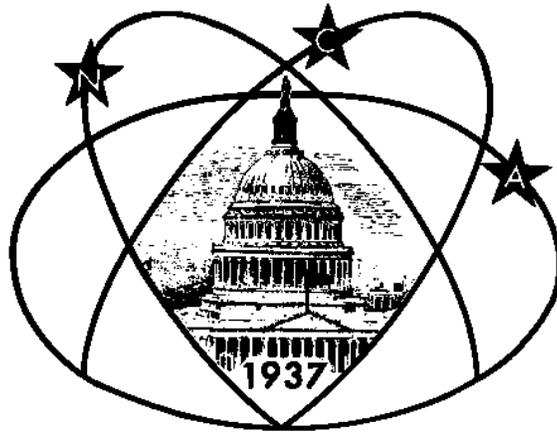


Star



Dust

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Dr. Kirk Borne to talk about the National Virtual Observatory

submitted by Gary Joaquin

Dr. Kirk Borne will present the featured talk, "Scientific Data Mining with the National Virtual Observatory" at the May 5 meeting of National Capital Astronomers. The meeting will be held in the Lipsett Amphitheater in Building 10 (Clinical Center) of the National Institutes of Health in Bethesda at 7:30 P.M.

Synopsis

The astronomical community is about to become the beneficiary of huge multi-terabyte databases from a host of surveys. The rich and diverse information content within this "virtual sky" and the array of results to be derived therefrom will far exceed the clearly demonstrable results from the first Palomar Observatory Sky Survey (POSS), whose omnipresence in astronomy libraries, departments, and observatories is undoubtedly one of the great scien-

tific legacies from the mid-20th century. The new digital surveys have the potential of exceeding the scientific usefulness of the POSS by orders of magnitude! To enable this to happen, the astronomical community is embarking on an ambitious endeavor, the creation of a National Virtual Observatory (NVO). To facilitate the new type of science enabled by the NVO, new techniques in data mining and knowledge discovery in large databases must be developed and deployed, and the next generation of astronomers must be trained in these techniques. This activity will benefit greatly from developments in the fields of information technology, computer science, and statistics. Aspects of the NVO initiative, including sample science user scenarios and user requirements will be presented. The value of scientific data mining

(Continued on page 2)

Congratulations to NCA Science Fair Winners!

We are pleased to announce the winners in the 2001 science fair judging. They are

DC Science Fair

Sabrina Curie Snell

The Optical Divide

Judges: Dr. Harold Williams and Jay Miller

Fairfax County Public Schools Regional Science and Engineering Fair

Kelly Johnson

Jessica Bell

Team project: *The Effect of Sunspot Rotation Determining How Fast the Sun Rotates*

Judges: Ken Short and Bob Bolster

(Continued on page 5)

Review of a Talk by Elizabeth M. Warner on Deep Impact

by Gary Joaquin

At the April NCA Meeting, astronomer Elizabeth M. Warner gave a presentation about NASA's Deep Impact mission to the comet Tempel 1. The purpose of the mission is to explore the interior structure of a cometary nucleus by firing a probe at the comet which will excavate a football field sized crater whose formation and ultimate size and shape will be imaged and relayed back to Earth. The mission is conceptually simple but technically challenging.

What is a comet and what can we learn about them from this mission?

Comets are small astronomical bodies,

many of which are believed to originate in the Oort Cloud at the extreme limits of our solar system. Cometary orbits can be divided into three classes: "Short Period" comets like Tempel 1 have an orbital period of revolution about our Sun of less than 200 years. "Long Period" comets like Hale Bopp have an orbital period of greater than 200 years. "One-Time Visitors" just pass through our solar system, never to return.

Ground and space-based observations confirm that comets consist of a nucleus, a coma, and a tail. The nucleus is believed to be similar in structure to an ice-

covered rock or dirty snowball. A glowing coma about the nucleus of a comet forms when a comet approaches the Sun and the ice on its surface begins to melt. Comets leave in their wake a tail of dust and small particles. As comets approach the Sun they develop a second tail of gas and ions blown off by the solar wind.

Little else is known about a comet's mass, strength, and stratification. The ice-to-rock ratio is unknown. Only one comet, Halley, has ever been imaged to obtain data about shape and topography.

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NCA Events This Month

The Public is Welcome!

NCA Home Page: <http://capitalastronomers.org>

Fridays, May 4, 11, 18, and 25, from 7:00 to 10:00 P.M. Telescope-making and mirror-grinding, -polishing, -figuring and -testing classes at American University, McKinley Hall, Basement (Room 9), Nebraska and Massachusetts Avenues, NW. Classes are very informal, and you can start or finish a mirror at any time. We can also aluminize the finished product. Call or e-mail Guy Brandenburg for details and prices for materials: 202-635-1860 or gbranden@earthlink.net.

Fridays, May 11, 18, & 25, 9:30 p.m.
** Note change in time to 9:30 **

Open nights with NCA's 14-inch telescope at Ridgeview Observatory near Alexandria, Virginia; 6007 Ridge View Drive (off Franconia Road between Telegraph Road and Rose Hill Drive). Call Bob Bolster, (703) 960-9126 before 6:00 p.m.

