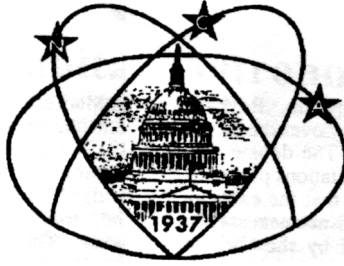


Star



Dust

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Dr. Joseph Weber to speak on Advances in Methods for Detection of Neutrinos and Gravitational Waves

Dr. Joseph Weber will conduct the November colloquium on two topics of great interest to the fields of astronomy and cosmology. The detection of neutrinos has been vexing science for some time. Some postulate that neutrinos may be so numerous in interstellar space that their mass may affect, and may even eventually halt the expansion of the universe. Dr. Weber will discuss new experiments, methods and results in the detection of neutrinos.

No one has yet established a propagation velocity for gravity, nor found whether changes in a gravitational field can be detected as waves. Dr. Weber will discuss the latest advances in

detection of gravitational waves and will demonstrate the newest observational data for these phenomena.

Dr. Weber has been a professor of physics at the University of Maryland since 1960. He obtained his PhD. in 1951 and was a Guggenheim Fellow at the University of Leiden. He was nominated to the Maryland Hall of Fame in 1969 for the earliest publication of works on principles of quantum electronics. He is a Life Fellow of the Institute of Electrical and Electronic Engineers and of the American Physical Society.

DECEMBER CALENDAR -- *The Public is Welcome*

Saturday, December 1, 7:30 pm - NCA Monthly Colloquium will be held in room A-06 of Building #42 on the Van Ness Campus of the University of the District of Columbia (UDC), at 4200 Connecticut Ave NW. Dinner with the speaker at 5:45 PM at Charlie Chaing's Restaurant at 4250 Conn Ave. NW (dinner will be in upper level of restaurant).

DIRECTIONS: From the Van Ness Metro station exit, walk west through entrance of UDC, crossing bus lane into garage. Exit garage on North side, climbing to level A of the campus. Building 42 is to the west as you emerge. (Alternatively, there is an elevator in Building 42.) The parking garage may be entered by car from Van Ness street. Charlie Chaing's restaurant is to the west of the entrance to UDC, and may be accessed from Connecticut Avenue or from the rear.

Tuesday, December 4, 11, 18, 7:30 pm - Telescope-making classes at Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, (202) 362-8872.

Friday, December 7, 14, 21, 7:30 pm - Telescope-making classes at American University, McKinley Hall Basement. Information: Jerry Schnall, (202) 362-8872.

Friday, December 7, 14, 8:30 pm - NCA 14-inch telescope open nights with Bob Bolster, 6007 Ridgeview Drive, south of Alexandria off Franconia Road between Telegraph Road and Rose Hill Drive. Call Bob at (703) 960-9126.

Saturday, January 5, 1991, 7:30 pm - NCA Monthly Colloquium with Dr. Judith Lean, who will speak on the topic of solar variability.

NOTE NEW MEETING PLACE: NCA has been offered a new permanent meeting place by the University of the District of Columbia. See details above.

November Colloquium

At the November colloquium, Barbara Becker spoke on the controversy over the origin of large redshifts of quasars. The debate was fueled by the dissenting interpretations proposed by Halton Arp. Arp believed that the extraordinary red shift in quasars did not necessarily reflect the distance indicated by the Hubble theory. Becker explored the effect of this challenge on existing cosmological models and the reactions of the astrophysical community.

According to the Hubble hypothesis, strongly red-shifted quasars imply large recessional velocities, placing them at cosmological distances. The discovery that some of these objects were pulsating at short periods meant that quasars could not be very large. If one accepts their distance, size and luminosity, no currently understood energy source could drive them. When faced with this paradox, Arp began to question the status of quasars as the most distant objects whereas the vast majority of his colleagues accepted this as fact and were trying to deduce a mechanism by which they might be powered.

Becker chose this controversy as a forum for exploring the ways in which science deals with dissenting viewpoints. She presented two principle philosophies of change in science: the views of Thomas Kuhn, who believed in the cyclic nature of thought evolution, and Ludwig Fleck who conceived of science as overlapping, cellular thought collectives. In Kuhn's theory, the "normal phase" of scientific research is upset by some contrary piece of information which is temporarily ignored until a crisis is reached when this contrary information must be integrated into the normal thought paradigm. Becker saw similarities between this phase and the impasse reached in the redshift debate during the early 1970's. Internal dissension in the astrophysical community had grown to the point that it was a source of public debate.

