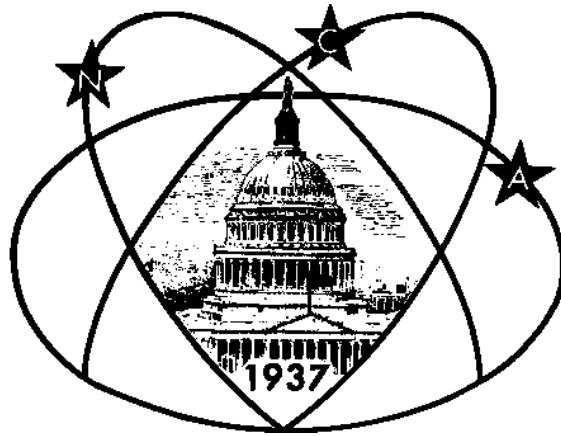


Star



Dust

National Capital Astronomers, Inc.

Volume 60, Number 7

March 2002

ISSN 0898-7548

March Talk: Dr. Sidney B. Parsons, “Some Binary Star Studies with Space Telescopes” *Submitted by Gary Joaquin*

Dr. Sidney B. Parsons will present the featured talk for the March 2 meeting of National Capital Astronomers, “Some Binary Star Studies with Space Telescopes”. The meeting will be held in the Bethesda-Chevy Chase Regional Services Center of Montgomery County, 4805 Edgemoor Lane (Second Floor), Bethesda, MD at 3:00 P.M.

Synopsis

Certain classes of double star systems cannot be fully analyzed from ground-based observatories. For over two decades Dr. Parsons has been engaged in using space telescopes to gather ultraviolet clues about component stars that are outshone by their primaries in visible light.

These studies include discovering eclipses of a 5th magnitude star, as well as discovering dozens of hot companion stars. From their analyses he derives estimated ages, masses, and distances for evolved stars that are 100's of parsecs away.

Biography

Dr. Sidney B. Parsons is the Section Manager of Post Observation Data Processing for a Computer Sciences Corp. contingent at the Space Telescope Science Institute in Baltimore, which operates the Hubble Space Telescope for NASA. Dr. Parsons earned his BA in Astronomy and Physics from Amherst College, and his MA and PhD in Astronomy from the University of California at Berkeley. He has worked for

CSC since 1983, after two years at Goddard Space Flight Center as a National Research Council/NASA Senior Research Associate. He was a Research Scientist at the University of Texas at Austin from 1973 to 1981 working on a Skylab project. Prior to that he was an Asst. Professor at Case Western Reserve University, Cleveland.

June Meeting Notice

Early warning: The June meeting of the National Capital Astronomers will be held on the 15th of June.

“Why Nothing Is Important” A Talk by Dr. Sten Odenwald *Reviewed by Dr. Andrew W. Seacord, II*

“Why Nothing Is Important” was presented by Dr. Sten Odenwald at the February 2 NCA meeting. There were two themes of this talk: the concept of Nothing as it applies to the nature of space and the use of mental imagery in understanding it. Several books about the nature of space, string theory and such have been written, generally by physicists, for the popular market. Some of these have been on the New York Times best seller list. Dr. Odenwald claims they are “generally incomprehensible, even to astronomers”. Furthermore, they discuss the “experience of space” but are devoid of the human dimension of this experience and, after reading these books, the reader feels that some-

thing is missing. He feels that there is a lack of romanticism and sentimentality among the astronomers he has known. We “tabulate, enumerate, measure, and quantify, but the entire human experience is lost between the comas and periods in a paper and you are never allowed to talk about the romanticism and sentimentality of the physical world”.

Fifty years of brain research has shown that it contains two parts, or completely separate individuals, which look at the world differently. One part looks for patterns which it stamps with emotional experiences. The other, which also contains language centers, is the logical, or rational

side, and considers cause and effect, does not get the emotional (“Oh Wow!!”) experience. He believes that it is difficult to write a book on science or astronomy that gets both sides of the brain excited at the same time. They are written for only one half of the brain. The other part wants to see the whole picture, patterns and relationships that are not a part of the ordering of time and space.

We can exercise that part of the brain which deals with the concept of Nothing. The exercise, an IQ test - where “I” stands for Imagination - was to consider a list of experiences. For example, “have you ever

(Continued on page 3)

NCA Events This Month

The Public is Welcome!

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

Fridays, March 1, 8, 15, 22, and 29, 7:00 to 10:00 P.M., NCA Mirror-Making Classes. Note change to *Fridays*.

Saturday, March 2, 8:30 P.M.,
Fridays, March 8, 15, 22, & 29, 8:30 P.M.
Open nights with NCA's 14-inch telescope at Ridgeview Observatory near Alexandria, Virginia. See below.

