# Star Dust

**National Capital Astronomers, Inc.** **http://capitalastronomers.org**

Volume 61, Number 9 May 2003 ISSN 0898-7548


## May Speaker: John Dobson

### *Submitted by Gary Joaquin*

On Sunday, May 4, John Dobson will give the featured talk at the meeting of the National Capital Astronomers. The meeting will be held at 3:00 P.M. in the Bethesda-Chevy Chase Regional Services Center of Montgomery County, 4805 Edgemoor Lane (Second Floor), Bethesda, MD.

Although Mr. Dobson did not provide a synopsis of his presentation, one of his favorite topics is cosmology, and we can expect to learn more about his own revised steady state model. The following biography is derived and excerpted from http://quanta-gaia.org/dobson and http://www.johndobson.org:

**Biography**

John Dobson, co-founder of the Sidewalk Astronomers and builder of telescopes, is a groundbreaking thinker and teacher. He was featured in the PBS television series "The Astronomers", has been written up several times in "Sky and Telescope" magazine, has twice appeared on the Tonight Show with Johnny Carson, and has been interviewed many times for radio programs on stations such as Oregon Public Broadcasting. John Dobson is perhaps best known for his work in the design and construction of telescopes; he is famous

*(Continued on page 2)*

## Sunday Meeting in May!

Please note that this May NCA meeting will be held on May 4, which is a Sunday.

## Congratulations to NCA Science Fair Winners!

We are pleased to announce the winners in the 2002 science fair judging, They are

**Prince George's Regional Science Fair**

Sarah W. Bates, Eleanor Roosevelt High School, *Optimization of satellite orbits through the magnetosphere*

Stephen F. Simon, Eleanor Roosevelt High School, *Refining near-IR data from the 2MASS survey*

**Montgomery County Science Fair**

Stephen Lin, Montgomery Blair High School, *Formaldehyde - Mineral reactions: A possible route to the organic molecules in carbonaceous chondritic meteorites*

Wei-Liang Lai, Montgomery Blair High School, *Predictability of high-dissipation auroral activity*

**Fairfax County Science Fair**

Nina Hoffman, Langley High School, 10th grade, *Measuring the Composition of Stellar Atmospheres Via Optical Spectroscopy*

**Washington, D.C. Science Fair**

Sabrina C. Snell, School Without Walls *An assessment of linear and accelerated motion in double stars*

*(Continued on page 4)*

## "Extrasolar Planetary Systems", A Talk by Dr. Sara Seager

### *Reviewed by Gary Joaquin*

At the April 12 NCA meeting, Dr. Sara Seager of the Carnegie Institute of Washington gave a presentation entitled "Extrasolar Planetary Systems", emphasizing what we can learn about the evolution and structure of extrasolar planets interacting with the stars about which they revolve. Her presentation summarized what we currently know about extrasolar planets, the significance of extrasolar planet HD209458b, plans for near future extrasolar planet searches, and longer range plans to detect Earth-like planets and extraterrestrial life.

**What Do We Know About Extrasolar Planets?**

Extrasolar planets are detected via indirect means. They are much too small and dim compared to the star about which they revolve to be imaged directly. Instead the line of sight motion of the star caused by its gravitational interaction with its planets is detected and measured. Massive extrasolar planets revolving about nearby stars in very low orbits parallel to our line of sight produce stellar motions that are the most detectable. Earth-like planets are too small to be detected given the amount of noise generated by the star about which they revolve and the current sensitivity of detection equipment.

*(Continued on page 3)*

# NCA Events This Month

## The Public is Welcome!

NCA Home Page: http://capitalastronomers.org

**Fridays, May 2, 9, 16, 23, & 30, 6:30 to 9:30 P.M.,** NCA Telescope-making Classes 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. Also, see below.

**Fridays, May 2, 9, 16, 23, & 30, 9:30 P.M.** Open nights with NCA's 14-inch telescope at Ridgeview Observatory near Alexandria, Virginia. For more information, see below.

**Saturday, May 24, 9:00 P.M.** Exploring the Sky at Rock Creek Park. See Page 4.

**Sunday, May 4, 3:00 P.M.** NCA meeting in the Bethesda-Chevy Chase Regional Services Center of Montgomery County, 4805 Edgemoor Lane, (Second Floor), Bethesda, MD.

Science fair winners will give short talks about their projects.

John Dobson will give the featured talk.

