

# Star Dust

National Capital Astronomers, Inc.

March 2011

Volume 69, Issue 7

<http://capitlastronomers.org>

## Next Meeting

**When:** Sat. Mar. 12, 2011  
**Time:** 7:30 pm  
**Where:** UM Observatory  
**Speaker:** John Debes,  
NASA GSFC

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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](mailto:rigel1@starpower.net).

## Observing after the Meeting

Following the meeting, members and guests are welcome to tour through the Observatory. Weather-permitting,

## March 2011: John Debes NASA Goddard Space Flight Center Extrasolar Gas: A Stellar Debris Disk Flapping in the Interstellar Wind

**Abstract:** Many nearby debris disks that have been resolved in scattered light show a variety of twists, warps, or asymmetries. Often these features are noted and the presence of unseen planetary companions is inferred. However, the outer regions of debris disks can be impacted by their surrounding environment--some of the warps we observe are disks blowing in the interstellar wind. In this talk, I will show some striking examples of this behavior, as well as my physical model for explaining these phenomena. A good understanding about how dust from the leftovers of planet formation react to the interstellar medium could tell us new things about the very building blocks of planetary systems around other stars.

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several of the telescopes will also be set up for viewing.

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Thank you!

**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.

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**Biography:** John H. Debes is a NASA Postdoctoral Program Fellow at NASA's Goddard Space Flight Center in the Exoplanets and Stellar Astrophysics laboratory. He received his PhD in 2005 at the Pennsylvania State University, and his bachelor's degree in 1999 in physics at the Johns Hopkins University. His work focuses on two main questions: What are the initial conditions of planet formation? and What happens to a planetary system after the death of its star? To answer these questions he's observed young stars with the Hubble Space Telescope, white dwarfs with the Spitzer Space Telescope, and is currently searching all known white dwarfs for dust with NASA's explorer mission, the Wide Field Infrared Sky Explorer, or WISE.

**March 8 Hearing on Maryland Light Pollution Bill HB906**

*Milt Roney  
International Dark Sky Association*

Everyone interested in astronomy has noticed that light pollution continues to worsen, but there is something you can do. Last year, opposition from special interest groups prevented passage of the Marilyn Praisner Safe and Earth Friendly Roadway Act, which would have required new Maryland State-funded roadway lighting fixtures to be fully shielded to minimize light pollution and energy waste, while maximizing safety. Delegate Al Carr has now reintroduced the bill, designated HB906, with 30 cosponsors and it is scheduled for a hearing before the Environmental Matters Committee on March 8. If you live in Maryland, it is terribly important that you contact your delegate and ask him or her to support the legislation.

You can learn more about the bill by visiting <http://mlis.state.md.us/#bill> and typing in HB906 in the space for bill number. You can call your Maryland Delegate at 888-492-7122 to express your support for the legislation.

If you have questions, you can contact Milt Roney, International Dark Sky Association: [milt@darksky.org](mailto:milt@darksky.org)

**Time to Go**

*By Tom Koonce  
March, 2011  
Lancaster, California*

The history of astronomy has always been tied closely to the accurate measurement of time. We take it for granted that even the least expensive digital watch keeps better time than the finest timepiece of a few hundred years ago. Even so, anyone who has put up with jet lag during a long trip knows how difficult it is to keep track of the local time. If we could all think in Universal Time, I suppose it would still be a struggle to get an idea of local sunrise and sunset times. These days, dual time-zone watches make it easier, but before pocket watches and other portable clocks, it must have been impossible for the Renaissance-period road warriors to keep track of time, right? At least I thought so until a recent visit to a museum where I saw ingenious portable timepieces dating from c. 1600.

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# Come See the Stars!