Saturday, March 2, 3:00 P.M. - NCA meeting in the Bethesda-Chevy Chase Regional Services Center of Montgomery County, 4805 Edgemoor Lane, (Second Floor), Bethesda, MD. See map and directions on Page 8.

Dr. Sidney B. Parsons will present the featured talk "Some Binary Star Studies with Space Telescopes".

Saturday, March 2, following the meeting, dinner with the speaker and NCA members at the Guapos Restaurant
8130 Wisconsin Avenue
Bethesda, MD
301 656-0888

See Page 6 for more National Capital Area astronomical doings.

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

The deadline for the April *Star Dust* is March 15. Your cooperation in adhering to the deadline would be appreciated.

Please send submissions to Elliott Fein at elliott.fein@erols.com.
Text must be in ASCII, MS Word, or WordPerfect.
Thank you.

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 ngroman@erols.com, or via telephone at 301-656-6092 (home).

Observing with the NCA C-14

by Bob Bolster

Date, Time

Saturday, March 2, 8:30 p.m.

Friday, March 8 & 15, 8:30 p.m.

Friday, March 22, 8:30 p.m.

Friday, March 29, 8:30 p.m.

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.

Prime Objects

M42, Double Cluster, Saturn, Jupiter

M42, Double Cluster, Saturn, Jupiter

Lunar photography - bring your SLR camera with medium-speed film. Nikon, Canon, Olympus OM-1, and Praktica T adapters

Saturn, Jupiter

Science Fair Judges Needed

by Jay H. Miller

We need some NCA members to act as judges for the county fairs coming up in March. Montgomery County and Prince Georges County have their fairs on March 16 while Fairfax County and Northern Virginia in Arlington have theirs on March 9. People do not have to be experts on astronomy. In fact I would not mind if people wanted to come to assist just to see how it goes so that they might judge the next year. I will be judging the Montgomery County fair which will be held at Montgomery College, Rockville. NCA gives a year's membership in NCA along with a year subscription to Sky and Telescope to winners in both the junior and senior divisions. Please contact me if you are interested in helping out. [jhmiller@os2bbs.com, or 301-530-7942 (home).]

Jay

Mirror Making Classes

by Guy Brandenburg

Fridays, March 1, 8, 15, 22, and 29: The NCA Mirror-Making class has gone back to FRIDAYS during March of 2002, from 7:00 to 10:00 P.M. at the American University's McKinley Hall, Rooms 9 and 13, just off Ward Circle in Northwest Washington, D.C. Classes are very informal, and you can start or finish a mirror at any time. We have all the necessary abrasives, glass, pitch, and testing equipment on hand, and you will find that in learning how to make a fine primary mirror, you will learn a lot about optics and astronomy that will be very helpful in observing the sky later on. Plus, you can then brag about how you made your own mirror and how you tested it to be accurate to a small fraction of a wavelength of light! Prices for entire packages (instruction, blank, tool, grit, pitch, other abrasives, rouge, testing, and so on) run about \$70 for a 6-inch mirror, and more for larger ones. Our prices are actually lower than ordering an entire kit from Willmann-Bell or Newport Glass. We can also test optics that you purchased or found elsewhere or help you collimate your scope. We can aluminize mirrors up to 12.5 inches for an additional fee. For more information, email Guy Brandenburg at gfbrenden@earthlink.net or phone him in the evenings or weekends at 202-635-1860.

Dr. Sten Odenwald

(Continued from page 1)

been abducted by an alien?" or "have you ever seen a total solar eclipse?". Most of the research on Nothing does not involve the logical side of the brain; rather, it involves the nonverbal side that deals with patterns. It is this part of the brain that theoreticians use as a tool kit for developing ideas. We all have the same internal imagery, but theoreticians are also able to use the other side of the brain which provides sophisticated mathematics with data and relationships. So, when we read books on space and fields, we can bypass much of the discussion by using the core part of our experience which we share with theoreticians. We can derive an understanding of extremely complicated physical principles by finding a personally satisfying way of manipulating these images.

Einstein had something to say about the use of internal imagery to develop ideas: "The words of language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The cyclical entities which seem to serve as elements of thought are certain signs, symbols, and, more or less, clear images which can be voluntarily reproduced in the mind". Einstein developed his General Theory of Relativity by wrapping mathematics around a core image. We can have an understanding of this theory by "bonding with the core image".

Roger Penrose, a mathematical physicist, also has something to say about this process: "Almost all my mathematical thinking is done visually in terms of non-verbal concepts. Although the thoughts are quite often accompanied by inane, and almost useless, verbal comments such as 'that thing goes with this thing and this thing goes with that thing'". The point is that the mental process begins with an image that includes essential relationships which mathematicians can use. We, also, can use this image when we want to understand "how something works".