**Sunday, May 4, following the meeting,** dinner with the speaker and NCA members at

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

See map and directions on Page 6.

# Observing with the NCA C-14

***Bob Bolster***

| **Fridays at 9:30 p.m.** | **Prime Objects** |
|---|---|
| May 2 | Jupiter, M44, Castor |
| May 9 | Jupiter, first quarter Moon |
| May 16 | Jupiter |
| May 23 | Jupiter, M44, Mizar |
| May 30 | Jupiter, M3 |

At Ridgeview Observatory in Bob Bolster's backyard, 6007 Ridge View Drive, Franconia, Virginia (off Franconia Rd. between Telegraph Rd. and Rose Hill Dr.). Call Bob at 703-960-9126 before 6:00 p.m., to let him know you are coming.

# NCA Telescope/Mirror-Making Workshop

***Guy Brandenburg***

The NCA mirror- and telescope-making classes continue as usual at the Chevy Chase Community Center every Friday evening from 6:30 to 9:30 P.M. We have a contingent of younger mirror makers - two elementary-school students (with parental help) and a 9th grader who is working on a very ambitious 16-inch plate glass mirror project, focal ratio f/5, with glass less than 1 inch thick. We cast a concrete tool faced with ceramic tiles, after a small disaster with dental stone (it set too fast to be poured!).

We are about to take delivery of a donated mirror-grinding machine - something only that Robert Bolster and Jerry Schnall have experience with, but the rest of us don't. Dave Strout donated the machine after he decided that making the mirror was not for him.

The CCCC is at the intersection of McKinley Street and Connecticut Avenue, NW, in the District, a few short blocks from Chevy Chase Circle, and right next to the Chevy Chase Branch Library. There is parking in the back, and our workshop is in the woodworking shop in the basement.

# John Dobson

*(Continued from page 1)*

for the design of the portable "Dobsonian" mount.

Mr. Dobson completed a degree in Chemistry at the University of California at Berkeley in 1943, and worked on defense-related jobs until he joined the Vedanta Monastery in San Francisco in 1944, becoming a monk of the Rama-krishna Order. He spent the next 23 years in the monastery. Since leaving the monas-tery, he feels compelled to share the beauty of the Universe with others, expecting nothing in return save the joy of sharing. He does this by setting up telescopes in public places, beckoning passers by to come look through them, and by conduct-ing classes and public lectures.

We feel honored, and look forward to hearing John Dobson's talk.

# Review of talk by Dr. Sara Seager, continued

*(Continued from page 1)*

Almost all extrasolar planets have been discovered via the radial velocity method, primarily because it offers the highest probability of successful discovery. The velocity of a star is measured as it comes towards the viewer and moves away over a period of a couple of years. Circular planetary orbits generate radial velocity plots that are more sinusoidal and symmetrical. Eccentric orbits generate more irregular plots. Extra modulation can indicate the presence of a second planet. Care must be taken to predict and confirm the complete extrasolar planetary orbit so it cannot be confused with a variable star.

So far, about 100 extrasolar planets have been discovered with several common properties. They are massive planets with minimum masses ranging from 0.4 to 10 times the mass of Jupiter. These planets have been discovered in tight orbits about their stars ranging from those that are seven times smaller than that of Mercury's orbit about the Sun to up to four astronomical units (AU). Almost all of these extrasolar giant planets (EGPs) with orbits greater than 0.2 AU have eccentric orbits. Given that these orbits are so different from our solar system (which is characterized by circular orbits), Dr. Seager observed that these newly discovered planetary systems will keep solar system and planetary formation theoreticians busy for quite some time analyzing data and refining their computer models.

**HD209458b**

In 1999, an extrasolar planet known as HD209458b in the constellation Pegasus was detected transiting across the face of its star. This transit measurement confirmed that extrasolar planets really do exist and it enabled the planet's radius and density to be measured directly; the composition is inferred from models and the measured radius and mass.

Dr. Seager noted that this discovery was made with a 4" telescope with a CCD camera in Boulder, Colorado, which bodes well for amateur astronomers continuing to make significant contributions to science. Since this transit takes only about 3 hours and is repeated every 3.5 days, once each time the planet completes an orbit about its star, there are plenty of opportunities for future study. Many amateurs and students around the world have observed this crossing.

Once again, the disk of the planet was not imaged directly, but inferred from a 2% drop in the star's brightness during the crossing. If you have equipment capable of 1 to 2% photometry, then you will be able to detect events like these. Subsequent observations by the Hubble Space Telescope with its 1 in 10,000 photometry precision confirmed this observation.