# Exploring the Sky

## 2011 Schedule

Date	Time	Things of interest
4/02	8:30 PM	Winter constellations; Saturn rising
5/07	9:00 PM	Astronomy Day; 4-day-old Moon
6/04	9:00 PM	Solstice 6/21; Saturn pauses in Virgo
7/02	9:00 PM	Mercury at sunset; Summer Triangle
8/27	8:30 PM	Andromeda rising; Sagittarius due south
9/24	8:00 PM	Rock Creek Park Day; Cassiopeia
10/22	7:30 PM	Pleiades and Jupiter rising in the east
11/05	7:00 PM	Much of Moon sunlit; winter constellations

*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:

<http://www.nps.gov/rocr/planyourvisit/expsky.htm>  
<http://www.capitalastronomers.org>

A Presentation of the National Park Service and National Capital Astronomers





Figure 1 – Ivory Portable Timepiece; c. 1600.



Figure 2 – Brass Portable Timepiece; c. 1650.

After aligning the Traveler sundial with magnetic north and correcting for magnetic declination, the user used the shadow cast by the Sun on the string or the spot cast by the hole in the lid to determine the time on the scale marked on the base in the manner of sundials. Despite the small size of the unit and the user's likely errors in alignment, the instrument still gave times accurate to within an hour or so. The accuracy depended on the time of year, time of day, and the 2 axes leveling of the Traveler. And of course, if it were a cloudy day, the user was simply out of luck.



Figure 3 – Outer Lid of a Traveler timepiece; c. 1621.  
(Photos by author, Finland National Museum)

The workmanship on the pieces that I photographed for this article was finely detailed and carefully inscribed. These instruments were not inexpensive, nor were they something that everyone of the period needed to have. But portable spring powered clocks of the day were unreliable on long trips because they constantly needed to be rewound. If the owner of the clock forgot to rewind it even for one day, it would be temporarily useless; but on a sunny day, the Traveler sundial timepiece would always be reliable. People of means such as scholars and businessmen who traveled far and regularly enough to make this instrument a necessity would have been the primary consumers. While I won't trade in my quartz watch anytime soon, I think these instruments are cool enough, even now, that I'd like one to demo before a star party.

Clear Skies!  
Tom

**Interesting Fact: First Wrist Watch.** In 1504, the first portable (but not very accurate) timepiece was invented in Nuremberg, Germany by Peter Henlein. The first reported person to actually wear a watch on the wrist was the French mathematician and philosopher, Blaise Pascal (1623-1662). With a piece of string, he attached his pocket watch to his wrist. Reference: <http://inventors.about.com/od/cstartinventions/a/clock.htm>

## 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

David Dunham

### Asteroidal Occultations

Date	Day	EST	Star	Mag.	Asteroid	dmag	s	"	dur.	Ap.	Location
Mar 13	Sun	23:53	2UC39976835	12.9	2003 YL179	10.8	16	10	TNO;	Americas?	
Mar 16	Wed	3:11	TYC02990259	12.1	Philomela	0.4	13	8	NJ,DE,	neMD,PA	
Mar 18	Fri	20:46	TYC08270066	9.6	1999 CV118	14.	6	3	TNO;	S.Am.;N.Am.?	
Mar 18	Fri	20:57	SAO 58480	9.7	Whitford	6.1	1	4	nWV,	nVA,DC,MD,DE	
Mar 24	Thu	5:07	TYC68530320	10.4	INAG	7.3	1	5	swPA,	MD,nVA;DC?	
Mar 25	Fri	2:25	TYC24230320	10.4	Terni	6.3	1	8	OH,WV,	VA;DC?-low	
Apr 3	Sun	4:19	PPM 224592	10.2	Mashona	3.8	7	4	MS,LA,	cen.TX,nMX	
Apr 5	Tue	21:32	2UC44279087	11.7	Ursula	2.1	8	7	OH,PA,	MD,DC,VA	
Apr 10	Sun	23:36	2UC40341597	12.1	Adelinda	3.6	7	8	sOH,	WV,c&eVA,eNC	