Saturday, May 5, 5:30 P.M.

Dinner with the speaker and NCA members at

Il Forno Pizzeria
4926 Cordell Avenue
Bethesda, MD
301 652-7757

See the map and directions on Page 8.

Saturday, May 5, 7:30 P.M. - NCA meeting, at the Lipsett Auditorium in Building 10 at NIH, will feature Dr. Kirk Borne talking to NCA about "Scientific Data Mining with the National Virtual Observatory" and Science Fair presentations.

Saturday, May 12, beginning 6:00 p.m.

Open House at Hopewell Observatory. See directions at right.

See Page 6 for more National Capital area astronomical doings.

To join NCA, use the membership application on Page 9.

Open House at Hopewell Observatory

by Bob Bolster

NCA members, families, and guests are invited to enjoy the spring sky at Hopewell Observatory on Saturday evening May 12. View deep-sky objects as well as the planets Saturn and Jupiter (April) and Mars. On May 12 sunset will be at 8:14, astronomical twilight ends at 10:00, and the Moon rises at 1:08 a.m. If you wish, come any time after 6:00 p.m. and bring your prepared picnic dinner. Coffee, tea, and cocoa will be provided by the Hopewell Corporation.

Directions: (1) From the Beltway (I-495) go west on I-66 25 miles to Exit 40 at Haymarket onto U.S. 15.

(2) Turn left on U.S. 15 at the end of the exit ramp. (3) Go 0.3 miles to traffic light, turn right onto Va. 55. (4) Go 0.8 miles to Antioch Road (Rt. 681) and turn right. (5) Go 3.2 miles to the end of Antioch Rd. and turn left onto Waterfall Road (601). (6) Go one mile and bear right onto Bull Run Mountain Rd. (Rt. 629). (7) Go 0.9 miles on 629 to a narrow paved road at right with an orange pipe gate (Directly across from an entrance gate with stone facing). (8) Turn right through pipe gates, go 0.3 miles to top of ridge, and around the concrete building and towers. (9) Continue on dirt road through the white gate and woods a few hundred feet to the observatory. Park along the road short of the buildings.

If it is raining or hopelessly cloudy, the events will be canceled.

For further information, call (703) 960-9126.

Observatory phone: (703) 754-2317.

tems, archive research support facilities, on-line user services, and education and public outreach for NASA space astronomy missions. His technical interests include scientific information systems as well as on-line data mining, knowledge discovery, and visualization of large scientific data sets. Dr. Borne once served as the Deputy Editor for the Publications of the Astronomical Society of the Pacific, and is now on their Publications Committee. He is also a member of the IAU International Task Force on Electronic Publishing in Astronomy and a member of the IAU Task Group on Astronomical Names.

Dr. Kirk Borne

(Continued from page 1)

and some early test case results will be discussed in the context of the speaker's research interests in colliding and merging galaxies.

Biography

Dr. Kirk Borne was born in Baton Rouge, Louisiana, and lived in many other places as the child of an Air Force officer. He received a B.S. in Physics from Louisiana State University, and an M.S. and Ph.D. from the California Institute of Technology, where he studied with Jim Gunn. He spent three years teaching at the University of Michigan and two years as a Carnegie Fellow at the Carnegie Institution of Washington. He then spent ten years supporting the Hubble Space Telescope Science Institute in Baltimore, until 1995, when he transferred to Raytheon Information Technology and Scientific Services company at NASA's Goddard Space Flight Center, where he manages the astrophysics support staff in the Astrophysics Data Facility and in the Astronomical Data Center.

He has research experience in both obser-

vational and theoretical astrophysics, including numerical simulations, ground-based observations, and space-based observations of a variety of disturbed, colliding, and starbursting galaxies. The broad goal of his research has been to obtain a global, objective determination of the rate and significance of galaxy-galaxy collisions and mergers in the overall scheme of galaxy formation and evolution. That some of the most luminous (optical, radio, and infrared) objects in the universe are involved in such collisions makes this group of objects particularly important in our quest to understand the birth rate, current state, and ultimate fate of galaxies in the cosmological setting. He has used the Hubble Space Telescope (HST) extensively in these studies. His HST observations of the starburst ring in the Cartwheel Ring Galaxy and his discovery of multiple-merging super-starburst galaxies were the subjects of NASA press releases in 1995 and 1999, respectively.

In addition to these scientific research endeavors, Dr. Borne has nearly 15 years of professional experience in developing and managing science data management sys-

Elizabeth Warner

(Continued from page 1)

The primary scientific objective of Deep Impact is to understand the difference between the interior and exterior of a comet, to determine some of its basic properties, and to search for pristine material below its surface that will be uncovered in the impact crater.

To make up for the sparseness of available data on crater formation, Dr. Peter H. Schultz, of Brown University, has been working at the NASA Ames Vertical Gun Range at the NASA Ames Research Center on cratering simulations. Ms. Warner showed two videos from his work illustrating the impact of a sample object into a porous material. The impact of a copper sphere at 4.5 km/sec into porous pumice at a density of 1g/cc was especially dramatic. Building a library of such observations will aid the Deep Impact team to understand the structure of Tempel 1 that is revealed from the scheduled impact.