Richard Feynman, who, along with Freeman Dyson and others, developed the Quantum Field Theory, had a unique ability to write down solutions [Feynman Diagrams] from his head without the use of equations. He worked from mental images.

There is an emotional element to what we do. A good example of this is the performance of music. Music is composed with

harmonious patterns stamped with emotional experience. To emphasize this emotional component, Dr. Odenwald told us of a music teacher and a student. This student, who was obsessed with technique and "getting it right", was told to think beyond the technical aspect of playing and "just enjoy the sound".

All of this can be applied to the study of space. Dr. Odenwald finds that, as we read those books mentioned above, the first few chapters read well, but as we continue (say around chapters four or five), we get bogged down. Instead of finding a "liberating image that we can carry away with us and use to look at the night sky, we get a train wreck". How does this happen?

He explains that it is a matter of training the right side of your brain to think of space. The left side of the brain is analytical, but the right side considers patterns. So, what does space look like from the right side? For insight, we were shown a classic drawing which can be interpreted two ways. One way shows an old woman with a bonnet; the other way shows a beautiful young lady, also with a bonnet. The left side of the brain is analytical, for which the image is one or the other, but not both at the same time. The right side of the brain, however, can accept both interpretations.

We were then shown several graphics which presented two similar images. One graphic had the star field of a globular cluster placed next to an image of the night-time view of the United States aglow with city lights. The right side of the brain sees ordered spots and uses experience to fill in the details. Another graphic had two examples of a common cell motif. A micrograph of cellulose in a tree trunk was placed next to a photograph of the granulation in the solar photosphere. In both of these examples, we see similar images from two fundamentally different physical systems. This suggests how we consider the structure of space. Is space a collection of disconnected fragments in a dark void or does it have some sort of cellular structure? Theoretical physicists consider patterns and find the mathematics to provide insight into this structure.

Dr. Odenwald believes that we need to feed the right side of the brain in order to have more "ah-has". For an example, he asked us to consider a gallery of visual

analogs of what space might be like. We need to have sufficient internal visual imagery in order to understand books we read. We need to expend more effort in providing our brains with carefully examined imagery, which can be used later.

We go through life giving little attention to geometric objects we see. If we study something long enough that its image penetrates our mind, it becomes a part of a mental library. Later, when we are reading about a subject like the structure of space, we will recall some of these images. The remainder of this talk provided us with a library of images which we can use to understand the nature of space. Space is not Nothing; it is a field.

In trying to understand space, the left side of the brain interprets space as not being empty, but filled with "ooga-boogas" which come and go invisibly. Heisenberg's Uncertainty Principle allows continual field activity to occur. To illustrate unseen matter, we were shown a picture of an interstellar nebula in which some of the matter is not visible to the naked eye. Then, we were shown a pair of images. One was a map of the cosmic microwave background observed by the COBE spacecraft. The other, next to it, was a conception of universes stacked one upon another, each covered with stars. They were vaguely similar. This kind of imagery will be useful later.

Comparing how the two sides of the brain might consider space, it was noted that the left side thinks in terms of space-time geometry whereas the right side considers images, perhaps one where geometry exists in some portions of space, but does not exist in others. Space-time geometry is thought of being some sort of fabric with particles moving along world lines that form a geometrical pattern. Nature has many patterns like this.

Particles are created out of nothing. In the 1930s, researchers at the General Dynamics facility in Pittsfield, Massachusetts were testing electrical insulators by applying a million volts across them. Every discharge created a bluish glow, the cause of which was not understood at the time. Later, it was found that particle - antiparticle pairs were being produced.

This can be related to Genesis, or creation stories, in which some deity — God, Yah-

(Continued on page 4)

Dr. Sten Odenwald

(Continued from page 3)

weh, Ra — creates something out of nothing, matter out of empty space. This has been done in laboratories since the 1930s and we think nothing of it. But, in fact, it is almost a religious experience. Except for quantity, there is not much difference between creating particles out of nothing in an accelerator and creating them in the Big Bang. It is only a matter of degree, not a matter of principle.

Another analog of space-time might look like a spider web with tiny water drops along each strand. Particles are strung along filaments that go out into the void. One can see where matter exists and the places, in between, where there is no matter, energy, or anything. And, where there is matter we get everything else that is in the world, including gravity.

Artists have been creating visual libraries for hundreds of years. Unfortunately, these libraries, which could be so useful in understanding science and the nature of space, have been compartmentalized into the area called “art”. People who do original research use these images, any image they can get that gives them some sort of core experience. However, the public tends to compartmentalize much more severely and would never think of visiting an art gallery to understand quantum field theory. This is where we must retrain ourselves.

One core concept of modern space physics is that space is not continuous. Physics is concerned with dissolving matter into individual atoms, particles, and fields. At some level, matter breaks apart into things which are neither space nor time. How do we internalize an image of that?

