One of Hubble Space Telescope Instruments is Broken

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Hubble Space Telescope

Hubble Space Telescope was originally designed in the 1970s and launched in 1990. Every day, Hubble archives 3 to 5 gigabytes of data and delivers between 10 and 15 gigabytes to astronomers all over the world. Now over 10 years old (launched in 1990), the telescope is basically a new machine. Upgrades and maintenance keep Hubble operating in top condition to give us the greatest scientific data possible.

Yesterday Nasa reported that **one of four science instruments aboard NASA's Hubble's Space Telescope suspended operations earlier this week, and engineers are now looking into possible recovery options.**

The instrument, called the Space Telescope Imaging Spectrograph

(STIS), was installed during the second Hubble servicing mission in 1997 and was designed to operate for five years. It has either met or exceeded all its scientific requirements.

Hubble's other instruments, the Near Infrared Camera and Multi-Object Spectrometer (NICMOS), the Advanced Camera for Surveys, and the Wide Field/Planetary Camera 2 are all operating normally.

The STIS instrument, which went into a suspended mode Tuesday, was not slated for replacement or upgrade as part of any future servicing mission.

NASA has convened an Anomaly Review Board to investigate the cause of the STIS problem and an investigation is underway to determine if the instrument is recoverable.

Preliminary findings indicate a problem with the +5V DC-DC power converter on Side 2, which supplies power to the mechanism's electronics. STIS suffered a similar electrical malfunction in 2001 that rendered Side 1 inoperable.

A final decision on how to proceed is expected in the coming weeks as analysis of the problem progresses.

In the current observing cycle, STIS accounts for about 30 percent of all Hubble scientific observation programs. A "standby" list of peer reviewed and approved observing programs for the other science instruments on Hubble can be used to fill the observing time now available.

The high sensitivity and spatial resolution of STIS enabled astronomers to search for massive black holes and study star formation, planets, nebulae, galaxies, and other objects in fine detail.

STIS was developed jointly with Ball Aerospace under the direction of principal investigator Dr. Bruce E. Woodgate of the Laboratory for Astronomy and Solar Physics at NASA's Goddard Space Flight Center, Greenbelt, Md.

Among the major scientific achievements made by scientists using STIS were:

- Independent confirmation of the age of the universe by finding the coolest and hence oldest white dwarf stars that exist in our galaxy
- Conducted an efficient census of galaxies to catalog supermassive black holes. The fraction of galaxies that prove to contain a central massive black hole has proven to be surprisingly large
- Made the first-ever measurements of the chemical composition of the atmosphere of an extrasolar planet
- Saw the magnetic "footprints" of the Jovian satellites in Jupiter aurora, and made clear images of Saturn's aurora
- Studied the dynamics of circumstellar disks, the region around young stars where planets may form
- Found the first evidence of the high-speed collision of gas in the recent supernova remnant SN1987A

Additional information about STIS is available on the Internet at the Hubble Project Servicing Mission 2 web page.

Source: NASA