### Lunar Grazing Occultations (\*, Dunham plans no expedition)

Date	Day	EST	Star	Mag.	% alt	CA	Location
Mar 14	Mon	22:46	SAO 79370	7.6	72+ 61	16N	Herndon&Arlgtn,VA;PoplHil,MD
Mar 22	Tue	3:28	ZC 2039	5.5	90- 34	2N	*Bristow&Dmfries,VA;Newbrg,MD
Apr 6	Wed	20:04	tau Ari	5.3	10+ 30	5N	Glasboro,Elwood,&Smithvill,NJ
Apr 6	Wed	22:01	SAO 75923	8.0	10+ 8	15N	Chntly&Arlngtn,VA;Brndywin,MD
Apr 9	Sat	21:42	SAO 77996	7.4	35+ 41	15N	Athens,OH; Carson,VA; Duck,NC
Apr 9	Sat	22:04	SAO 78024	9.1	35+ 37	14N	*Lewsby,PA;RisngSun&Elktn,MD
Apr 10	Sun	23:13	SAO 79063	8.5	45+ 33	14N	*Fincastle,VA;Wise&Enfield,NC

### Total Lunar Occultations

DATE	Day	EST	Ph	Star	Mag.	% alt	CA	Sp.	Notes
Mar 13	Sun	14:20	D	eta Gem	3.5	59+ 29	68S M3	Sun	+40,ZC 946,double
Mar 13	Sun	19:54	D	mu Gem =	2.9	61+ 74	85N M3	Sun	-9, ZC 976
Mar 13	Sun	21:16	R	Tejat	2.9	61+ 68	-64N M3	AA	298, ZC 976
Mar 13	Sun	21:37	D	SAO 78352	7.2	61+ 65	65N A3		close double
Mar 14	Mon	0:40	D	SAO 78460	7.5	62+ 31	55S G5		
Mar 15	Tue	20:33	D	ZC 1247	7.0	81+ 61	34S A0		
Mar 15	Tue	22:20	D	ZC 1258	6.7	81+ 67	59N K0		
Mar 16	Wed	21:06	D	ZC 1381	6.4	89+ 54	69N A2		
Mar 18	Fri	4:16	D	RX Sex	6.7	97+ 21	87S A3	ZC	1528
Mar 22	Tue	5:19	R	ZC 2045	6.4	90- 27	80N K0		
Mar 22	Tue	6:13	R	CS Vir	5.9	89- 21	83N A0p	Sun alt.	-12, ZC 2051
Mar 24	Thu	6:22	R	19 Scorpii	4.6	72- 25	68S A4	Sun alt.	-9, ZC 2347
Mar 25	Fri	4:21	R	SAO 185237	6.7	62- 21	34N G8	Comp.	39 Oph,10",PA 353
Mar 25	Fri	4:22	R	39 Oph	5.2	62- 21	35N K0	ZC	2490,comp. SAO185237
Mar 27	Sun	5:30	R	ZC 2802	6.4	41- 20	54S K0		spectroscopic binary
Mar 28	Mon	4:55	R	ZC 2926	7.6	31- 11	86S G0		Azimuth 125 deg.
Mar 30	Wed	5:41	R	ZC 3169	6.1	15- 9	48S K0		Azimuth 111 deg.
Apr 6	Wed	19:52	D	tau Ari	5.3	10+ 32	35N B5	Sun	-4,ZC 486,dbl,NJgrz
Apr 6	Wed	20:27	D	63 Arietis	5.2	10+ 25	26S K3	Sun	-11,ZC 487,NCgrz,dbl
Apr 6	Wed	20:34	D	SAO 75906	7.5	10+ 24	82S G5	mg2	8.6 sep. 1",PA 98dg
Apr 6	Wed	21:12	D	65 Arietis	6.1	10+ 17	39S A1	ZC	492
Apr 7	Thu	19:51	D	ZC 625	7.1	17+ 42	34S F5	Sun alt.	-4 deg.
Apr 7	Thu	21:54	D	ZC 630	7.7	17+ 19	42N F5	equal dbl,	sep .6",PA 80
Apr 8	Fri	20:51	D	SAO 77019	7.9	25+ 41	58S F5		maybe close double
Apr 9	Sat	22:17	D	ZC 928	5.9	35+ 34	52S K4		
Apr 10	Sun	0:47	D	SAO 78129	7.0	36+ 7	17S K0		Azimuth 293 deg.
Apr 10	Sun	20:13	D	SAO 78993	7.8	45+ 65	49N A2	Sun alt.	-7 deg.
Apr 10	Sun	21:17	D	SAO 79030	7.6	45+ 55	69N G		zetaGemComp.,102",PA272
Apr 10	Sun	21:17	D	zet Gem	4.0	45+ 55	75N G3	ZC	1077,SAO 79030 102"