Why Tempel 1?

Tempel 1 satisfied several of Deep Impact's mission criteria. With a perihelion distance of 1.5 AU and a 5.5 year period, Tempel 1 is in the vicinity of Earth during the available mission launch window. Tempel 1's period of rotation is greater than 24 hours, which means that the impact area will not

rotate too quickly out of view before it can be imaged by the flyby spacecraft. Tempel 1 also lacks any visually exciting jets that might generate dust and other particles that could threaten to damage the space craft.

Tempel 1 was discovered on April 3, 1867 by Ernst Wilhelm Leberecht Tempel. It was observed again in 1873 and 1879 and then it was lost for 88 years. In accord with Dr. Brian Marsden's 1963 prediction documented in *On the Orbits of Some Long Lost Comets*, Tempel 1 was found once again in 1967.

How will the spacecraft get to Tempel 1?

The spacecraft will be mounted in the nose cone of a Delta rocket and is scheduled for launch on January 2, 2004. Although the spacecraft could fly directly to Tempel 1 in just a few months, it will remain in orbit about the Sun to test its systems and calibrate its cameras. On July 4, 2005, a 350-kg impactor launched 24 hours earlier from the flyby spacecraft will impact Tempel 1 at 10.2 km/sec with a force of 18 gigajoules or 4 1/2 tons of TNT, creating a 100-meter diameter crater. The force of the impact will not be sufficient to break up the comet. Ms. Warner compared the impact to firing a BB gun at a speeding train.

How will the data be collected and transmitted?

After the impactor is launched, the flyby spacecraft will slow down and begin recording the impact, from a distance of 8500 km, for 800 seconds. A closer approach at the time of impact could put the spacecraft at risk of being struck by impact ejecta and also would reduce the amount of time available for observing the impact. Instrumentation aboard the flyby spacecraft includes a Medium Resolution Instrument consisting of a Ritchie-Chretien telescope with a 10-cm aperture and 2.1-m focal length, as well as an infrared spectrometer and a multi-spectral CCD camera. The High Resolution Instrument on board includes a telescope with a 30-cm aperture, an infrared

spectrometer, and a multi-spectral CCD camera.

A high-gain antenna will transmit near real-time images of the impact back to Earth. The flyby spacecraft will use X-band to communicate to Earth and UHF to communicate with the impactor after separation. The Deep Impact team members are currently debating when to transmit data: before or after the flyby spacecraft passes through the tail of the comet.

In addition to onboard observation, the Deep Impact team will apply for observation time on the Hubble Space Telescope and at many major ground-based observatories. Observations will be required not only of

the impact, but before the impact to help determine more detailed properties of the comet, which will aid in targeting.

How Can the Public Get Involved?

Observations made by professional observatories are often incomplete. Observing times are limited by the desire to share telescope resources with as many deserving projects as possible. Bad weather may prevent viewing by ground-based telescopes. To fill in the gaps in the data collected, the Deep Impact mission has initiated the Small Telescope Science Program designed to encourage

(Continued on page 4)

Elizabeth Warner quoted the following:

"It (an asteroid) was racing past them at almost thirty miles a second; they had only a few frantic minutes in which to observe it closely. The automatic cameras took dozens of photographs, the navigation radar's returning echoes were carefully recorded for future analysis - and there was just time for a single impact probe.

The probe carried no instruments; none could survive a collision at such cosmic speeds. It was merely a small slug of metal, shot out from Discovery on a course which should intersect that of the asteroid.

... They were aiming at a hundred-foot-diameter target, from a distance of thousands of miles...

Against the darkened portion of the asteroid there was a sudden dazzling explosion of light..."

Arthur C. Clarke, 1968, *2001: A Space Odyssey*

To minimize the possibility of missing the comet altogether, the impactor will have its own tracking system and thrusters with which to make late course changes. This is an improvement over earlier impactor designs. In addition, the profile shape of the impactor will be variable, to adapt to new information obtained from observatories and from the flyby spacecraft as it approaches Tempel 1. Targeting algorithms are currently under development. The general idea is to target a bright patch on the comet that is not a jet.

Elizabeth Warner

(Continued from page 3)

and collect observations made by technically proficient amateurs and private observatories.

The amateur and private communities can help determine the properties of the comet, including its nucleus' rotation rate and its dust production rate. Mission scientists will use this data to refine their model of Tempel 1 to aid the Deep Impact spacecraft's targeting and imaging systems.

Recently, the mission scientists revised the July 4 impact time from 00:00 UT to 06:00 UT (2 A.M. EDT) to increase the redundancy in the observations that will be made by the Deep Space Network. Unfortunately, this means that Tempel 1 will be below the horizon at our latitude at the time of impact. Ms. Warner secretly hopes that this time will be revised to be more favorable for northern hemisphere observers. While it is unlikely that the plume of the impact will be visible to ground based observers, certainly the brightening of the comet, caused by the impact, will be visible under good observing conditions.

Ms. Warner is also involved with soliciting observations from the general public and providing them with current mission information. She meets with astronomy clubs in to encourage them to form star parties to observe the comet.