In 2001, the first extrasolar planetary atmosphere was detected about HD209458b. HST detected additional sodium (Na) absorption as stellar light passed through the extrasolar planet's atmosphere. This discovery confirmed Dr. Seager's computer model which predicted the presence of Na. However, the HST measurements demonstrated that there is a lot less Na than expected, requiring future adjustments to Dr. Seager's model.

**Plans for Future Extrasolar Planet Searches**

Fortunately, the Canadian Space Agency will be launching a new mission in June to further the study of extrasolar planets. The Microvariability and Oscillations of Stars mission (MOST) will launch a small telescope with a 15 cm.-wide mirror capable of detecting changes in photometry on the order of one part in one million. The telescope will focus on just the brightest stars for about two months each, to get the right precision.

In the near future, there will be ground- and space-based searches for extrasolar planets. Not only will these try to detect changes in radial velocity, but they will also employ techniques like transit searches, reflected light, astrometry, microlensing, and direct imaging. One such program will attempt to automate the process of identifying transiting stars by using computer software to observe tens of thousands of stars simultaneously with the hope of finding hundreds of stars at a time with the characteristic light curve of a transiting planet. It is estimated that one in 3000 observable stars will have an extrasolar planet transit visible to this technique.

**The Search for Earth Twins and Extraterrestrial Life**

There are currently at least three approaches to searching for extraterrestrial life:

- Direct observations including planned missions to detect life in the soil of Mars and below the icy surface of Europa;
- SETI which searches for radio transmissions broadcast by extraterrestrial civilizations; and
- Terrestrial Planet Finder (TPF) which uses remote sensing to search for indirect evidence of life.

Dr. Seager focused the remaining part of her presentation on TPF, scheduled to be launched in 2015. This mission's goal is to discover earth-like planets located within 50 light years of Earth. TPF will be designed to detect and analyze extrasolar planetary atmospheric gases produced by biological processes.

The primary obstacle to this mission is the difference in brightness between a star and the planets that revolve about it. Stars are so much brighter than planets that it becomes very difficult to detect planets within this glare. Early designs by David Spergel and Jeremy Kasdin of Princeton University propose a space telescope with an approximately cat's eye shaped objective opening or "pupil" which causes light from the star being studied to diffract or interact in such a way that it cancels itself out in a distinctive interference pattern, reducing the stellar glare along the orbital paths of extrasolar planets making it easier to detect them. Once detected, remote sensing may be able to gather more information about weather, oceans, ice cover, land masses and even rotational periods.

**The Extrasolar Planet Timeline**

The era of extrasolar planetary discovery has just begun. Dr. Seager concluded her presentation with a brief summary of the milestones of discovery and what we can expect to discover in the future:

- 10/1995 – First planet discovered
- 11/1999 – First transit detected
- 11/2001 – First atmosphere detected
- 2004-15 – The Giant Planet Era
- 2010-20 – Earth-like Planet Era

NCA is grateful to Dr. Seager for an excellent presentation and especially for her willingness to present on such short notice

*(Continued on page 4)*

# Congratulations to NCA Science Fair Winners!

*(Continued from page 1)*

Andrew Muniteanu, Banneker High School, *An analytical approach to calculating the minimum orbital intersection distance*

Austin Davis, Tacoma Educational Center, *Can you see the stars?*

**Judges**: Wayne Warren, Andrew Seacord, Melanie EILassi, Robert Bolster, and Harold Williams.

These science fair winners will be honored at the May NCA meeting. They will bring their projects to the meeting, where each will give a three to five minute summary of his or her project. Each student will be presented with a certificate. They will also be invited to join us at the dinner with the speaker and NCA members at Il Forno Pizzeria. The award also includes a one-year membership in NCA with a one-year subscription to *Sky and Telescope*.

# Dr. Sara Seager

*(Continued from page 3)*

when her colleague and our scheduled speaker, Dr. Alycia Weinberger, was unable to present due to a family illness. At our meeting NCA members and friends signed a card to be delivered to Dr. Weinberger expressing our best wishes. NCA will look forward to future visits by Dr. Seager and Dr. Weinberger to bring us up to date on their fascinating research.

