

STAR

National Capital Astronomers, Inc.



DUST

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Hughes to Present Recent Advances in Optical Astrometry



DR. HUGHES

Dr. James A. Hughes, Director, Astrometry Department, U.S. Naval Observatory, will discuss recent developments in optical interferometry at the March National Capital Astronomers colloquium in the National Air and Space Museum. He will describe the Observatory's present and future programs in this area, background about the technique, current observational procedures and results, and design considerations for a new Naval Observatory instrument. Currently an optical interferometer is being used for astrometric observing at Mount Wilson Observatory. This instrument is the result of a joint effort of the Smithsonian Astrophysical Observatory, U.S. Naval Research Laboratory, the Massachusetts Institute of Technology, and the U.S. Naval Observatory.

Born in Sharon Pennsylvania, Dr. Hughes received his A.B. and Ph.D. from Columbia University, New York, specializing in astrometry, especially inertial

coordinate systems or so-called "absolute" astrometry. He is a past president of the IAU Commission 8 on Star Positions, currently Chairman, IAU Working Group on Reference Frames, and a member of the IAU Working Group on Astronomical Refraction.. He has published many papers dealing with astrometry in both its theoretical and observational aspects, and star catalogs.

MARCH CALENDAR -- *The public is welcome.*

Tuesday, March 1, 8, 15, 22, 29, 7:30 pm -- Telescope-making classes at Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 362-8872.

Friday, March 4, 11, 18, 25, 7:30 pm -- Telescope-making classes at American University, McKinley Hall basement. Information: Jerry Schnall, 362-8872.

Friday, March 4, 11, 25, 8:00 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 960-9126.

Saturday, March 5, 5:45 pm -- Dinner with the speaker at the Smithson Restaurant, 6th and C Streets, SW., inside the Holiday Inn. Reservations unnecessary. Use the 7th Street and Maryland Avenue exit of the L'Enfant Plaza Metrorail station.

Saturday, March 5, 7:30 pm -- NCA monthly lecture in the Einstein Planetarium of the National Air and Space Museum, Seventh Street and Independence Avenue, SW. Enter Independence Avenue side. Dr. Hughes will speak.

For other organizations' events of interest see elsewhere in this issue.

FEBRUARY COLLOQUIUM

Dr. Robert D. Chapman, Senior Program Management Engineer for the Space Station Project, addressed the February National Capital Astronomers colloquium at the National Air and Space Museum. He spoke on the Space Station as an astronomical observatory, one of its many functions.

In the past, many proposed ideas for space station construction resembled large wheels or cylinders intended to be rotated to provide simulated gravity. One of the main reasons for a practical space station, however, is to eliminate the effects of gravity for research and certain processes that can only, or best, be carried out in a gravity-free environment. The design of the present project addresses these needs; it will not rotate except to establish or maintain the desired attitude.

The phase one baseline configuration of the NASA design is a 510-foot latticework beam. Laboratory and living modules are mounted along the beam. The station will be powered by four solar panels which will provide 75 kilowatts.

Among the purposes other than astronomical are study of the effects of near-zero gravity on plants and animals, materials processing, such as manufacture of exotic alloys, the components of which would separate by floating or sinking in the presence of gravity, growth of very large crystals for many uses, and as a way station for assembly of large craft for long or heavy space missions.

The Space Station will be a major observatory for attached payloads, platforms, and repair facilities for other craft in space.

The phase one plan, which has been approved and funded, is well underway. Contractors have been selected, and four NASA centers are responsible for different parts of the project. The Lewis Center in Cleveland, Ohio will provide the power system, laboratory units for the scientific work are being built by Goddard Center at Greenbelt, Maryland, the main structure is being constructed by the Johnson Center in Houston, Texas, and the living and working modules are to be built by the Marshall Center in Huntsville, Alabama. Each will have a prime contractor and many subcontractors. The first-piece launching is planned for 1995; the station should be complete by the turn of the century.

Astrometry, high-energy astronomy, and solar physics will be done on the Space Station. A 60-foot-focus astrometric telescope will search for planets about other stars. It must measure star positions to an accuracy of 20 microarcseconds. (Ed note: That is the angle subtended by the thickness of a thin human hair at a distance of 500 miles! This, of course, is position determination by clever astrometric techniques, not direct optical resolution.) Parallax accuracies, hence, direct distance measurements will also be greatly improved.

A cosmic dust collector will not only collect interstellar, asteroidal, and comet dust, but also measure the direction and velocity of the particles, allowing calculation of their orbits and possibly their sources.