We were shown some picture analogs. One of these was a model depicting the evolution of the universe. Each point of light on it is a glob of matter which eventually joins other globs to become a galaxy. The distance across the model is 100 million light years.

When physicists think of the emptiness of space on a large scale, they envision a cellular structure. But, on a scale billions of times smaller than an atomic nucleus, the picture becomes a spaghetti-like web-work of things. We do not know what those “things” are even though we have a name for them. Nobody tells us, however, that those things do not move.

Space is not just a container, it is part of a field which has two components, a space part and a time part. The name of this field is gravity. If gravity does not exist, space and time will not exist. If gravity is turned off, space and time in some region would be annihilated. This is the essence of Einstein's General Theory of Relativity. Einstein makes no mathematical distinction between space-time and the gravitational field of the universe. They are the same. Pure mathematicians call it space-time and pure physicists call it gravity.

At some scale, space-time may be a fractal. A fractal universe is weird because, with only two or three simple rules, it becomes an object of incredible complexity and dazzling beauty. Its structure vanishes into infinity and is rich at every scale. Maybe space-time and gravity are like that. We do not know.

According to Dr. Odenwald, the universe has a character more like a spirit than matter. Everything we know of in the universe can be reduced to ephemeral fields working their way through space-time. Matter, which gives solidarity to our world, is really a small percentage of this. Those of us who have a fondness for spirits will find a lot of resonance with modern physics in finding archetypes for these sort of things.

Several more visual analogs of what space-time may be like were presented. One was a photograph of stars seen through a gravitational lens and appearing in a foreground screen of “other things”. This image had the appearance of the pattern seen on the bottom of a swimming pool on a sunny day. Another suggested analog was a picture of diatom shells. The third analog was a photograph of a few dozen tungsten atoms at the end of a needle. These analogs are very complicated. The question is: Do they make good analogies of how space-time dissolves into smaller things? We can imagine that at each point of light in these images there is space-time and everywhere else there is neither space nor time, but emptiness. Suppose the entire physical universe is composed like this.

The concept of space-time dissolving into nothingness was illustrated with more photographs. One of them was a cluster of galaxies and another was an electron cloud in a hydrogen atom. The latter suggests that maybe space-time is a superposition of waves. Light is a wave with electric and

magnetic fields. Recall that without gravity, a field, space-time does not exist.

The right side of the brain imagines fields. Picture a planetary nebula as an analog of a field structure. A unique example of this at the atomic scale was a photograph of fifty atoms arranged to form an elliptical corral with a single atom located at one focus of this ellipse. However, something appears at the other, supposedly empty, focus. If the real atom is removed from the focus, the “ghost” at the other focus disappears. This illustrates how nature uses fields. Two questions are “Is the ‘ghost’ real?” and “What do we mean by ‘real’?” The “ghost” has measurable properties, but it is a mirage. The right side of the brain likes this image, but it drives the left side crazy.

An image of an aurora shows the essential quality of a field imbedded in space. It is like a frosted cake, the cake being space and the frosting is a field. The magnetic field above the sun's surface has an arc structure. This is in contrast with gravity, a field with no structure. For an interesting picture of field structure, consider a Kirlian photograph of a leaf showing plasma surrounding it. Some people, not including Dr. Odenwald, claim that the plasma is the leaf's spirit.

We also considered two photographs of the sun placed next to each other, one taken in white light, the other through a spectral filter. When we look at something in two ways, like these pictures of the sun, sometimes features become apparent that were not apparent before. Fields are like that, maybe space-time is also.

Both sides of the brain seem to agree that there is more to space than what lies between darkness and light. To demonstrate this, Dr. Odenwald, took an analog of a ruler and moved it around in three dimensions. He posed the question: “What is forcing it to move only in three dimensions, even in a perfect vacuum?” There must be a hidden relationship between the fields in the ruler, which make it a ruler, and fields in space-time which prohibit motion in more than three dimensions. An invisible connection prevents motion in other dimensions. If this connection were not present, the nature of gravity would be different that what it is. Even a simple change of gravity would annihilate the world. This constraint is related to subtle patterns hidden in the world that are

Dr. Sten Odenwald

“totalitarian” and prevents the possibility of warp drives or dimensional gateways.

The concept of darkness was illustrated by a Hubble Space Telescope image of a spiral galaxy. Its (dark) dust lanes were prominent. We can also see dust lanes in our own galaxy. The Incas also knew about them. Whereas eastern and western cultures defined constellations by stars and imaginary lines between them, the Incas based their constellations on darkness. They even sacrificed children to placate their dark constellations. Some ancestors painted images on cave walls in total darkness. Darkness is primal to us.

Dr. Odenwald says darkness and light make up the two axes of the universe. Although we enjoy the light of stars, nebula, and auroras, darkness is a much larger part of the universe. There are things going on in space, hidden by darkness, that control the destiny of the universe. Dark energy and dark matter do not produce light.