NCA is indebted to Ms. Warner for her excellent presentation. She provided good information to me before, during, and after our meeting. This included a copy of her Microsoft PowerPoint presentation that I found to be a great help in writing this review. Lastly, Dick Byrd needs to be recognized for the real service that he provides by videotaping each lecture. Without the videotape, much of the content of the question and answer session for this review would have been unavailable.

To learn more about the Deep Impact Mission and related subjects visit the web sites listed below:

http://deepimpact.umd.edu	(at the University of Maryland)
http://deepimpact.jpl.nasa.gov	(at the Jet Propulsion Laboratory)
http://www.ball.com/aerospace/deepimpact.html	(at BATC)
http://encke.jpl.nasa.gov	(the Comet Observation Home Page)
http://discovery.nasa.gov	(the Discovery Program)
http://sse.jpl.nasa.gov	(Solar System Exploration)
http://encke.jpl.nasa.gov/whats_visible.html	(Comets currently visible)

Leith Holloway Awarded NCA Life Membership

The officers of the NCA gave Leith Holloway Life Membership at its April 7, 2001 meeting. Below is a brief summary of his contributions to the NCA.

Leith Holloway joined the NCA as a junior member in 1945. An adult member of the NCA, Morgan Cilley, took interest in this new member and offered to teach Leith how to make observations of variable stars. Leith learned to make observations. He made more than 500 observations. He also joined the AAVSO.

When Leith returned to Washington in 1955 after his education at MIT, he rejoined the NCA. Leith was appointed Director of the Junior Division in 1956. He organized the juniors into three groups with the help of several other members. At times there were more than 50 juniors enrolled in this program. Leith served in that position until his Lab moved to Princeton, NJ in 1968.

Leith rejoined in 1984 because the NCA sponsored a solar eclipse expedition to southern Virginia on May 30. In 1988, Leith moved back to Washington and became active again in the NCA. He was re-appointed Director of the Junior Division. There were not as many juniors by now, but Leith tutored several of the juniors in various astronomical projects. In 1991, Leith was elected NCA Secretary and served in that position for seven years.

Leith is planning to move to western North Carolina later this year to join a retirement community in Black Mountain. He is looking forward to enjoying dark skies, eating at least one dinner each day that he does not have to cook and having his apartment cleaned by a maid biweekly.

Support
the
IDA

Join the International
Dark-Sky Association

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2103

www.darksky.org

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Available
Electronically**



Any member wishing to receive *Star Dust*, the newsletter of the National Capital Astronomers, via e-mail as a PDF file attachment, instead of hardcopy via U.S. Mail, should contact Nancy Grace Roman, the NCA Secretary, at ngroman@erols.com, or via telephone at 301-656-6092 (home)

Nominating Committee Report

Andrew W. Seacord, II

The election of next year's officers will be held during the June meeting. A slate of officers will be published in the June issue of Star Dust.

The members of the Nominating Committee are Andrew W. Seacord, II, Chair
Wayne H. Warren, Jr.
Joseph C. Morris

The slate is not yet complete, but, as of now, it is as follows:

President: TBD
Vice Present: Gary Joaquin
Secretary: Nancy Grace Roman
Treasurer: Jeffrey B. Norman
Trustee: Harold A. Williams

Come See the Stars!

by Joe Morris

Exploring the Sky 2001 Schedule

Date	Time	Notes
5/19	9:00 P.M. (EDT)	Mercury visible at sunset
6/23	9:00 P.M. (EDT)	Longest day 6/21; latest sunset 6/27
7/21	9:00 P.M. (EDT)	Thin crescent Moon visible
8/18	8:30 P.M. (EDT)	Perseid meteors 8/12
9/22	8:00 P.M. (EDT)	Fall equinox
10/13	7:30 P.M. (EDT)	Mars bright in the constellation Sagittarius
11/10	7:00 P.M. (EST)	Leonids peak 11/18

Exploring the Sky is an informal program that for nearly fifty 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, in the field south of the intersection of Military and Glover Roads, near the Nature Center.

Beginners (including children) and experienced stargazers are all welcome - and it's free!

Questions? Call the Nature Center at (202) 426-6829 or check the Internet sites: <http://www.nps.gov/rocr/planetarium> or <http://www.capitalastronomers.org>

Congratulations to NCA Science Fair Winners!

(Continued from page 1)

Prince George's Regional Science Fair

Christina Ann Dwyer
Asteroidal Occultations of Stars?
Judges: Dr. Andrew W. Seacord, II, Dr. Wayne H. Warren, Jr., and Dr. Harold Williams

Montgomery County Science Fair

Junior Division
Abigail Fraeman
The Effect of Star Color on Perceived Apparent Visual Magnitude

Senior Division
Brinda Thomas
Multifractal Properties of the Solar Wind-Magnetosphere System
Judges: Jay Miller and Leith Holloway

These winners will be honored at the May NCA meeting. They will be invited to the dinner with the speaker and NCA members before the meet-

ing. The science fair winners will bring their projects to the meeting, where each will give a three to five minute summary of his or her project. The student will be presented with a certificate. The award also includes a one-year membership in NCA with a one-year subscription to *Sky and Telescope*.