A large-area, high-precision, high-sensitivity X-ray telescope will provide images of very faint X-ray sources. It will contribute greatly to studies of cosmic dark matter, the nuclei of active galaxies, and of stellar evolution.

A huge superconducting magnet will be equipped to collect cosmic particles, such as isotopes in supernova ejecta, and simultaneously measure their charges and velocities. It may possibly discover any antimatter cosmic rays by their opposite deflections, thus perhaps to settle the question of their existence.

An advanced solar observatory is proposed for continuous, long-term, very high-resolution study of coronal activity. Simultaneously, the ionosphere of the Earth will be monitored for reactions. One or more 300-pound satellite will be deployed on 20-km conductive tethers in one set of studies.

Coming decades will see some very innovative astronomy carried out on the Space Station.

Robert H. McCracken

AIR AND SPACE MUSEUM OFFERS PROGRAMS, TELESCOPIC SKY VIEWING

The following free, public programs will be held in the the National Air and Space Museum during February.

Saturday, March 5, 9:30 am -- Dr. James Sharp, Planetarium Chief, will present "Motions of the Earth" in the Einstein Planetarium. Following the program, weather permitting, NCA Trustee and NASM Docent Stanley Cawelti will offer safe telescopic viewing of the Sun.

Wednesday, March 16, 7:30 pm -- Dr. Herbert Friedman will present "The Violent Universe" in the Albert Einstein Planetarium. Following the lecture, weather permitting, Stanley Cawelti will offer a telescopic tour of the night sky.

March 29, 7:30 pm -- Dr. David DeVorkin, NASM, will present "Time and the Seasons," the first in a series of seven free lectures on beginning astronomy, in the Einstein Planetarium.

ASTROPHYSICS DAY, OPEN HOUSE AT COMPANY 7 & JOHNS HOPKINS APL

On Saturday, March 19, from 11:00 am to 5:00 pm, Company 7 will hold open house featuring Roland Christen and his Astrophysics products, at 14300 Cherry Lane Court, Laurel, Maryland. The event will be followed by a star party at the Johns Hopkins Applied Physics Laboratory, Johns Hopkins Road off Route 29, Laurel, Maryland

OCCULTATION EXPEDITIONS PLANNED

Dr. David Dunham is organizing observers for the following occultations. For further information call (301) 495-9062 (Silver Spring, MD).

UT	Place	Vis Mag	Pent Sunlit	Cusp Angle	Min Aper
Date Grazing Lunar: 03-22-88 23:48	Crofton, MD,	9.1	28	04N	15 cm

NCA WELCOMES NEW MEMBERS

Charles A. Amazeen
5704 South 4th Street
Arlington, VA 22204

Carol D. Bartosch
4204 South 36th Street
Arlington, VA 22206

Stephen Phillip Brown
6940 Cavalier Trail
Falls Church, VA 22042

John H. Gibbons
Box 497
The Plains, VA 22171

John R. Lipsey
4 Southfield Place
Baltimore, MD 21219

Yuan Liu, Computer Science Division
University of Maryland
College Park, MD 20742

Susan Norris, World Watch Institute
1776 Massachusetts Avenue, NW
Washington, DC 20036

Geri D. Reamy Family
2917 Linden Lane
Falls Church, VA 22042

Sarah Slade White
4428 Edmunds Street
Washington, DC 20007

Anthony D. Zukus
14213 Dav Road
Rockville, MD 20850

ASTRONOMY AND PERSONAL COMPUTERS: SELECTING A COMPUTER

Most of us consider the pc an expensive item to purchase for our personal (rather than business) use, and want to buy one that will serve our needs for a long time. We have many choices, and deciding among them can be difficult. The March 1988 issue of *Consumer Reports* offers an impartial assessment of pc's, considering the IBM family, the Apple family, the Atari ST, and the Commodore Amiga, but bases the comparison on the use of the computers for word processing. There are additional considerations when deciding on a pc for supporting efforts in astronomy.

The computer chosen should be one for which software will be widely available from many different places. The more publishers of software for a machine there are, the better and less expensive the software will be, as well as the more there will be related to astronomy. All of the computer models discussed in *Consumer Reports* are quite popular and software should be available for them for years to come. To receive that software, the computer should have a floppy-disk drive. The 5.25-inch is currently the most popular size, but an increasing number of pc's are sold with 3.5-inch drives. A less popular computer, especially one with an unusual format, such as the Sinclair QL, which uses a wafer tape, is much less desirable because there will not be as much astronomical software for it. These two points may mean that we will miss the "state of the art" machines, but we may also "miss" having a machine that is underutilized because of the lack of software.