In Becker's view, the fulcrum of the controversy centered around the pair of objects known

as Markerian 205, believed to be a 1.1 Gly distant quasar according to its redshift and NGC 4319, a spiral galaxy believed to be 110 Mly distant. Arp, claimed to find a "luminous bridge" between the two objects, implying that they could not be at a great distance from each other. Though a few astrophysicists accepted Arp's and his student's conclusions, many others declared that the apparent bridge must be an artifact in the line of sight.

The events that followed were viewed by Becker as perhaps the beginning of a pathological approach to science. Becker postulated that the Astrophysical community began to employ questionable methods to quiet Arp and the controversy. Several published textbooks declared that the conflict was over and quasars were truly distant objects. Guidelines for research proposals no longer addressed the issue as even a valid research path. An additional blow to Halton Arp was loss of valuable telescope time at the Cal Tech-Carnegie facilities. In Becker's analysis, the astrophysical community appeared to have "declared victory by fiat" and was taking steps to silence Arp's dissent. On the other hand, Becker observed that Arp had become increasingly arbitrary in addressing criticism and myopic in his approach to resolving the debate.

The most recent chapter in the debate was Arp's recent publication on the redshift controversy. Arp, now with the Max Plank Institute for Astrophysics wrote his book in a style to appeal to the popular press. Becker saw this as the final stage in this conflict. Arp acting as an outsider to the astrophysical community, was no longer using the accepted avenues for scientific debate or perhaps was denied them. The astrophysical community, to the public, now appears united in its interpretation of at least this aspect of quasars. Becker described the process as returning to the "pre-conflict state of dynamic equilibrium within the thought collective".

Brady Byrd

NCA Welcomes New Members

J. Scott Duresky
4102 Gallows Rd.
Annandale, Va. 22003

Douglas Megenity
7403 Recard La
Alexandria, Va. 22307

Peter & Mary Corro
7430 Mason La.
Falls Church, Va. 22042

Trexlers send Greetings from Arizona

Former NCA members, Jim and Frances Trexler send greetings from the land of "incredible" night skies. For those who would like to contact them, their new address is 1921 So. Abrego Drive. Green Valley, AZ 85614.

Occultation Expeditions Planned

Dr. David Dunham is organizing observers for the following occultations. For further information call the NCA-IOTA information line (301) 474-4945 (Greenbelt, MD).

Date	Time	Locality	Visible Magnitude	Percent. Sunlight	Cusp Angle	Minimum Aperture
12/4/90	06:26	Arcadia, VA	5.8	93	16S	5 cm
12/7/90	06:08	Cherry Hill, NJ	7.3	67	15S	5 cm
12/11/90	05:05	Jessup, MD	8.8	27	16S	20 cm
12/28/90	22:02	Chambersburg, PA	4.2	90	6S	5 cm
12/28/90	22:39	Florence, SC	3	90	5S	5 cm

Asteroidal:	Star Mag.	Delta Mag.	Name	Minimum Aperture		
12/08/90	22:26#	n. Quebec*	11.3	0.7	(704)Interam	20 cm
12/09/90	06:54#	Mexico*	7.5	7	(134)Sophs	5 cm

*Appulse to be observed for possible satellites or path shift.

#Estimated

EXCERPTS FROM THE IAU CIRCULARS

R.N. Bolster

- 1. March** - The GRANAT Team (Space Research Institute, Moscow, and the Danish Space Research Institute) detected a strong x-ray transient in February and March near the Vela pulsar with the WATCH detector. The lightcurve indicates that the source is an x-ray nova.
- 2. October** - The GRANAT Team also reported the detection of two new x-ray sources near the galactic center in September and October with the coded mask imaging spectrometer ART-P. The sources were reported to have hard spectra with strong absorption at lower energies.
- 3. October 16** - E.F. Helin discovered a fast-moving asteroidal object of 16th magnitude on films taken with the Palomar 46-cm Schmidt telescope. The orbit determined by G.V. Williams indicates that the object passed 0.02 AU from the Earth on October 10.

ASTRONOMY AND PERSONAL COMPUTERS

Joan Bixby Dunham

Software

•In 1987, at Universe 87, I purchased an interesting program called Deep Space, written by David Chandler. I have mentioned this program several times, and used it in demonstrations and astronomy Day programs. It generates star maps in several projections, including pairs for stereo viewing. I have just received an updated version, now called Deep Space 3-D. There are many new and improved features, but the one which I noticed first and found most impressive, was that the star map plotting is considerably faster than in the old version. Other new features are:

•Option to purchase up to 14 additional disks containing a star catalog of 248,709 stars, down to 10th magnitude. The unregistered version has stars to 7.25 (19,000 stars). The star catalog source for this was the Skymap database, which Chandler received from the Space Science Data Center.