# Come See the Stars!

## *by Joe Morris*

**Exploring the Sky 2002-2003 Schedule**

| Date | Time | Notes |
|---|---|---|
| 5/24 | 9:00 P.M. | Astronomy Day 5/10 |
| 6/7 | 9:00 P.M. | Quarter moon. Summer solstice 6/21 |
| 7/19 | 9:00 P.M. | |
| 8/23 | 8:30 P.M. | Perseid meteor shower 7/17-8/24 |
| 9/27 | 8:00 P.M | Rock Creek Park Visitor Day |
| 10/18 | 7:30 P.M. | |
| 11/15 | 7:00 P.M. | Leonid meteor shower 11/14-11/21 |

*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, 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 immediately next to the field.

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
http://www.capitalastronomers.org

# *Star Dust* is Now 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 nancy.roman6@verizon.net or 301-656-6092 (home).

*The deadline for the June Star Dust is May 15.*
*Please send your material to Elliott Fein by that date to ensure inclusion.*

*Send submissions to Elliott Fein at elliott.fein@erols.com.*

*Text must be in ASCII, MS Word (97 or earlier), or WordPerfect.*

*All articles submitted may be edited to fit the space available.*

# Meteor Showers May Radiants

**Full Moon: May 16**

**Major Activity**

| Radiant | Duration | Maximum |
|---|---|---|
| Eta Aquarids (ETA) | April 21 - May 12 | May 6 at 10:25 UT |

**Minor Activity**

| Radiant | Duration | Maximum |
|---|---|---|
| Epsilon Aquilids | May 4-27 | May17/18 |
| May Librids | May 1-9 | May 6/7 |
| Eta Lyrids | May 3-12 | May 8-10 |
| Northern May Ophiuchids | April 8-June 16 | May 18/19 |
| Southern May Ophiuchids | April 21-June 4 | May 13-18 |

**Daylight Activity**

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

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

# Mid-Atlantic Occultations and Expeditions

***by David Dunham***

## Asteroidal Occultations

| Date | Day | EDT | Star | Mag | Asteroid | dmag | dur. s | Ap. in. | Location |
|---|---|---|---|---|---|---|---|---|---|
| Apr 30 | Wed | 3:32 | TAC+2d 8673 | 11.7 | Undina | 0.7 | 10 | 8 | S. Carolina |
| **Date** | **Day** | **EDT** | **Star** | **Mag** | **Asteroid** | **dmag** | **s** | **in.** | **Location** |
| May 8 | Thu | 2:03 | TYC73440658 | 11.8 | Bojeva | 3.5 | 2 | 8 | cen. VA, s.MD |
| May 15 | Thu | 2:36 | TAC +3 6282 | 10.7 | Imhilde | 3.6 | 6 | 6 | Florida |
| May 15 | Thu | 22:34 | SAO 98128 | 9.5 | Galatea | 5.2 | 5 | 3 | Florida |
| May 16 | Fri | 0:49 | TYC08410224 | 11.4 | Nealley | 4.3 | 7 | 8 | Key West, FL |
| May 26 | Mon | 3:49 | TYC57641478 | 11.3 | Hercynia | 3.9 | 10 | 7 | Carolinas |
| May 28 | Wed | 1:51 | TYC49970795 | 11.0 | Forsytia | 4.3 | 4 | 7 | New York |

## Lunar Grazing Occultations

| DATE | Day | EDT | Star | Mag | % | alt | CA | Location |
|---|---|---|---|---|---|---|---|---|
| May 5 | Mon | 22:56 | SAO 78278 | 9.2 | 18+ | 12 | 7N | Rockv.,Adelphi,Kettering, MD |
| May 9 | Fri | 22:05 | ZC 1470 | 8.1 | 56+ | 57 | 11N | Verona & Petersburg, VA |
| May 9 | Fri | 22:42 | XY Leonis | 9.6 | 56+ | 49 | 11N | Winchester,Opal,Fredrksbrg, VA |
| May 11 | Sun | 21:35 | nu Vir | 4.0 | 77+ | 57 | 11N | Westminster &Reisterstown, MD |
| May 15 | Thu | 22:39 | SAO 159290 | 8.7 | 47E | 23 | 90U | Chester, VA lunar eclipse |
| May 15 | Thu | 23:57 | SAO 159320 | 9.4 | 0E | 32 | 60U | Fayetteville, NC lunar eclipse |
| May 16 | Fri | 0:13 | ZC 2217 | 5.5 | 0E | 45 | 60U | s. Alabama or Bradenton, FL |
| Jun 6 | Fri | 21:11 | SAO 99207 | 8.2 | 41+ | 49 | 13N | Bel Air, MD; York, PA; s.Del. |
| Jun 7 | Sat | 23:37 | SAO 118905 | 7.9 | 53+ | 28 | 9N | Burtonville,Atlee&Suffolk, VA |

