Next Meeting
When: Sat. Feb. 8th, 2014
Time: 7:30 pm
Where: UMD Observatory
Speaker: Holly Gilbert

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Directions to Dinner/Meeting
Our time and location for dinner with the speaker before each meeting is 5:30 pm 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 Metzerott 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.

Abstract: Our closest star has been an object of mystery and inspiration for millennia; but, over the last 50+ years, solar scientists have made great strides in understanding the inner workings of what makes the Sun tick. The layers of the solar atmosphere lead to dynamic behavior and act as the birthplace of space weather. NASA has a fleet of spacecraft dedicated to studying the Sun and its domain, the heliosphere, and its effects on Earth. I will take you on a journey through the Sun’s varying moods, focusing on coronal mass ejections and associated activity, and discuss the implications for Earth in the past, present, and future.

Biographical Sketch: Dr. Holly Gilbert is Chief of the Solar Physics Laboratory in the Heliophysics Science Division at NASA's Goddard Space Flight Center. She obtained a BS in physics from the University of Colorado, Boulder and her PhD in theoretical astrophysics from the University of Arizona.
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.

Top 10 SOHO Images Contest Results, 1st place (11,468 votes):

Courtesy ESA/NASA/SOHO

Did the free National Geographic Live tickets for the March 4th screening of "Cosmos: A Spacetime Odyssey" with Neil deGrasse Tyson disappear into a black hole?

http://youtu.be/7e5-0t0pTF0

Our Dynamic Sun – continued from page 1

Holly Gilbert

University of Oslo in Norway. Prior to joining NASA, Dr. Gilbert was a Research Scientist at Rice University and an Associate Scientist at the High Altitude Observatory at the National Center for Atmospheric Research. As a solar physicist for over 13 years, Dr. Gilbert has extensive experience studying the solar atmosphere and phenomena associated with coronal mass ejections (CMEs), such as prominences and global waves. In her research she has utilized used both ground- and space-based data to gain a better understanding of solar dynamical processes. An ongoing primary focus of her research is determining the nature of prominence support, formation, and evolution and how this relates to CMEs. Her research in this area will lead to a greater understanding of the magnetic environment that controls solar eruptions (sometimes referred to as “solar storms”).

Cold Flow Evidence

Flowing into the Fireworks Galaxy (NGC 6946), a stream of hydrogen gas was discovered recently by astronomer D.J. Pisano (West Virginia University). There has been a standing question of what maintains consistent star formation rates in spiral galaxies such as NGC 6946. Some scientists believe that “cold flows,” or hydrogen rivers, from intergalactic space, infuse the galaxies and provide the needed star fuel. The discovery of this hydrogen stream, using the Robert C. Byrd Green Bank telescope, may provide support for the cold flow theory.

A faint aura of hydrogen (in red) that appears to flow between galaxies

Did the free National Geographic Live tickets for the March 4th screening of "Cosmos: A Spacetime Odyssey" with Neil deGrasse Tyson disappear into a black hole?

Read more at: https://public.nrao.edu/news/pressreleases/gbt-sees-river-of-hydrogen

The Green Bank radio telescope (West Virginia) can sense very faint radio sources and its surface characteristics also contribute to the timing accuracy of pulsars and the discovery of the nature of dark matter. The telescope is 485 feet tall, has a 100x110 meter dish and, at over 17 million pounds, is the largest, “fully-steerable” telescope in the world.

Geremia
(University of AZ)
Sky Watchers

February

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6:00 pm</td>
<td>Planets, Northern Hemisphere. Features: Uranus (with the Moon at 3° N.)</td>
</tr>
<tr>
<td>11</td>
<td>1:00 am</td>
<td>Planets, Northern Hemisphere. Features: Jupiter (with the Moon at 5° S.)</td>
</tr>
<tr>
<td>14</td>
<td>6:53 pm</td>
<td>Full Moon, Global. Other Moon Names: Full Snow Moon, Hunger Moon, Full Bony Moon, Moon of Ice, Budding Moon</td>
</tr>
<tr>
<td>15</td>
<td>4:00 am</td>
<td>Planets, Northern Hemisphere. Features: Venus (brightest mag at -4.9)</td>
</tr>
<tr>
<td>16-28</td>
<td>Evening</td>
<td>Zodiacal Light, W. Sky, Northern Hemisphere.</td>
</tr>
</tbody>
</table>

All times EST

The Drinking Gourd

“When the sun comes back and the first quail calls, follow the drinking gourd, for the old man is waiting for to carry you to freedom, if you follow the drinking gourd…”

February is the month that the US celebrates African American history. Part of that history is a system of people, safe houses & routes from the far southeastern states of the US to Canada, collectively called “The Underground Railroad.” Enslaved Africans would make use of this system to stealthily escape the US borders into a land where slavery was prohibited. Beyond cryptic quilts with hidden directions to use the underground system, the railroad was also associated with celestial navigation. Polaris, the North Star, indicated the general direction that escaped slaves should travel to freedom. Locating Polaris was based on finding the Big Dipper (which was known by the Africans as “the Drinking Gourd”) in Ursa Major and viewing the alignment of the edge of the gourd (the stars, Merak & Dubhe) outward to the Little Dipper in Ursa Minor. This navigation system, along with other escape details, was immortalized in the the song, “Follow the Drinking Gourd” (attributed to a carpenter called “Peg-leg” Joe), in which escapees were charged to cross the Ohio River and move ever northward using the underground system.

