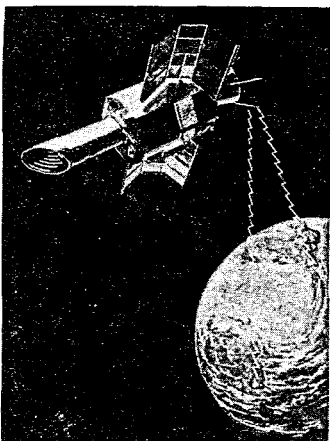


Imhoff to Present New IUE Studies of T-Tauri Stars



THE IUE SATELLITE

Dr. Catherine Imhoff, Computer Sciences Corporation, will address National Capital Astronomers on October 4 at 8:15 pm in the Einstein Planetarium of the National Air and Space Museum. She will discuss recent studies of young, T-Tauri-type stars with the aging International Ultraviolet Explorer (IUE): *Spacecraft Geriatrics and Stellar Pediatrics*.

The IUE has been an extremely productive astronomical satellite. It has permitted astronomers to obtain new results on nearly every kind of astronomical object known. Launched in 1978, the satellite has well substantially exceeded its 5-year design lifetime. Its longevity is largely due to interesting innovations and creative problem solving by NASA engineers and astronomers. Efforts are continuing to keep IUE operational for several more years.

Catherine Imhoff received her B.S. in mathematics from Baldwin-Wallace College in 1970, her M.S. in Astronomy from Ohio State University in 1973, and her Ph.D. from Ohio State University in 1976. Before joining Computer Sciences Corporation in 1981 as IUE Resident Astronomer, she was Prime Observer for Steward Observatory's near-infrared photographic sky survey. She was one of the first observers to use the IUE. Her research interests are the very young T-Tauri stars and pre-main-sequence stellar evolution.

OCTOBER CALENDAR — *The public is welcome.*

- Friday, October 3, 10, 17, 24, 7:30 pm — Telescope-making classes at American University, McKinley Hall basement. Information: Jerry Schnell, 362-8872.
- Friday, October 3, 10, 24, 8:30pm — 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, October 6, 6:00 pm — Dinner with the speaker at the Smithsonian 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 Metro station.
- Saturday, October 6, 8:15 pm — NCA monthly lecture in the Albert Einstein Planetarium of the National Air and Space Museum, Seventh Street and Independence Avenue, SW. (Enter Independence Avenue side.) Dr. Harrington will speak.
- Monday, (Note change) October 6, 13, 20, 27 7:30 pm — Telescope-making classes at Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnell, 362-8872.
- Saturday, October 11, 8:30 pm — *Exploring the Sky*, presented jointly by NCA and the National Park Service. Glover Road south of Military Road, NW, near Rock Creek Nature Center. Planetarium if cloudy. Information: John B. Lohman, 820-4194.
- Saturday, October 18, 8:00 pm — Discussion group: Astronomical Software and Bulletin Boards. Moderator, Mark Trueblood. Note new location: The University of the District of Columbia, 4250 Connecticut Avenue, NW, Suite 510. Use the plaza entrance. 4250 is alongside the red line Van Ness-UDC Metro station, UDC exit.

SEPTEMBER LECTURE

Dr. Robert S. Harrington, Chief of the Equatorial Branch of the U.S. Naval Observatory, opened the 1986-1987 National Capital Astronomers lecture series in the Einstein Planetarium of the National Air and Space Museum. He spoke on the search in which he is engaged for an undiscovered planet of the solar system.

Harrington pointed out that first seeing a planet does not alone constitute discovery; all newly discovered planets have been seen earlier. For example, others saw Uranus before Herschel, but did not recognize, identify, or announce it. A "faint star," plotted near Jupiter by Galileo in 1612, is now known to have been Neptune.