## Total Lunar Occultations

| DATE | Day | EDT | Ph | Star | Mag | % | alt | CA | Sp. | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| May 3 | Sat | 21:40 | D | ZC 0688 | 6.8 | 5+ | 6 | 67N | F2 | Az. 294; mag2 10, sep2" |
| May 6 | Tue | 20:24 | D | ZC 1094 | 7.1 | 25+ | 50 | 42S | A0 | Sun alt. -4 deg. |
| May 11 | Sun | 21:28 | D | nu Vir | 4.0 | 77+ | 58 | 23N | M0 | ZC 1702; graze Baltimore |
| May 11 | Sun | 22:22 | R | nu Vir | 4.0 | 77+ | 55 | -1N | M0 | |
| May 14 | Wed | 3:29 | D | 82 Vir | 5.0 | 95+ | 16 | 33S | M2 | |
| May 14 | Wed | 20:59 | D | ZC 2070 | 6.7 | 98+ | 22 | 39S | F5 | Sun -9; terminator 13" |
| May 15 | Thu | 23:27 | D | SAO 159329 | 8.6 | 0E | 27 | 65U | A | WA 82 deg. (lat. +08) |
| May 15 | Thu | 23:36 | D | SAO 159320 | 9.0 | 0E | 28 | 23U | G5 | WA 161 deg. (lat. -71) |
| May 15 | Thu | 23:44 | D | ZC 2217 | 5.5 | 0E | 28 | 49U | A2 | WA 130 deg. (lat. -40) |
| May 16 | Fri | 0:20 | R | SAO 159320 | 9.0 | 9E | 30 | 37U | G5 | WA 234 deg. (lat. -36) |
| May 16 | Fri | 0:30 | D | SAO 159339 | 8.8 | 24E | 31 | 78U | M1 | WA 169 deg. (lat. -79) |
| May 16 | Fri | 0:33 | R | SAO 159329 | 8.6 | 29E | 31 | 83U | A | WA 313 deg. (lat. +43) |
| May 16 | Fri | 0:52 | R | ZC 2217 | 5.5 | 64E | 31 | 73U | A2 | WA 264 deg. (lat. -06) |
| May 17 | Sat | 4:04 | R | ZC 2398 | 6.1 | 98- | 21 | 62S | A7 | |
| May 18 | Sun | 4:46 | R | ZC 2558 | 6.3 | 93- | 21 | 55S | B3 | Sun alt. -12 deg. |
| May 19 | Mon | 0:11 | R | phi Sgr | 3.2 | 87- | 4 | 23N | B8 | Az. 130; close double? |
| May 20 | Tue | 4:13 | R | omega Sgr | 4.7 | 77- | 23 | 64S | G3 | close double? ZC 2910 |
| May 21 | Wed | 3:01 | R | ZC 3052 | 6.3 | 67- | 14 | 44S | K0 | mag.2 8.5, sep. 1.5" |
| Jun 3 | Tue | 20:56 | D | ZC 1194 | 7.7 | 13+ | 30 | 73S | K0 | |
| Jun 4 | Wed | 23:56 | D | ZC 1334 | 7.0 | 22+ | 5 | 39N | G5 | Az. 294 deg. |
| Jun 5 | Thu | 23:22 | D | ZC 1444 | 7.8 | 31+ | 18 | 73N | K0 | |
| Jun 6 | Fri | 21:01 | D | SAO 099207 | 8.2 | 41+ | 51 | 28N | F8 | Sun -6; graze, York, PA |
| Jun 7 | Sat | 22:42 | D | ZC 1669 | 6.7 | 53+ | 37 | 27S | F5 | |

---

Phone the IOTA occultation line, 301-474-4945, for updates,
or check the local IOTA Web site at http://iota.jhuapl.edu
David Dunham, e-mail dunham@erols.com, phone 301-474-4722

