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Amateur Astronomers Will Use NASA's Hubble Space Telescope

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The full news release story:

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Six amateur astronomers will have a rare opportunity to use NASA'S Hubble Space Telescope to conduct original research. Officials at the Space Telescope Science Institute (STScI) announced today that the observations were chosen from proposals submitted by amateur astronomers across the nation.

The amateur programs will use Hubble Space Telescope to study the birth of stars, spectroscopically probe the atmosphere of the giant moon Titan, attempt to settle a controversial theory regarding the nature of the cosmological redshift, and search for binary asteroids and dying comets.

The winning amateurs include a nurse, programmer/analyst, engineer, high-school science teacher, and college student.

This is the second time a group of amateurs will have had an opportunity to use the Hubble Space Telescope's powerful and unique observing capabilities. Four amateur astronomers, selected in 1989, have already completed observations with HST and are presently analyzing their results.

The Space Telescope Science Institute Director, Dr. Riccardo Giacconi, will devote discretionary time on the telescope to the amateur programs. Giacconi expects the HST program to benefit from the imaginative science research the amateurs can offer. "I expect the amateur astronomers to ask refreshing new questions and that their findings will make a real contribution to the advancement of astronomy," Giacconi explained.

Astronomers at STScI will assist the amateurs in preparing their observations and will plan and schedule the programs in the same manner as professional astronomer programs. STScI astronomers also will help in data analysis and publication of observing results.

Summary of HST Amateur Cycle 2 Programs

Title: Are Asteroids Old Comets?
Targets: Asteroids: 182 Elsa, 244 Oceana, 899 Jokaste,944 Hidalgo, 2101 Adonis
Investigators: Harald Schenk, 48 yr-old Civil Engineer,
Shebygan, Wisconsin (414-458-6726)
Jim Secosky, 45 yr-old high school science teacher,
Shortsville, New York (716-289-4525)
Summary:
Some asteroids may have once been comets which lost all of their volatile material (water ices which sublimate in sunlight). Clues come from the highly elliptical comet-like orbits of some asteroids. Observations with ground-based telescopes report a faint glow around some asteroids which could be due to outgassing. The investigators will use HST's ultraviolet sensitivity to look for spectral emissions which would be the signatures of

outgassing from a comet-like body. "The verification of transition comets would be very useful to future manned missions to the asteroid belt," says Mr. Shenk." The volatiles could supply water, oxygen and fuel for the mission."

Title: The Dynamics of Binary Asteroids
Targets: 44 Nysa, 49 Pales, 171 Ophelia, 624 Hektor, 1580 Betulia
Investigator: Benjamin P. Weiss, 19 year-old student
Amherst College, Massachusetts (518-439-0621)
Summary:
Some asteroids may be gravitationally bound to each other, just as are the Earth and Moon. Previous ground-based observations suggest that some asteroids are elongated or peanut-shaped. One interpretation is that these are really pairs of objects which are orbiting about a common center of gravity. HST is the only telescope capable of resolving the suspected asteroid pairs. Sequential images will reveal if the bodies are orbiting about each other. "The outcome of our observation may lend insight into the dynamics of the main belt asteroid region and further our understanding of the structural composition of the solar system," says Mr. Weiss.

Title: Titan's Atmosphere and Evolution
Target: The moon Titan, largest satellite of the planet Saturn
Investigator: George Lewycky, 25-yr old Programmer/Analyst
Milltown New Jersey (908-846-1216)
Summary:
Titan is the only moon known to have a substantial atmosphere. Mr. Lewycky will use HST's UV sensitivity to study the distribution of nitrogen, argon and methane in the atmosphere. He also hopes to uncover previously undetected gases that might be seen through breaks in the atmosphere. "It seems odd that such a satellite in our solar system contains an atmosphere and composition resembling that of a planet," says Lewycky.

Title: Morphology of Galaxy-Quasar Association Displaying an Anomalous Redshift
Targets: galaxy NGC 4319/quasar Markarian 205
Investigator: Karl J. Hricko, 57-yr old high school teacher/department head
Edison, New Jersey (908-494-0948)
Co-invesitgators: Dr. Lewis Thomas, (teacher) Vincent Chirivalle, Jatin Patel (12th-grade students)
Summary:
According to mainstream cosmology, quasars lie near the horizon of the observable universe. This is based upon the Hubble Law which holds that the farther away an object is the faster it is receding from earth. Astronomers use the spectral redshift of an object to calculate its recession velocity. An alternate theory is that quasars are physically linked to galaxies which are much closer to us. This is controversial because if it were true then redshift is not an infallible measure of cosmic distances, and the current model of the expanding universe would need serious revision. Mr. Hricko plans to use HST high resolution to observe a suspected "bridge" of material between one QSO-galaxy pair: galaxy NGC 4319 (estimated to be 100 million light-years away) and a quasar Markarian 205 (estimated to be 8 billion light-years away). "This observation should provide direct photographic evidence that should end any doubt of the existence of this controversial feature," says Hricko.

Title: The UV Emission spectrum of an HII region
Targets: Lagoon Nebula, (M8)
Investigator: Nancy Cox, 46 yr-old nurse
San Francisco, California 415-826-2217
Summary:
The Lagoon Nebula is a region of star formation within our Galaxy. Using HST's UV sensitivity Ms. Cox plans to study the spectra of hot young stars embedded within the nebula's vast whispy filaments of gas and dusty streamers.

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