These pre-discovery observations are very important, however. Pre-discovery images, frequently found on old photographic plates, yield useful positional data. Herschel was measuring stellar distances along the ecliptic when he found Uranus. He first thought it was a comet, but further observation showed that it was a planet. Pre-discovery observations were sought - and found - which allowed immediate calculation of orbital parameters without having to wait for years of further observations.

Perturbations by the inner planets were taken into account, but after several years it became evident that other perturbations were present; Another undiscovered planet was suspected. From these effects, Laverrier calculated the position of the unknown planet, Neptune, which subsequently was found where he had predicted. Although usually credited with its discovery, Laverrier probably never saw Neptune.

Perturbations of the orbits of Uranus and Neptune in subsequent years indicated at least one more unknown planet. Todd, at the U.S. Naval Observatory made the first serious but unsuccessful search. At Flagstaff, Arizona, Lowell computed an orbit and searched unsuccessfully. In 1929, Clyde Tombaugh at Lowell Observatory found Pluto almost exactly where Lowell had predicted. Lowell had missed Pluto four times!

The planet was expected to be of about seven earth masses; It seemed far too faint. Because it was at the predicted position, however, it was assumed to be the sought planet. In 1950, Kuiper measured the diameter to be about half that of the Earth. It was later found to have only a fourth the diameter of the Earth.

At the Naval Observatory, Van Flandern found Pluto's mass to be far too small. Christie's 1978 discovery of Pluto's satellite, Charon, allowed measurement of Pluto's mass - 0.2 that of the Earth! Pluto was not the sought planet, but was fortuitously placed at discovery!

The source of the perturbations of Uranus and Neptune is still undiscovered. Harrington has computed some parameters of the unknown planet(s?). Assuming a single body, its orbit must be eccentric with a high inclination. It must be either far above or below the ecliptic. The ambiguity has not been definitely resolved. Its mass must be seven times that of the Earth. It should be brighter in infrared than in visual. The period must be about 800 to 1000 years. Van Flandern and Harrington use different, independent methods. Both are confident that the planet is there.

President Csawelti concluded the presentation with the admonition that when the planet is discovered, McCracken should be notified promptly so it can be published in *Star Dust!*

John B. Lohman

NATIONAL CAPITAL ASTRONOMERS AND THE WASHINGTON ACADEMY OF SCIENCES

invite you to attend a jointly sponsored lecture by Dr. Gernot M.R. Winkler, Director of the Time Service of the United States Naval Observatory, who will speak on the many kinds of time, at 8:30 pm on Thursday, 18 October 1986, at the Mary Grayden Center, American University, Nebraska and Massachusetts Avenues, NW. The lecture will be preceded by a reception at 6:45, and dinner at 7:30. It is not necessary to attend the dinner to hear the lecture.

For further information and for reservations for the optional pre-meeting dinner at 7:30 pm, call NCA at (301) 320-3621.

OCCULTATION EXPEDITIONS PLANNED

Dr. David Dunham is organizing observers for the following occultations. For further information call Dave at 585-0989. at 585-0989.

UT		Place	Vis Mag	Pent Sunlit	Cusp Angle	Min Aper
Date	Time					
Grazing Lunar:						
10-07-86	23:28	Ft. Caswell, NC	1.2	22	4N	5 cm
10-13-86	01:04	Bishop, MD	6.2	76	10S	5 cm
Asteroidal:						
			Star Mag	Delta Mag	Name	
10-04-86	10:15	Venice, FL	9.1	3.0	(38) Leda	5 cm
10-11-86	07:53	Cuba*	6.7	9.0	(773) Irmintraud	3 cm
10-21-86	04:20	Northern S. Amer.	7.9	6.0	(676) Melitta	8 cm

*Asteroid appulse, 0^h9 at DC.

