

From the Beltway North (inner loop), take New Hampshire Ave. south, turn left at the second traffic light onto Adelphi Rd., and at the third light (passing Metzerrott) turn left onto University then immediately right into the garage.

From the Beltway South (outer loop), take US-1 south, turn right onto University Blvd. west, and take it to the intersection with Adelphi Road. Park either in the garage (costs), or in Lot 1 nearby (free).

After dinner, to get to the observatory, exit to the right onto University Blvd. (MD-193) east, and at the second light turn left onto Metzerrott Road. Once on Metzerrott Rd., continue past a traffic light at St. Andrews Place. The observatory entrance is about a quarter of a mile on the left side of the road after that. The observatory entrance is slightly hidden, so slow down to turn left as soon as you pass a large "System Administration" sign. The observatory entrance is almost directly the street from the UM System Administration Sign (3300 Metzerrott Rd.).

DO YOU 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.

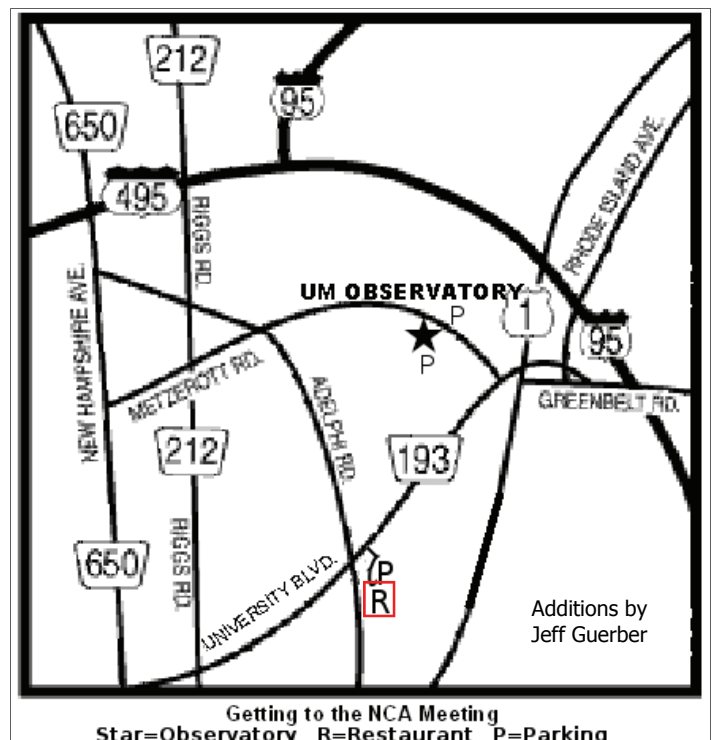
DIRECTIONS TO UM OBSERVATORY

NCA meetings are held at 7:30pm at the University of Maryland Observatory, in College Park. The observatory is located on Metzerrott Road between Adelphi Road and University Blvd.

From the beltway (I-495):

if on the Inner Loop, take Exit 28B toward Takoma Park, which puts you on New Hampshire Ave. (MD-650) south, turn left at the second light onto Adelphi Road, two more lights, turn left onto Metzerrott Road, and proceed 0.6 miles to the observatory entrance (on your right);

if on the Outer Loop, take the College Park/Route 1 exit. Head south on Route 1 for about a mile until you see a sign for 193 West. Get on 193 West. The first traffic light is at Metzerrott Road. Take a right onto Metzerrott Road. Once on Metzerrott Rd., continue past a traffic light at St. Andrews Place. The observatory entrance is about a quarter of a mile on the left side of the road after that. The observatory entrance is slightly hidden, so slow down to turn left as soon as you pass a large "System Administration" sign. The observatory entrance is almost directly across the street from the UM System Administration sign (3300 Metzerrott Rd.).



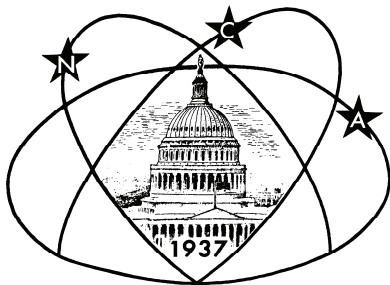
THANK YOU!!!

I'm sure that most and probably all of the members of NCA will join me in thanking Elliott and Adele Fein for their hard work on the newsletter for the past 8 years.

I'd like to extend the thanks to all of the previous newsletter editors as well. ... Alisa Joaquin... Bob McCracken...

Their efforts have helped bind the society, provided an archive of information, and laid a foundation for future editors to build upon.

But these editors often had a corps of volunteers (members and often family!) who helped write articles, reviewed drafts, folded, stamped... all of the various chores that helped get the newsletter published and disseminated. Those volunteers are not often *acknowledged*, but we wish to let them know that we *appreciate* their help as well!



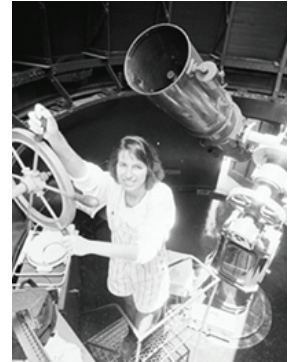
NATIONAL CAPITAL
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Editor: Elizabeth Warner

Editorial Advisors: Walt Faust
John D. Gaffey, Jr.
Jeffrey Norman
Wayne Warren
Harold Williams

PDF distributor: Jay Miller



Elizabeth, ~ 15 yrs ago!