Deadline for June Star Dust: May 15



Please send submissions to Elliott Fein at elliott.fein@erols.com. Text must be in ASCII, MS Word, or WordPerfect. Graphics in BMP are best.

Thanks.

Meteor Showers

May Radiants

Full Moon: May 7

Major Activity

Radiant	Duration	Maximum
Eta Aquarids (ETA)	April 21 - May 12	May 5 at 23:21 UT

Minor Activity

Radiant	Duration	Maximum
Northern May Ophiuchids	April 8 - June 16	May 18/19
Southern May Ophiuchids	April 21 - June 4	May 13 - 18
May Librids	May 1 - 9	May 6/7
Epsilon Aquilids	May 4 - 27	May 17/18

Daylight Activity

Radiant	Duration	Maximum
Epsilon Arietids	April 25 - May 27	May 9/10
May Piscids	May 4 - 27	May 12/13
May Arietids	May 4 - June 6	May 16/17
Omicron Cetids	May 7 - June 9	May 14-25

Source: <http://comets.amsmeteors.org/meteors>

Other National Capital Area Meetings, etc.

Goddard Scientific Colloquia

The Scientific Colloquia will be held at 3:30 p.m. on Fridays in the Building 3 auditorium, except as noted.

May 18 Michael Molnar, Rutgers University, "The Star of Bethlehem".

If you plan to attend and do not have a NASA badge, please contact Carol Krueger, at (301) 286-6878, at least 24 hours beforehand.

Source: heawww.gsfc.nasa.gov/users/djt/colloq/

Montgomery College's Planetarium

Fenton St. in Takoma Park, MD.

Saturday, May 12 at 7:00 P.M. "The Search for Extraterrestrial Intelligence".

Since Marconi invented the radio transmitter (1897) and we first started sending radio messages we have been announcing our presence to the technologically advanced civilizations of the cosmos.

How likely is it that we have been heard? How likely is it that we have been visited before or after we started radio broadcasts, which go out to all of space? How would we go about listening for extraterrestrial intelligence? What are we doing now about searching for extraterrestrial intelligence? Come to this planetarium show and find out.

The planetarium shows 1,834 naked eye stars, the Milky Way (the diffuse band of light caused by the disk of our own galaxy), and the five naked-eye planets (Mercury, Venus, Mars, Jupiter, and Saturn) under a twenty-four-foot dome with forty-two comfortable chairs.

There is no admission charge for these public planetarium programs. e-mail: hwilliam@mc.cc.md.us, phone 301-650-1463.

Source: <http://www.mc.cc.md.us/Departments/planet/>

Northern Virginia Astronomy Club

(NOVAC) meets 6:00 p.m. at Lecture Hall 1 on the Fairfax campus of George Mason University. 703 803-3153.

May 13 - Pete Johnson, "Telescope Collimation". Come see Pete, who will show ya how to get those optics lined up to get the best possible images out of your equipment.

Source: <http://novac.com>

University of Maryland at College Park Astronomy Colloquia

All Astronomy Colloquia are held in Room CSS 2400 on Wednesdays at

4:00-5:00 p.m. unless otherwise noted.

May 2 Dr. Chris McKee, Berkeley, "The Formation of Stars and Star Clusters".

May 9 Dr. Roger Chevalier, U. Virginia, TBA.

Special accommodations for individuals with disabilities can be made by calling (301) 405-3001. It would be appreciated if we are notified at least one week in advance. Parking: Most parking meters in Parking Garage 2 have been removed. Parking for visitors is available in the Cashier-Attended Parking Lot at the intersection of Paint Branch & Technology Drive. It is a 5-10 minute walk from the parking lot to the Computer & Space Sciences building.

Source: <http://www.astro.umd.edu/colloquia/colloquium.html>

NASA/GSFC LEP Seminar Laboratory for Extraterrestrial Physics

Brown Bag Seminar

Fridays at noon in Room 8 in Building 2 at Goddard.

May 4 Larry Nittler, TBA.

May 11 Marc Swisdak, University of Maryland, TBA.

Source: http://lepjas.gsfc.nasa.gov/~seminar/lep_seminar.html

Goddard Engineering Colloquia

All colloquia are held at 3:30 p.m. on Mondays in the Building 3 Auditorium, unless otherwise indicated below.

May 7 Carl Pilcher, NASA Headquarters, "Bio-centrism and Solar System Exploration".

May 14 Carroll O. Alley, University of Maryland, "Lunar Ranging Experiment".

May 21 Anthony Johnson, New Jersey Institute of Technology, "Ultrafast Optical Phenomena".

Note: Individuals not badged for entry into Goddard should obtain the current procedure by contacting Main Gate security at 301-286-7211.

Source: <http://ecolloq.gsfc.nasa.gov/sched.html>

Laboratory for Astronomy and Solar Physics (LASP)

Seminars are on Thursday at 3:30 P.M. in GSFC Bldg. 21, Room 191.

May 3 Warren Moos, Johns Hopkins University, "The Far Ultraviolet Spectroscopic Explorer Mission".

May 10 Adam Riess, STScI "High Redshift Supernovae".