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

David Dunham, [dunham@starpower.net](mailto:dunham@starpower.net)

Phones: home 301-220-0415; cell 301-526-5590

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 into their schedules, so we hope that you might be able to.

Information on timing occultations is at: <http://iota.jhuapl.edu/timg920.htm>.

Good luck with your observations.



## Feb. 6 Grazing Occultation of SAO 128424

*Michael Chesnes*

On Super Bowl Sunday I took part in an exciting astronomical observation along a quiet country road on Maryland's Eastern Shore. The Moon passed almost in front of a star, and it was impossible to know for sure if it would briefly disappear behind one or more of the mountains along the lunar limb.

Grazing occultations such as these are a way that amateur astronomers can contribute real scientific data on the star, the Moon, and solar eclipses. Setting up to observe an occultation is almost always a race against time, and part of the challenge is determining where on the Earth's surface the occultation will or won't be visible. Even on an expedition like the one below where the weather did not cooperate, there is plenty of suspense.

Here is David Dunham's description of our expedition:

Clouds developed in the afternoon over the Washington, DC, area, forcing us to move our sites farther east and abandon the Presidential Golf Club sites north of Upper Marlboro. Michael Chesnes, Harold Williams, and I ran two 120mm "maxi" telescopes to try to video record the graze from sites just west of US 50 a few miles north of Easton, MD, and for awhile before the graze, we had a good view of the star near the dark limb of the crescent Moon. But a couple of minutes before the graze began, and then through the graze, thin clouds covered the Moon, increasing glare so that the star was very difficult to see and record, and it's likely that no useful (reliable) data were obtained. The IR satellite image showed that behind (west of) the clouds over Maryland, there may have been some clear sky along the path in the northern Virginia suburbs (Manassas to Alexandria), but I know of no observations made there.

## Feb. 5 Mid-Atlantic IOTA Meeting at JHU APL

*Michael Chesnes*

At the Johns Hopkins University Applied Physics Laboratory in Laurel, MD, a group of local occultation observers met for a pleasant afternoon of presentations and dinner. Most of the attendees belonged to the International Occultation Timing Association, and in attendance were NCA members David Dunham, Wayne Warren, Harold Williams, and Michael Chesnes. Some of the topics covered during the meeting included: recent expeditions to observe occultations, occultation software, video and timing electronics. I was especially impressed with the advances made in compact, remotely operable observation stations. Each station includes a telescope, and all the electronics needed to observe an occultation. A single observer can fly with several of these stations as carry-on luggage, and make observations that used to take several people.



Photo Credit: Steve Conard

## March 26 Presentation on Light Pollution Effects

On Saturday, 26 March 2011 at 7:00 P.M. NCA member Harold Williams will present [How Seeing the Stars Will Save You Money and Possibly Save Your Life](#) (and help slow the planet Earth's climate and prevent Breast Cancer).