# Getting to the NCA Monthly Meeting

## Sunday, May 4

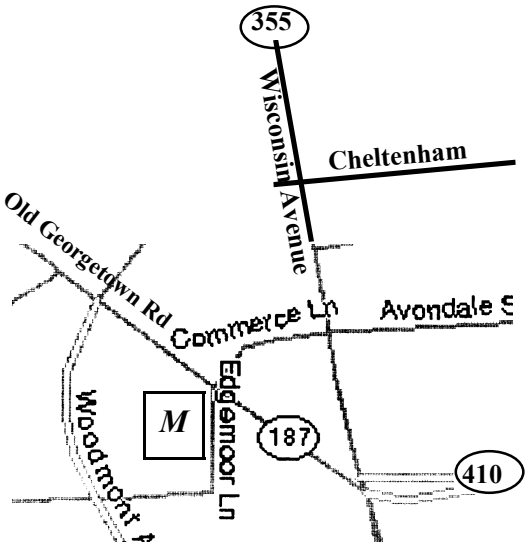
**3:00 P.M. - NCA Meeting** in the Bethesda-Chevy Chase Regional Services Center of Montgomery County, 4805 Edgemoor Lane **(2nd Floor)**, Bethesda, MD.

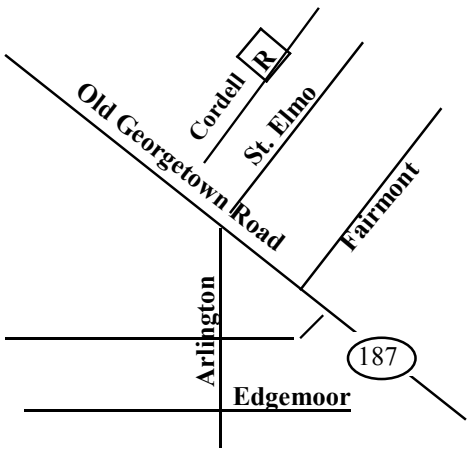
Science fair winners will give short talks about their projects.

John Dobson will give the featured talk.

**Following the meeting, dinner** with the speaker and NCA members at

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




## Directions to the Meeting Place in the Bethesda-Chevy Chase Regional Services Center of Montgomery County, 4805 Edgemoor Lane, (Second Floor), Bethesda, MD.

### From North of Bethesda

1. Take Rockville Pike/MD-355 South.
2. Rockville Pike/MD-355 S becomes MD-355/Wisconsin Ave.
3. Shortly after Cheltenham Dr. (and one block before reaching Rt. 410), turn right onto Commerce Lane.
4. Commerce Lane becomes Edgemoor Lane.
5. After crossing Old Georgetown Rd., 4805 is the second entrance on the right. (See **M** on map.)
6. To get to public parking, continue on Edgemoor Lane, which will make a sharp right turn. The parking garage is then on your right. See note below.

### From South of Bethesda

1. Take MD-355/Wisconsin Ave. North.
2. Turn slight left onto MD-187/Old Georgetown Rd.
3. Turn next left onto Edgemoor Ln. 4805 is the second entrance on the right. (See ***M*** on map.)
4. To get to public parking, continue on Edgemoor Lane, which will make a sharp right turn. The parking garage is then on your right.

Note: there are two parking lots. The one on Woodmont is for the apartments and may have a fee. The one on Edgemoor is marked "Public" and does not charge on weekends.

## Directions to the Restaurant

1. Following the meeting, turn right out of the parking garage.
2. Continue on Edgemoor Lane and cross Woodmont Ave.
3. Turn right onto Arlington Blvd.
4. Turn left onto MD-187/Old Georgetown Rd.

Turn right at Cordell Ave. The restaurant, Il Forno Pizzeria, will be on your right 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 near the restaurant.

*Star Dust* is published ten times yearly, September through June, by the National Capital Astronomers, Inc. (NCA).
Editor: Elliott Fein, Co-editor: Adele Fein, Editorial Advisor: Nancy Byrd. Consultant: Jeffrey Norman


## National Capital Astronomers, Inc.



**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: _____

Dues:

___ $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.
_____ I prefer to receive *Star Dust* by e-mail.

Please send this form, with your check payable to National Capital Astronomers, Inc., to:
Mr. Jeffrey Norman, NCA Treasurer, 5410 Connecticut Ave NW #717, Washington DC 20015-2837

**National Capital Astronomers, Inc.**
If undeliverable, return to
NCA c/o Nancy Roman
4620 N. Park Ave., #306W
Chevy Chase, MD 20815-4551

**FIRST CLASS**
**DATED MATERIAL**

# *Inside this issue:*