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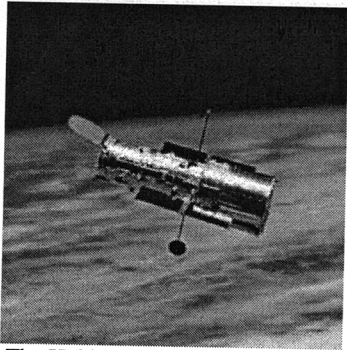yandTelescope.com

Hubble Spectrograph Fails
By Jonathan McDowell

The Hubble Space Telescope's Space Telescope Imaging Spectrograph (STIS) has failed, leaving it unable to take ultraviolet and visible-light spectra of celestial objects. *Courtesy NASA.*

August 7, 2004 | One of the Hubble Space Telescope's premier science instruments failed on August 3rd. A power converter blew in the main electronics box for the Space Telescope Imaging Spectrograph (STIS), the only instrument on Hubble that can record spectra in visible and ultraviolet light, leaving the instrument permanently unusable and the telescope without a crucial capability.

This is a huge blow to astronomers, since spectra are needed to study the chemical composition and physical state of the objects Hubble studies, as well as measuring redshifts of galaxies and gas velocities around black holes — all science goals that the remaining instruments cannot help with. Furthermore, STIS's ultraviolet capability is unique, because ultraviolet light from space doesn't reach ground-based telescopes. This leaves astronomers without any way to study the important ultraviolet spectral fingerprints of ionized hydrogen and carbon crucial to studies of quasars and of the atmospheres of hot stars. Hubble's sharp imaging also helped STIS, allowing spectra of very small regions — such as the nuclei of galaxies — to be picked out from within larger sources, a key factor in pinning down the presence of supermassive black holes in the nuclei of galaxies.

STIS was added to Hubble on the second servicing mission in February 1997, replacing two earlier instruments: the Faint Object Spectrograph and the Goddard High Resolution Spectrograph. Its successor, the Cosmic Origins Spectrograph (COS), is ready for launch but grounded indefinitely because of the ban (currently under review) on post-Columbia shuttle missions to Hubble.

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