May 17 David Spergel, Princeton Uni-

versity, "Arc-minute Cosmic Microwave Background Fluctuations: The Next Frontier".

May 24 Brian Dennis, GSFC, "First results from HESSI".

May 31 Sylvain Veilleux, University of Maryland, "Deep Surveys of the Warm Ionized Medium in the Local Universe". Coffee, Tea, and Cookies served before the seminar. For additional information contact Eli Dwek at 301-286-6209 (edwek@stars.gsfc.nasa.gov) or Jon Gardner at 301-286-3938 (gardner@harmony.gsfc.nasa.gov).

Source: http://stars.gsfc.nasa.gov/www/lasp_colloq

LASP Stellar & Extra-Galactic Astronomy Lunch

Talks are Wednesdays at 12:00 Noon in Room 242 of Building 21, except as noted.

Tuesday, May 1 Room 191 Gerhardt Meurer, Johns Hopkins (BWSS), "First Results From SINGG"

Friday, May 4, Room 191 Neil Cornish, University of Montana, "Future Directions in Gravitational Wave Astronomy"

May 9 Floyd Stecker, GSFC, "The CIRB and its Implications for High Energy Astrophysics"

May 16 Bill Danchi, GSFC, "Circumstellar Disks with Near- and Mid-IR Interferometry".

May 23 Kirk Borne, GSFC/RITSS, "Interactive Galaxies: Some Assembly Required".

May 30 Povilas Palunas, GSFC/CUA, "A Filament of Galaxies at $z=2.4$ ".

Source: <http://hires.gsfc.nasa.gov/~gardner/seal/>

Greenbelt Astronomy Club

Meetings, star parties, and other events are open to the general public. You do not need to be a member, nor even own a telescope, to attend.

Star parties are usually held at the James Wolfe ballfields at the end of the Northway extension in Greenbelt, unless otherwise noted below. You can find it on the map where it is labeled as Northway Field. Members are usually setting up their telescopes at dusk so the actual time varies depending on the time of the year.

Star Parties and the Weather

Since star parties are dedicated to ob-

(Continued on page 7)

Mid-Atlantic Occultations and Expeditions for May

by David Dunham

Asteroidal Occultations

DATE	Day	EST	Star	Mag	Asteroid	dmag	Dur Ap.		Location
May 8	Tue	0:42	SAO 182707	8.4	Devosa	3.7	5	2	Georgia
May 11	Fri	1:20	TYC55210394	11.0	Brambilla	3.1	11	7	Illinois
May 19	Sat	3:33	TYC68524784	10.5	Admete	5.1	5	6	Cuba, Mexico
May 25	Fri	6:21	SAO 145940	6.5	Klotho	6.5	5	1	s. Florida
May 27	Sun	5:15	TYC56390173	2.1	Bavaria	2.1	6	8	S. Carolina

Lunar Grazing Occultations and a Grazing Annular Solar Eclipse

DATE	Day	EST	Star	Mag	% alt	CA	Location
May 12	Sat	1:58	ZC 2811	6.2	79-	15	12S Dunn, NC (no DC expedition)
May 25	Fri	22:32	ZC 1059	6.9	11+	7	-2S Westminster & Baltimore, MD
Dec 14	Fri	17:30	The Sun	-27	0	13	N Liberia, Costa Rica; eclipse*

* For more, see <http://iota.jhuapl.edu>

Total Lunar Occultations

DATE	Day	EST	Star	Mag	% alt	CA	Notes
May 4	Fri	22:27	D ZC 1856	6.6	92+	49	54N DbL., mgs. 7.2&7.6, sep.1", PA104
May 5	Sat	22:11	D ZC 1976	7.0	97+	38	49S Sp. A3
May 5	Sat	22:46	D ZC 1978	6.6	97+	41	52S DbL., mags. 7.4&7.4, sep.0.1"
May 4	Fri	22:27	D ZC 1856	6.6	92+	49	54N Close double, mags. 7.2 & 7.6
May 5	Sat	22:11	D ZC 1976	7.0	97+	38	49S Sp. A3
May 5	Sat	22:46	D ZC 1978	6.6	97+	41	52S Close double, mags. 7.4 & 7.4
May 7	Mon	3:33	D ZC 2110	6.3	100+	26	76N Sp. K0
May 12	Sat	2:26	R ZC 2811	6.3	78-	17	45S Sp. F8; Graze in NC
May 16	Wed	4:53	R AB Aqr 7.9	-9.9	41-	20	45N Sp. M7; SAO 165212; Sun -11
May 16	Wed	4:54	R ZC 3323	7.5	41-	20	53N Sp. A5; Sun alt. -11 deg.
May 18	Fri	4:56	R ZC 0018	5.8	23-	13	61N Sp. K1; double?; Sun -10 deg.
May 25	Fri	21:55	D SAO 078912	7.6	11+	13	65N Sp. G0
May 26	Sat	22:56	D SAO 079884	8.0	19+	12	58N Sp. K0
May 26	Sat	23:28	D SAO 079909	8.1	20+	7	70N Sp. K0
May 28	Mon	22:21	D SAO 098892	7.7	40+	37	70N Sp. K0; mg2 8.8, sep.9.6", PA100
May 28	Mon	22:48	D SAO 098897	7.6	40+	32	90N Sp. K0
May 30	Wed	19:42	D nu Vir	4.0	62+	57	75S Sp. M0; ZC 1702; Sun alt. +7
Jun 2	Sun	0:24	D 80 Vir	5.7	83+	35	79N Sp. G6; ZC 1950

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.