•Additional star map types, including one that matches the sky as it appears to the observer.

•Ability to label constellations, move the labels so they will not detract from the map, and use three letter abbreviations or full names as desired

•Two 3-D formats, the large 8.5 x 11 offered in the original version of Deep Space, and a new small scale format.

The program is, in David Chandler's words, "heavy on comets." It plots comet trajectories against the background stars, produces special search charts for comet recovery, lists where the comets are (a feature to help comet searchers avoid the embarrassment of "discovering" a known comet). This is version 2.1a of the software. It runs on MS DOS machines, and requires 512K of memory. It does not require a math coprocessor, but runs much more efficiently with one.

The program can be freely distributed in its unregistered version. Registration costs \$59, and includes a 3-D viewer. The viewer can be purchased separately for \$5, and a larger viewer is offered for \$35. Additional data sold to accompany Deep Space are the 14 diskettes and the star catalog, and orbital elements for 1100+ comets.

In addition to Deep Space, Chandler also sells astronomical software for the classroom, a newsletter on comets, and books, charts, and slide sets on astronomy. If you are interested, write David Chandler at P.O. Box 309, La Verne, CA 91750.

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is a non-profit, public-service corporation for advancement of the astronomical sciences and is the astronomy affiliate of the Washington Academy of Sciences. For information, call NCA: (301) 320-3621.

SERVICES AND ACTIVITIES:

A Forum for dissemination of the status and results of current work by scientists at the horizons of their fields is provided through the monthly NCA colloquia. (See monthly *Stardust* for time and location.) All interested persons are welcome; there is no charge.

Expeditions frequently go to many parts of the world to acquire observational data from occultations and eclipses which contribute significantly to refinement of orbital parameters, the coordinate system, navigation tables and timekeeping. Other results of this work under continuing study include the discovery of apparent satellites of some asteroids, discovery of apparent small variations in the solar radius, and profiles of asteroids.

Discussion Groups provide opportunities for participants to exchange information, ideas, and questions on preselected topics, moderated by a member or guest expert.

Publications received by members include *Sky & Telescope* magazine and the monthly publication of NCA, *Stardust*.

The NCA Public Information Service answers many astronomy-related questions, provides predictions of the paths and times of eclipses and occultations, schedules of expeditions and resulting data, assistance in developing programs, and locating references.

The Telescope Selection, Use, and Care Seminar, held annually in November, offers the public guidance for those contemplating the acquisition of a first telescope, and dispels the many common misconceptions which often leads to disappointment.

Working Groups support areas such as computer science and software, photographic materials and techniques, instrumentation, and others.

Telescope-Making Classes teach the student to grind and polish, by hand, the precise optical surface that becomes the heart of a fine astronomical telescope.

NCA Travel offers occasional tours, local and world-wide, to observatories, laboratories, and other points of interest. NCA sponsored tours for comet Halley to many parts of the southern hemisphere.

Discounts are available to members on many publications and other astronomical items.

Public Programs are offered jointly with the National Park Service, the Smithsonian Institution, the U.S. Naval Observatory, and others.

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If family membership, list names of additional participating immediate family members in same household, with birthdates of all those under 18 years old: _____

Note: If you already subscribe to *Sky & Telescope*, please attach a recent mail label, or indicate the expiration date: _____. A prorata adjustment will be made. Make check payable to National Capital Astronomers, Inc., and send with this form to:

Nancy Byrd, Secretary, 4215 Holborn Ave., Annandale, VA. 22003.

The following information is optional. Please indicate briefly any special interests, skills, vocation, education, experience, or other qualifications which you might contribute to NCA

Thank you, and welcome!

Stardust is published eleven times yearly by National Capital Astronomers, Inc. (NCA), a non-profit, public-service corporation for advancement of astronomy and related sciences through lectures, expeditions, discussion groups, conferences, tours, classes, public programs, and publications. NCA is an affiliate of the Washington Academy of Sciences. President Kenneth R. Short. Deadline for *Stardust* is the 15th of the preceding month. Information: Nancy Byrd, 4215 Holborn Ave. Annandale, VA 22003. Editor, Brady Byrd (703)237-0369.

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