continued on page 4
Use of the gourd to find Polaris – diagram based on Therese Josephson’s
The Story of: Follow the Drinking Gourd (Full Sail University)

Although the Underground Railroad is an undisputed matter of
historical record, there is a question of whether Joe really taught the
song to enslaved Africans before the Civil War. Some do not believe
so; others do. That being said, whether folklore or fact, the song
continues to be inspiring and still stands as a representation of the
courage, creativity and dedication of so many emancipators,
supporters and slaves who risked everything for an idea, a belief and
an unwavering moral compass...and they had pretty good celestial &
geo-navigation skills all around.

Other Resources

Some of the song verses and their
meanings are listed on the NASA Quest
educational site:
http://quest.arc.nasa.gov/ltc/special/mlk/gou
rd2.html

Also, for a quick video of the song lyrics,
See Therese Josephson’s 6-minute history

Finally, Montgomery College’s Takoma
Park Planetarium annually hosts a
presentation called “African Skies.” This
year, it is being held on Saturday, February
15th at 7 pm:
http://www.montgomerycollege.edu/Depart
ments/planet/

Water on Ceres

Water vapor was detected on the dwarf
planet, Ceres, located in the asteroid belt
between Mars & Jupiter. This marks the first
time an object in the belt has been identified
as having water vapor. Scientists used the
Herschel Space
Observatory to make
the claim. The
spacecraft, Dawn,
should reach Ceres
in Spring 2015 to
investigate the dwarf
planet in more detail.

For a soulfully acoustic version
of “Follow the Drinking Gourd,”
listen to multiple award-
winning blues singer, Eric
Bibb:
http://youtu.be/kBZEMkmwYA
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 in the notes following a /.
- 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,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

<table>
<thead>
<tr>
<th>Date</th>
<th>Day EST</th>
<th>Date EDT</th>
<th>Star</th>
<th>mag.</th>
<th>Asteroid</th>
<th>dmag</th>
<th>Sp. Notes</th>
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<tbody>
<tr>
<td>Feb 8 Sat</td>
<td>1:03</td>
<td>Sat 19:20</td>
<td>2UC39481875</td>
<td>12.3</td>
<td>Kirkwood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb 10 Mon</td>
<td>1:11</td>
<td>Mon 1:13</td>
<td>2UC33553809</td>
<td>11.6</td>
<td>Terzina</td>
<td>0.3</td>
<td>15 9 MD, DE, snj, PA, DC</td>
</tr>
<tr>
<td>Feb 17 Mon</td>
<td>6:14</td>
<td>Mon 6:14</td>
<td>SAO 118460</td>
<td>9.9</td>
<td>ltha</td>
<td>5.7</td>
<td>4 4vA, sOH, MD, DC</td>
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<tr>
<td>Feb 26 Wed</td>
<td>5:30</td>
<td>Wed 5:30</td>
<td>2UC18934677</td>
<td>13.1</td>
<td>Pretoria</td>
<td>1.2</td>
<td>11 9 sOH, VA, NC, DC</td>
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</table>

Lunar Occultations

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<th>Date</th>
<th>Day EST</th>
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<th>mag.</th>
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Explanation & more information is at http://iota.jhuapl.edu/exped.htm

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

NCA member, James Blau, posted an interesting link to an application developed by Cary & Michael Huang called “The Scale of the Universe” in which one can slide the scroll bar and get a perspective on the magnitude and/or distance of all manner of things, from earthworms to the Tarantula Nebula. There are 2 versions with which one can explore:

http://htwins.net/scale/ and http://htwins.net/scale2/
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Astronomie Haute Horlogerie

For those skywatchers who wear timepieces, Van Cleef & Arpels has a Poetic Astronomy series. During the promotion of the series, astrophysicist André Brahic stated that “astronomy is poetic by definition and by nature” and that both scientists and lovers of beauty are drawn to the field, which is connected to knowledge, philosophy and art. The newest edition to the series is the Midnight Planétarium Poetic Complication™ watch, which was unveiled in Geneva at Salon International de la Haute Horlogerie (SIHH) last month.

The watch is a mini solar system of 6 of the planets visible from earth revolving around a miniature sun in accurate time (e.g., Mercury in 88 days, Earth in 365 days, etc.) on aventurine disks. The planets are distinguished by different precious/semi-precious stones (Earth is turquoise) and the owner can set a special day during the year with a “lucky star.” The watch will be available later this year at the starting price of $245,000 US for the alligator leather-strapped, 18K rose gold version (above).

The Observing Campaigns have Begun!

http://www.globeatnight.org/
The Square Kilometre Array (SKA) is projected to become the largest radio telescope array in the world (3,000 dishes with the equivalent surface area of a square kilometer). Australia and South Africa will both host part of the telescope system.

https://www.skatelescope.org/

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The submission deadline for the March issue of Star Dust is February 23rd

Clear Skies!

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
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