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 <http://www.lunar-occultations.com/iota>. Sp. is spectral type-color, O,B,blue; A,F,white; G,yellow; K,orange; M,N,S,C red. Check IOTA's Web sites at <http://www.lunar-occultations.com/iota> or at <http://iota.jhuapl.edu> for weather go/cancel decisions, and other updates.

David Dunham, dunham@erols.com or 301-474-4722, car 301-526-5590.

Other National Capital Area Meetings, etc.

(Continued from page 6)

serving the night sky, they will only be held if the sky is clear enough to permit observing. Star parties will not be held if skies are overcast or mostly cloudy.

May 31 Meeting.

May 19 Star Party (May 26 cloud date).

The web site is maintained by Tom Bridgman (301) 286-1346. Send comments and other feedback to bridgman@wyeth.gsfc.nasa.gov

A service of the Laboratory for High Energy Astrophysics (LHEA) at NASA's GSFC
Source: lheawww.gsfc.nasa.gov/docs/outreach/gac/GAC.html

Getting to the NCA Monthly Meeting

Saturday, May 5

5:30 P.M. - Dinner with the speaker and NCA members at

Il Forno Pizzeria
4926 Cordell Avenue
Bethesda, MD
301 652-7757

7:30 P.M. - NCA Meeting at Lipsett Auditorium in Building 10 at NIH. Guest speaker: Dr. Kirk Borne, "Scientific Data Mining with the National Virtual Observatory", and Science Fair Presentations.

Directions to the Meeting Place

From Rockville Pike (Wisconsin Ave., Rt. 355), to get to the parking lot at the South entrance (this will be the entrance for the next three years or so until they finish the new wing) from Rockville Pike, enter NIH at the Metro Entrance: South Drive (traffic light). Go straight ahead. At the third stop sign you will be at the parking lot, but you will have to make a left turn then a right to get to the entrance to the lot. Make a right turn into the lot. Building 10 is just north of the parking lot. Enter the building and follow the signs to the Lipsett Auditorium.

From Old Georgetown Rd., enter at Lincoln Drive (traffic light nearest to Suburban Hospital). Go straight ahead. The second stop sign is at a T. Go left and left again, and the lot will be on the right. Make a right turn into the lot.

Metrorail Riders - From Medical Center Metro Station: Walk down the hill, past the bus stops. Continue straight past the anchor. At the second stop sign after the anchor, bear right up the incline into the entrance of Building 10, the tallest building on campus (walking time less than 10 minutes).

Taking the J2 or J3 buses from Silver Spring, get off at the Metro stop and follow the directions given for motorists from that point. If coming from Montgomery Mall, get off at the first stop in NIH, before the Clinical Center. There are signs near the ramp for the garage directing you into the side entrance. Walk straight through the building to the Lipsett amphitheater.

Directions to the Restaurant

Dinner before the meeting will be at 5:30 P.M. at
Il Forno Pizzeria
4926 Cordell Avenue
Bethesda, MD
301 652-7757