There are other ways in which darkness and light come together to form vivid images that we tag with emotional content. As noted earlier, part of our brain uses patterns. When it gets one, it immediately associates it with experience. As we try to understand what Nothing is, we deal with many patterns which have already been stamped with an emotional content. Dr. Odenwald believes that this is not an altogether bad situation. He maintains that science lacks the mind of the poet and romantic. Until we can find some way to take ownership of experience through the use of evocative imagery, the hard-to-understand science written in best-selling books will remain fairly obscure.

For an example of how a part of the brain takes an image and stamps it with some sort of connotation, he showed us an image of the Merope nebula in the Pleiades. He looks upon it as having some sort of non-physical, or spiritual, appearance, like a fairy caught in starshine. The brain has used imagery for hundreds of thousands years as a survival mechanism. With only a quick look, the brain stamps an image with fear, flight, mating, or whatever. The universe is like a Rorschach ink blot. Look at an ink blot and what do you see? Look at a nebula and what do you see?

We take possession of the universe in small pieces, an image at a time. We inter-

nalize what we see out there and imagine it in terms of things for which we have real experience. The presentation came back to the concept of hidden information. Statistically, 97% of the universe is dark matter or energy; 96% of our DNA is not in the form of genes; 95% of what we are is shared by chimpanzees; and 94% of our mass is hidden field energy. “Most of the things that control us, that define what we are as physical beings, are hidden from view.”

The concluding remark was “We experience darkness, nothingness, and things that are hidden. Fields in nature that are hidden on the cosmic scale, basically, are steering the destiny of the cosmos. We are along for the ride.”

Dr. Odenwald has written a book on this subject, “Patterns in the Void”. It is due on the market in June 2002. Also, he maintains a web site, www.theastronomycafe.net, which has answers to 3,000 frequently asked questions.

We thank Dr. Sten Odenwald for a very interesting presentation.

Support
the
IDA

Join the International
Dark-Sky Association
3225 N. First Avenue
Tucson, AZ 85719-2103

www.darksky.org

Air and Space Volunteers Needed by James R. Roy

Jay Miller, Ai Quan and I are current volunteers, but there is a need for more. Call Sean O'Brien at the Air & Space Planetarium (202) 357-2000. (You can leave messages at (202) 357-1529.)

The Exploring Space Lecture Series is now sponsored by Jaylee and Gilbert Mead. Prior to each lecture, Dr. David DeVorkin will lead a highlights tour of “Explore the Universe”.

Lectures are at 8 P.M. in Langley Theater at Air & Space (not the Planetarium)
Wed. March 13 - Owen Gingerich
Thu. April 11 - Robert Smith
Wed. May 1 - Vera Rubin
Thu. June 6 - J. Anthony Tyson

We will have viewing after each lecture (weather permitting).

The Astronomy Fair (How to shop for and use binoculars, telescopes of different types, star charts, etc.) will be held on Saturdays April 27 and November 16, in the main gallery on the East or West sides of the main Air & Space information desk. We need experienced astronomers to help explain uses of the gear, types, investments, versatility of various instruments, etc. The Fair runs 10 A.M. to 4 P.M.; please come in about 9 A.M. for set-up.

Public star parties at Sky Meadows on Route 17 in Paris, VA will be held from dusk to 11 P.M., weather permitting, on the following Saturdays: April 13, May 4, June 1, July 13, Aug. 10 (early Perseids), Sept. 7, Oct. 5, and Nov. 9. If you bring a telescope for use of others, you will be admitted free. At the last one on November 18, 2001, we had well over a hundred guests, plenty of meteors, and 20 telescopes, but almost all telescope bearers were from NOVAC. Help represent NCA!

There will be no Last Saturday planetarium lectures in February or March because a new show will be developed and installed. The entire Planetarium will be closed March 9 to April 5 for the installation of “Infinity Express” which opens April 6.

jimroy3d@juno.com or at (703) 356-6240, evenings

Other National Capital Area Meetings

University of Maryland Observatory on Metzerott Road. The Department of Astronomy at the University of Maryland, College Park hosts open houses at the Campus Observatory on the 5th and the 20th of every month. On Open House evenings a guest speaker will give approximately a half hour talk about a topic in astronomy. The talk is followed by viewing celestial objects through the observatory's telescopes, weather permitting. If weather does not permit viewing, the talk will still go on as scheduled. Starred talks are those that are likely to be kid-friendly.