If the computer is to be used to control a telescope or to collect data, we need to be sure that it has the capability to communicate with telescope controllers or the observing equipment. If this is a potential use of the computer we should be sure that the communications capability can be added at some later point. The best options are standard means, such as an RS-232 port. Not all computers have external communications capabilities, and of those that do, many have only one, which might limit the ability to use a printer at the same time. Many portable computers are not expandable. Computers which rely on game ports for external communications means may need custom interfaces to telescope controllers and the like. Only a few expensive portables are currently designed to be rugged enough for outdoor use, so ability to withstand the elements is not a practical discriminant to use in selecting a pc. Instead, we should design some protection for machines used outdoors to keep them warm and dry.

If we plan to write our own software or to convert software from mainframe computers then we need to consider the availability of compilers for various languages. This is less important for those who do not expect to write much software. There are BASIC interpreters for every pc, so small programs can be written on all pc's. The IBM computer family currently has the lead in the number of compilers and compiler sources for the major languages (BASIC, C, PASCAL, FORTRAN, COBOL). Some forms of these languages are available to other computers, but not from as many sources, a situation that often results in less capability and more expense. Of course, we can always make any pc do virtually anything if we program it in assembly language or machine code, but that is so time consuming that we might not have time to observe.

When asked for a recommendation, I usually suggest a no-name clone of an IBM PC XT. I think those offer the most value for the money, as well as the capability to expand. Most of us will not need more computing power than the XT offers, and there is considerable software available for the XT-type of machine. Joan R. Dunham

EXCERPTS FROM THE IAU CIRCULARS

1. January -- GINGA reported that X-ray Astronomy Satellite detected a large increase in the X-ray intensity from Supernova 1988A since December. In the 6-16 kev range the intensity increased by a factor of 4.

2. January -- Spectra of SN 1987A taken at European Southern Observatory have shown the forbidden lines of O III. Faint, narrow H lines were also seen.

3. January 18 -- K. Ikeya, Maisaka-Machi, Japan, visually discovered a supernova of 13th magnitude in M58. Several independent photographic and visual discoveries were also reported. Whipple Observatory spectra of January 22 indicated that it is a type II supernova.

Robert N. Bolster

COMET LILLER

This ephemeris of Comet Liller (1988a) for the Washington, DC area is provided by Robert N. Bolster. Estimated magnitude through March, 7.4 to 6.8.

Date	EST	RA	DEC	D	r	Alt	Azi	Set EST
03-04-88	19:35	0h23m	10°49'	1.768	0.976	8°	277°	20:17
03-09-88	19:40	0h27m	14°52'	1.739	0.935	7°	284°	20:16
03-14-88	19:50	0h32m	19°03'	1.705	0.900	5°	291°	20:16
03-19-88	19:55	0h37m	23°22'	1.666	0.873	4°	297°	20:18
03-24-88	20:00	0h42m	27°51'	1.622	0.856	4°	303°	20:03
03-29-88	20:05	0h48m	32°30'	1.574	0.849	4°	309°	20:32

THE JOB JAR: VOLUNTEERS NEEDED

Help is needed for the following activities. If you are able and willing, call the indicated person, or NCA: (301) 320-3621 24 hours. If no answer, (301) 229-8321 to leave message for call back.

1. Judges for the annual Metropolitan Area NCA Science Fair Awards, call Walter Nissen, (301) 585-5711.

2. Assistants for the U.S. Naval Observatory Astronomy Day Open House, some with telescopes and solar equipment, some to set up and attend exhibits. Call Bob McCracken at NCA: (301) 320-3621.

3. Assistants for the Smithsonian Garber Facility Open House, some with telescopes. Call Stanley Cawelti, O: (703) 849-3656, H: (703) 250-5154.

4. Assistants for the International Astronomical Union Convention, various services needed. Call David DeVorkin, (301) 949-8650 evenings.

NASA GODDARD SCIENTIFIC COLLOQUIA SCHEDULED

On Friday, March 4, at 3:30 pm in Building 3 Auditorium, Stanford Woosley, University of California, Santa Cruz, will speak on Supernova 1987A. Coffee and tea will be served from 3:00. Enter the main gate and obtain a visitors pass from the guard. Call Jaylee Mead, 286-8543, for further information.

FOR SALE

Questar 7-inch, fully mounted, folding pier, broadband coatings. Purchased as a demo from questar last fall. New price, \$12,400 plus tax and shipping. Asking \$8,500, while size 3.5-inch Questar as part payment. Call evenings 1-608-233-2369 (Wisconsin).

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