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A VOID WITHIN THE VOID

From Phil Berardelli
[ScienceNOW: Daily News](#)
24 August 2007

Astronomers have discovered an enormous zone that appears to contain nothing except the faint radiation left over from the big bang. So far, no one knows what could have caused the zone, and the discovery could force astronomers to revise some of the fundamental assumptions about the structure of the universe.

Outer space might seem empty, but even between the galaxies it can teem with gas and dust, as well as elusive dark matter. Radiation also abounds, including the cosmic microwave background (CMB) from the big bang. In some parts of the cosmos, there is nothing

but this background radiation. A leading model, known as inflation, suggests that shortly after the big bang, the universe underwent an exponential growth spurt that established its structure. The inflation model predicts that these voids should be roughly comparable in size and number to the galaxy clusters. But now, researchers have discovered a zone of emptiness that dwarfs all other objects in the universe. A team from the University of Minnesota, Twin Cities, had been studying data from the Very Large Array Sky Survey, which is mapping the entire universe with radio waves. The team members focused on one part of the survey where the temperature

of the CMB is lower than normal. This cooling is significant because interactions with both visible and dark matter warm the CMB slightly, and so the team suspected that matter was absent. Further observations of the zone, located between 6 billion and 10 billion light-years away, revealed it to be not only devoid of galaxies but also about a billion light-years wide. "What we're suggesting is that there is no matter in this void, either normal or dark," says radio astronomer and co-author Lawrence Rudnick.

[NGR]

WHAT ARE YOU READING?

Member Charles L. suggests:

- Neil De Grasse Tyson 's
 - [Merlin's Tour of the Universe](#)
 - [Death by Black Hole](#)
 - [The Sky is Not the Limit](#)
 - [Universe Down to Earth](#)
- Tom Siegfried's [Strange Matters](#)
- Brian Greene's [The Elegant Universe](#)

ODD LITTLE STARS

From Phil Berardelli
[ScienceNOW: Daily News](#)
21 November 2007

Until this year, all known white dwarfs boasted atmospheres consisting of either hydrogen or helium, which can be easily identified by their respective spectral lines.

Not so the nine discovered by an international team and reported in Nature. Plucked from millions of stars and galaxies analyzed over the past 7 years by the Sloan Digital Sky Survey. These are considerably cooler than nor-

mal and contain atmospheres made entirely of carbon, with no traces of hydrogen or helium. Astronomers don't have a clue why. Usually, a very large star produces excess carbon when it is about to shut down the nuclear-fusion cycle. The shutdown of the fusion means gravitational collapse followed by a supernova explosion. So why are these white dwarfs still around? One possibility, notes astronomer and lead author Patrick Duftour of the University of Arizona, Tucson, is that

the stars simply might not have grown massive enough—about 10 times heavier than the sun—to explode but are so close to the limit that they might be harboring abnormally high amounts of carbon. The unique chemical signature of the stars may provide clues to what's going on. "It tells us that nature has found a way that we didn't know to make white dwarf stars without the usual hydrogen or helium surface layers."

[NGR]

Yes, I'd like to join NATIONAL CAPITAL ASTRONOMERS!

Name: _____ Date: ____/____/____

Street address: _____

City/State/ZIP: _____

Telephone: ____ - ____ - _____ E-mail: _____

Other family members who should receive a membership card: _____

Would you prefer to get *Star Dust* by e-mail? ____

MEMBERSHIP CATEGORIES AND ANNUAL DUES RATES

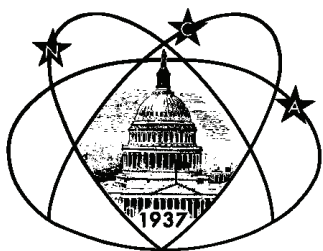
All members receive *Star Dust*, the monthly newsletter announcing NCA activities. As an added optional benefit to extend your knowledge of astronomy, you may also choose Sky and Telescope magazine at the discounted rate of \$33.

- Student Membership: \$5with Sky and Telescope....\$38
- Standard Individual or Family Membership: \$10with Sky and Telescope....\$43

You are welcome to make contributions in any amount in addition to the dues shown above.

Contribution amount: _____

Please mail this form with your check payable to National Capital Astronomers, to:
Mr. Michael L. Brabanski, NCA Treasurer; 10610 Bucknell Drive, Silver Spring, MD 20902-4254



National Capital Astronomers, Inc.

If undeliverable, return to
NCA c/o Michael L. Brabanski
10610 Bucknell Dr.
Silver Spring, MD 20902-4254

**FIRST CLASS
DATED MATERIAL**

***Next NCA Mtg:
MARCH 8!***

Inside this issue:

| | |
|------------------------|---|
| March Speaker | 1 |
| Belted Satellites | 1 |
| Calendar of Events | 2 |
| Occultations List | 3 |
| Officers | 4 |
| About the Club | 4 |
| Directions | 5 |
| A Void Within the Void | 6 |
| What are you reading? | 7 |
| Odd Little Stars | 7 |
| Membership Form | 7 |