Tuesday, March 5 7:15 and 8:00 p.m.
Dr. Derek Richardson, "How to Make Asteroid Families and Satellites"*

Wednesday, March 20, 8:00 p.m.,
Dr. David Smith on "Binary Black Holes"

Friday, April 5 7:15 and 8:00 p.m.
Dr. Steven White on "Space Weather"
Info: (301) 405-0355. Source: <http://www.astro.umd.edu/openhouse/>

Goddard Scientific Colloquia

Due to continued construction in Building 3, the Colloquium will be held in the Building 8 auditorium. For the time being, access to Goddard Space Flight Center is limited to those holding Goddard badges or official visitors. You can become an official visitor by finding a badged Goddard employee to escort you. The Scientific Colloquium Committee cannot promise to provide escorts. We regret the inconvenience to our regular guests. Coffee and tea will be served at 3:00 p.m., courtesy of GEWA. 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.

March 1 Paul Spudis, Lunar and Planetary Institute, "New Views of the Moon". Source: lheawww.gsfc.nasa.gov/users/djt/colloq/

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.

March 6 Prof. Vera Rubin, DTM, "How far Does the Dark Halo of our Galaxy Extend?"

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: Please note that 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>

Stellar & Extragalactic Astronomy Lunch

Talks are Wednesdays at 12:00 Noon in Room 191 of Building 21.

March 6 Bill Danchi, GSFC, "The Fourier-Kelvin Stellar Interferometer: A Path-finding Space Interferometer for the Mid-Infrared"

March 13 George Sonneborn, GSFC, "Report on IAU Symp. 209: Planetary Nebulae"

March 20 Harry Teplitz, GSFC/NOAO, "Emission-Line Galaxies in the STIS Parallels"
Source: <http://hires.gsfc.nasa.gov/~gardner/seal>

Solar Physics Talk Calendar

Talks are Wednesday at 3:30 in Building 26, Rm. G10 of Goddard Space Flight Center, unless otherwise specified.

March 6 Andrzej Fludra, RAL, "Coronal Heating in Active Regions"

March 13 "SOHO 11"

March 20 "STEREO Meeting"

March 27 Tom Moran, CUA, "Analysis of Non-Thermal Ion Motions in the Corona: Implications for Wave Heating and Wind Driving Models"

April 3 Jack Ireland, Emergent, "Longitudinal Oscillations in Coronal Loops"

April 17 Michael Uzzo, SAO, http://orpheus.nascom.nasa.gov/~kucera/solar_talks/

Meteor Showers

Full Moon: March 28

Major Activity: None

Minor Activity

Radiant	Duration	Maximum
Eta Draconids	March 22-April 8	Mar. 29-31
Beta Leonids	February 14-April 25	Mar. 19-21
Rho Leonids	February 13-March 13	Mar. 1-4
Leonids-Ursids	March 18-April 7	Mar. 10/11
Delta Mensids	March 14-21	Mar. 18/19
Gamma Normids	March 11-21	Mar. 16/17
Eta Virginids	February 24-March 27	Mar. 18/19
Pi Virginids	February 13-April 8	Mar. 3-9
Theta Virginids	March 10-April 21	Mar. 20/21

Daylight Activity

Radiant	Duration	Maximum
March Aquarids	February ??-April ??	Mar. 15-18

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

Mid-Atlantic Occultations and Expeditions

by David Dunham

Asteroidal Occultations

DATE	Day	EST	Star	Mag	Asteroid	dmag	Dur	Ap. s in.	Location
Mar 3	Sun	23:51	TYC03190151	12.0	Prokne	1.0	17	8	Delaware
Mar 8	Fri	21:50	TAC+2d 2139	11.1	Adelheid	3.1	7	7	n. Maryland
Mar 17	Sun	22:09	TYC03220240	10.1	Prokne	2.2	14	6	Georgia
Mar 19	Tue	1:23	TYC13271000	11.3	Thisbe	1.8	20	8	Tenn. (low)
Mar 26	Tue	21:27	TYC01682620	10.0	Zelinda	1.9	11	6	s. VA, n. NC
Mar 29	Fri	3:19	TYC03670228	11.8	Iclea	2.8	11	8	Louisiana
Apr 5	Fri	3:06	TYC03060023	11.4	Angelica	3.0	4	8	n. Quebec

Grazing Occultations

DATE	Day	EST	Star	Mag	% alt	CA	Location
Mar 7	Thu	5:24	SAO 186506	8.4	37- 19	13S	Philadelphia, PA
Mar 9	Sat	5:24	SAO 188868	9.1	18- 9	14S	Beltsville, MD
Mar 15	Fri	19:05	26 Ceti	6.1	3+ 8	16S	Roanoke Rapids, NC; ZC 150
Mar 20	Wed	21:34	SAO 76962	7.1	39+ 34	1N	Waldorf, MD
Mar 21	Thu	18:45	SAO 77792	7.8	48+ 73	6S	Bowie, MD; Sun -6; sp. M1
Mar 21	Thu	20:34	SAO 77851	7.3	48+ 57	0S	La Plata, MD
Mar 21	Thu	21:31	SAO 77890	8.8	50+ 46	2N	Rosaryville, MD & Alex'ia, VA
Mar 23	Sat	1:53	48 Gem	5.8	62+ 7	2N	Wallingford, CT; ZC 1092
Apr 6	Sat	4:55	SAO 189586	8.1	33- 17	9S	Fayetteville, NC; Sun -12