This presentation will be in the planetarium at Montgomery College at the Silver Spring/Takoma Park Campus. Many useful links and articles may be found at the following URL, including the "Marilyn J. Praisner Safe and Earth-Friendly Roadway Act," newspaper articles, and peer reviewed scientific article:

<http://www.montgomerycollege.edu/Departments/planet/planet/LightPollution.html>

## Bill "Flex" Kelley

Guy Brandenburg alerted me to a recent posting on the ATM Mailing List by Peter Chen about the passing of a long time amateur telescope making instructor. Bill Kelley started making telescopes as a boy in Ohio, but was best known for the telescope making classes and star parties he led in northern Arizona. Bill used road tar to polish his first telescope at age 10, with a circle cut from an automobile windshield as the mirror blank. He successfully cut a blank and tool after about 50 attempts. When he was 13, Bill had a mount set up for the telescope at a neighboring home for disabled children, and while serving in the Second World War had his parents send it to him so he could spot enemy artillery positions. More recently he created the OmniScope, a dual telescope / microscope, with a mirror that could have its figure adjusted by turning a screw. The OmniScope will be on display at the Mystic Aquarium in Connecticut this May. Bill was 93.

### Help Wanted

Here is a listing of upcoming public outreach events where NCA members can volunteer. Most of the March events are science fairs, although the Kenmore MS event needs observers with telescopes.

March 12  
Girl Scout Day at NASM Udvar-Hazy  
Chantilly, VA  
Contact: Jay Miller [rigel1@starpower.net](mailto:rigel1@starpower.net)

March 19  
Science Montgomery (Montgomery County  
Science Fair) College Park, MD  
Contact: Jay Miller [rigel1@starpower.net](mailto:rigel1@starpower.net)

March 25  
Kenmore Middle School, Arlington, VA  
Contact: Pam Juhl [pam.juhl@verizon.net](mailto:pam.juhl@verizon.net)

March 26  
Prince George's Area Science Fair  
PG Community College, Largo, MD  
Contact: Jay Miller [rigel1@starpower.net](mailto:rigel1@starpower.net)

### Calendar of Events

**NCA Mirror- and Telescope-making Classes:** Tuesdays Mar. 1, 8, 15, 22, 29 and Fridays, Mar. 4, 11, 18, 25, 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](mailto: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, Mar. 12 at 5:30 pm, preceding the meeting, at the [Garden Restaurant](#) in the University of Maryland University College Inn and Conference Center.

**APS Mid-Atlantic Senior Physicists Group:** Wednesday, March 16 1:00 pm. Speaker: Alan Boss. *The Crowded Universe: The Search for Living Planets*

**Upcoming NCA Meetings** at the University of Maryland Observatory

Mar 12, 2011 **John Debes** (GSFC) - *A Stellar Debris Disk Flapping in the Interstellar Wind*

Apr 9, 2011 **Jessica Rosenberg** (GMU) - *Gas and Stars in the Local Universe: What Normal Matter Can Teach us About the Formation and Evolution of Galaxies*

May 14, 2011 **Tracy Clarke** (NRL) - *Clusters of Galaxies, the Biggest Bound Objects in the Universe*

### National Capital Astronomers Membership Form

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

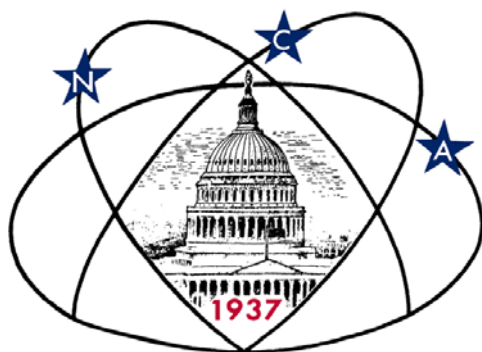
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**First Class**

**Dated Material**



Next NCA Mtg:

**Mar. 12**

**7:30 pm**

**@ UM Obs**

**Dr. John Debes**

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