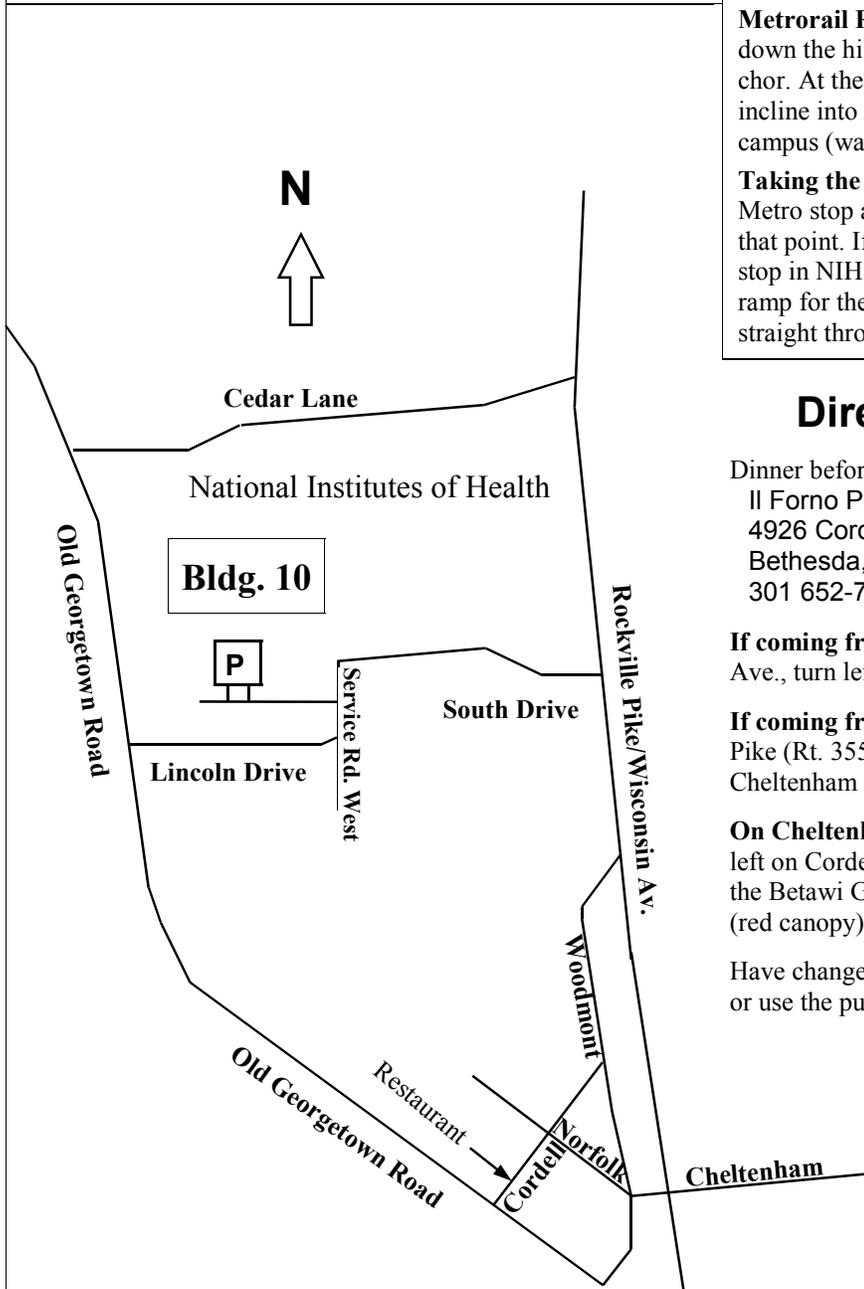
If coming from south of Bethesda, go north on Wisconsin Ave., turn left at Cheltenham Dr. (traffic light).

If coming from north of Bethesda, go south on the Rockville Pike (Rt. 355) which becomes Wisconsin Ave. Turn right at Cheltenham Dr. (traffic light).

On Cheltenham Dr., go straight to go onto Norfolk Ave. Turn left on Cordell Ave. The restaurant will be on your left between the Betawi Grill (blue canopy with orange lettering) and Nam's (red canopy).

Have change available for meters (still in operation at that time) or use the public parking garage on your left, past the restaurant.

After dinner, continue on Cordell to end of block. Turn right onto Old Georgetown Rd. Follow "Directions to the meeting place: From Old Georgetown Rd." at the top of this page.



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National Capital Astronomers, Inc.

Nancy Byrd, NCA President, nancy@pangean.com, 703-978-3440 (home).
Gary Joaquin, NCA Vice-president, glj1@erols.com, 703-750-1636 (home).
Nancy Grace Roman, NCA Secretary, ngroman@erols.com, 301-656-6092 (home).
Jeffrey Norman, NCA Treasurer, jeffrey.norman@ferc.fed.us, 5410 Connecticut Avenue, NW, Apt. #717,
Washington, DC 20015-2837.
Trustees: John Menke, Jay H. Miller, Dr. Andrew W. Seacord, II, Dr. Wayne H. Warren, Jr.
NCA Webmaster, Dr. Harold Williams, hwilliam@mc.cc.md.us, 301-650-1463 planetarium, 301-565-3709 (home).
Elliott Fein, NCA *Star Dust* Editor, elliot.fein@erols.com, 301-762-6261 (home), 5 Carter Ct. Rockville, MD 20852-1005.
NCA Web Page: <http://capitlastronomers.org/>.
Appointed Officers and Committee Heads: Exploring the Sky - Joseph C. Morris; Meeting Facilities - Jay H. Miller;
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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. 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. See monthly *Star Dust* for time and location.

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. Most of these NCA members are also members of the International Occultation Timing Association (IOTA).

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). Some NCA members are also individual members of 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. Contact: Sue Bassett wb3enm@amsat.org

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. joemorris@erols.com 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.

Fine Quality Telescope, 14-inch aperture, see “Calendar of Monthly Events”.

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

Date:

Name(s): _____

Address: _____

Telephone: _____ E-mail: _____

Other family members who should receive a membership card: _____

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___ \$57 With *Star Dust* and a discount subscription to *Sky & Telescope*.

___ \$27 With *Star Dust* ONLY.

___ \$45 Junior membership with *Star Dust* and a discount subscription to *Sky & Telescope*.

___ \$15 Junior membership with *Star Dust* ONLY.

___ \$100 Contributing member (with *Sky & Telescope*) (\$43 tax-deductible).

___ \$150 Sustaining member (with *Sky & Telescope*) (\$93 tax-deductible).

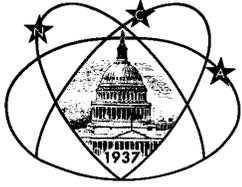
Junior members only: Date of Birth: _____ Only members under the age of 18 may join as juniors.

Tax deductible contribution: _____ Thank You.

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**FIRST CLASS
DATED MATERIAL**

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