Total Lunar Occultations

DATE	Day	EST	Star	Mag	% alt	CA	Sp.	Notes
Mar 1	Fri	22:22	R ZC 1923	6.8	88- 14	65N	K0	
Mar 5	Tue	2:15	R ZC 2338	6.4	57- 15	2N	G8	
Mar 7	Thu	5:22	R SAO 186484	7.9	36- 20	68S	A0	
Mar 8	Fri	5:16	R ZC 2792	6.9	26- 14	59N	B8	
Mar 15	Fri	18:46	D 26 Ceti	6.1	3+ 11	49S	F1	Sun alt. -7 deg.
Mar 17	Sun	20:18	D ZC 0376	7.0	13+ 15	24N	A0	
Mar 18	Mon	21:53	D SAO 093425	7.9	21+ 9	75S	K2	
Mar 19	Tue	20:42	D SAO 093814	7.8	29+ 33	60N	A2	
Mar 19	Tue	22:47	D SAO 093840	7.1	30+ 10	65N	F5	close dbl., mgs. 7.7&8.1
Mar 19	Tue	22:59	D SAO 093844	7.6	30+ 8	84S	K0	
Mar 20	Wed	22:48	D SAO 077003	7.5	40+ 20	52S	A0	
Mar 21	Thu	18:38	D SAO 077792	8.1	49+ 73	11S	M1	Sun -5; graze, Bowie, MD
Mar 21	Thu	20:24	D SAO 077851	7.9	49+ 58	14S	A0	Graze, La Plata, MD
Mar 22	Fri	20:54	D omega Gem	5.2	60+ 63	65S	G5	ZC 1070
Mar 22	Fri	23:22	D ZC 1080	6.7	61+ 36	84N	M1	
Mar 23	Sat	1:44	D 48 Gem	5.8	62+ 10	35N	F5	Graze, Conn.; ZC 1092
Mar 23	Sat	18:49	D ZC 1200	6.9	70+ 68	54S	K0	Sun alt. -6 deg.
Mar 23	Sat	19:50	D ZC 1208	6.3	71+ 74	5N	K1	Graze on bright side
Mar 26	Tue	18:29	D ZC 1598	6.5	95+ 27	43N	F5	double?; Sun alt. -2
Mar 29	Fri	23:01	R ZC 1994	6.2	97- 31	70N	F8	dbl., 6.5&7.7, 3.6", PA104d
Apr 1	Mon	3:05	R 47 Librae	6.0	82- 32	81N	B2	dbl., 6.1&8.1, 0.6", PA109d
Apr 2	Tue	5:29	R 24 Oph	5.6	72- 26	82S	A0	dbl.; Sun -5; ZC 2434
Apr 3	Wed	5:13	R 63 (Oph)	6.2	62- 26	49N	O7	Sun alt. -8; ZC 2577

Phone the IOTA occultation line, 301-474-4945, for weather go/cancel decisions, and other updates and details, or check IOTA's Web site at <http://www.lunar-occultations.com/iota>

David Dunham, e-mail dunham@erols.com

Phone home 301-474-4722; office 240-228-5609; car 301-526-5590

Getting to the NCA Monthly Meeting

Saturday, March 2

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

Dr. Sidney B. Parsons will present the featured talk for the March 2 meeting of National Capital Astronomers, "Some Binary Star Studies with Space Telescopes".

Following the meeting, dinner with the speaker and NCA members at the Guapos Restaurant
8130 Wisconsin Avenue
Bethesda, MD
301 656-0888

Directions to the New Meeting Place 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