NCA WELCOMES NEW MEMBERS

Michael Feinberg
1901 Randolph Road
Silver Spring, MD 20902

Lynne Gilliland
400-A Tenth Street, SE
Washington, DC 20003

John and Leslie Hunter
3334 Brantly Road
Glenwood, MD 21738

Betty Eileen Steinkraus
10655 Montrose Avenue, Apt. 2
Bethesda, MD 20814

Russell R. Waugh
9927 Good Luck Road, Apt. T-3
Seabrook, MD 20706

NAVAL OBSERVATORY OPEN HOUSE WITH NCA 11 OCTOBER

The U.S. Naval Observatory will hold its annual open house on October 11 from 10:00 am to 4:00 pm with participation by a ceremonial band from the U.S. Naval Academy and National Capital Astronomers.

The public can visit the historic 26-inch Clark refractor, the 24-inch reflector, the 12-inch refractor, the latter equipped with a hydrogen-alpha filter for solar viewing, the 15-inch astrograph, the 6-inch transit circle, the master clock, several historic instruments, a computer display, the NCA 14-inch Celestron, the NCA 5-inch Clark, other NCA instruments, demonstrations, and exhibits.

Several more NCA volunteers are needed for the event. Call NCA: 320-3621.

Vehicles may enter through the south gate on Observatory Circle, across from the New Zealand Embassy. Foot traffic may enter the main gate at 34th Street and Massachusetts Avenue, Northwest.

DISCUSSION GROUP ON COMPUTER SERVICES, SOFTWARE, BULLETIN BOARDS

Available or needed astronomical computer support will be discussed on Saturday, 18 October at 8:00 pm. Bring your questions, answers, or suggestions to 4250 Connecticut Avenue, NW, Suite 510. Mark Trueblood will moderate.

Use the plaza entrance; the main entrance is closed on Saturday nights. Call NCA for further information: 320-3621.

National Capital Astronomers thanks Dr. Marilyn Krupsaw for making the arrangements with the University of the District of Columbia.

AIR AND SPACE MUSEUM OFFERS TALK, SAFE SOLAR VIEWING

On Saturday, October 4, at 9:30 am, in the Albert Einstein Planetarium of the National Air and Space Museum, James Sharp, Planetarium Chief, will observe Columbus Day by describing the early methods of celestial navigation used by Columbus and his contemporaries.

Following the talk, weather permitting, Stanley Cawelti will offer safe telescopic solar viewing in hydrogen alpha on the east deck.

EXCERPTS FROM THE IAU CIRCULARS

1. August 21 - Gorkom, Rupen, Knapp, and Gunn, Princeton University, detected a probable supernova in NGC 891 with the VLA radiotelescope array. On August 24 the object was detected at three frequencies: 1.515, 4.835, and 14.9 GHz.

2. September - B.A. Skiff, Lowell Observatory, discovered a comet on a plate taken by Kowal with the 1.2-m Schmidt in 1977. Marsden noted that the object was discovered and reorted by Kosai as a minor planet. Comet Skiff-Kosai has an orbital period of 7.5 years.

3. September - I. Ferrin, Universidad de Los Andes, predicted a possibly enhanced Draconid meteor shower during 1986 October 8.8 to 9.4 UT.

4. September 8 - French radio astronomers detected the 88.6 GHz line due to molecular HCN in the atmosphere of Titan with the 30-m IRAM radiotelescope.

Robert N. Bolster

STAR DUST may be reproduced with credit to National Capital Astronomers.

★ S T A R D U S T

WASHINGTON, D. C.



Published eleven times yearly by NATIONAL CAPITAL ASTRONOMERS, INC., a non-profit, public-service corporation for promotion of astronomy and related sciences through lectures, expeditions, discussion groups, tours, classes, public programs, and publications. NCA is an affiliate of the Washington Academy of Sciences. President, Stanley G. Cawelti. *Star Dust* deadline 15th of preceding month. Information: (301) 320-3621. Material for publication: Robert H. McCracken, Editor, 5120 Newport Avenue, Bethesda, MD 20816.

FIRST CLASS MAIL