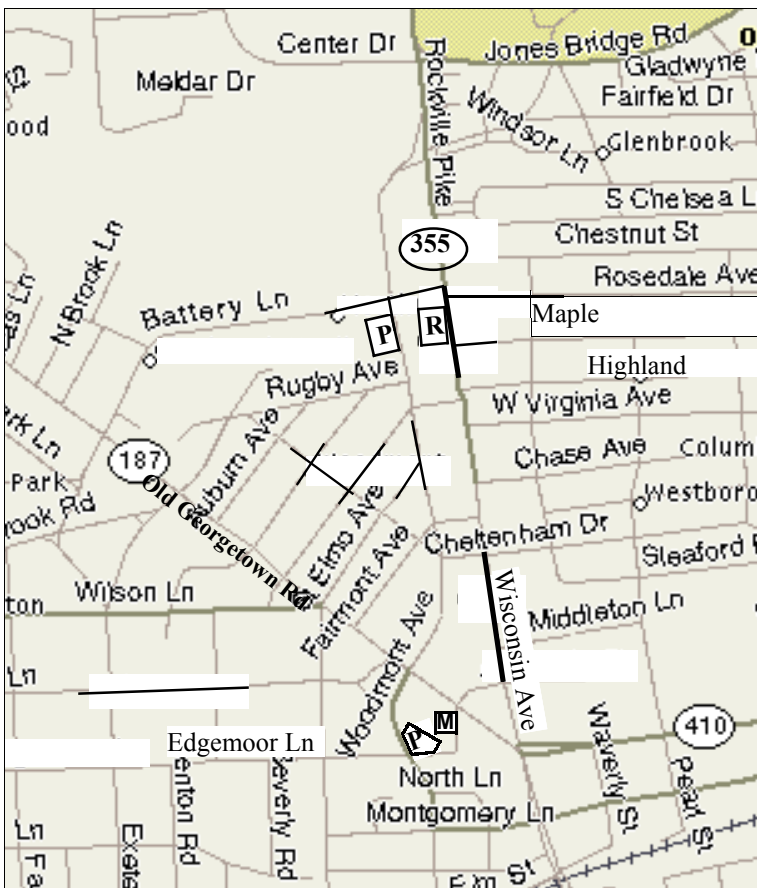
1. Take MD-355/Wisconsin Ave. North.
2. Turn slight left onto MD-187/Old Georgetown Rd.
3. Turn next left onto Edgemoor Ln. 4805 is the second entrance on the right. (See **M** on map.)
4. To get to public parking, continue on Edgemoor Lane which will make a sharp right turn. The parking garage is then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

Because Woodmont Ave. is one-way Southbound coming out of the parking garage, we are offering you what may appear to be circuitous, but is actually a fairly efficient way of getting to the restaurant after the NCA meeting

1. Following the meeting, turn left out of the parking garage. If you are on Woodmont Ave., turn left at the next intersection, which is Edgemoor Lane.
2. Continue on Edgemoor Lane to Old Georgetown Road.
3. Turn left on Old Georgetown Rd and then turn right on Woodmont Ave.
4. Continue on Woodmont Ave, which will twist and turn a bit. After you pass Rugby Ave., watch for the public parking garage and turn left into the garage.
5. Walk out of the parking garage and cross the street (Woodmont Ave.). Enter the back entrance of the restaurant. (See **R** on map.) You will have to walk up some stairs.
6. To avoid walking the stairs, either walk around the block (turn left to go North on Woodmont, and then turn right at the next two corners and walk South on Wisconsin Ave., or park at a meter (still needs money at that time) on Wisconsin Ave. and enter the front entrance of 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.

Star Dust © 2001. *Star Dust* may be reproduced with credit to National Capital Astronomers, Inc.

National Capital Astronomers, Inc.

Jay H. Miller, NCA President, jhmiller@os2bbs.com, 301-530-7942 (home).

Gary Joaquin, NCA Vice-president, glj1@erols.com, 703-750-1636 (home).

Dr. Nancy Grace Roman, NCA Secretary, ngroman@erols.com, 301-656-6092 (home).

Jeffrey Norman, NCA Treasurer, Jeffrey.Norman@ferc.gov, 5410 Connecticut Avenue, NW, Apt. #717,
Washington, DC 20015-2837.

Trustees: Jeff Guerber, Dr. Andrew W. Seacord, II, Dr. Wayne H. Warren, Dr. Harold Williams

NCA Webmaster, Dr. Harold Williams, hwilliam@mc.cc.md.us, 301-650-1463 (planetarium), 301-565-3709 (home).

Elliott Fein, NCA *Star Dust* Editor, elliott.fein@erols.com, 301-762-6261 (home), 5 Carter Ct. Rockville, MD 20852-1005.

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

Appointed Officers and Committee Heads: Exploring the Sky - Joseph C. Morris; Meeting Facilities - Jay H. Miller;

Observing - Robert N. Bolster; Telescope Making - Guy Brandenburg; Travel Director - Sue Bassett; *Star Dust* Editor - Elliott Fein

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).

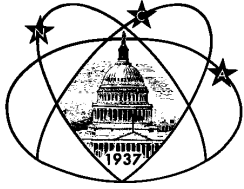
Junior members only: Date of Birth: _____ Only members under the age of 18 may join as juniors.

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:

March Speaker and His Talk	1
Review of February Speaker's Talk	1
NCA Events This Month	2
Observing with the NCA C-14	2
Mirror Making Classes	2
Other National Capital Area Meetings, etc.	6
March Meteor Showers	6
Mid-Atlantic Occultations and Expeditions	7
Directions with Map to Meeting Place	8
About NCA	9
Membership Application	9