FAR ULTRAVIOLET SPACE TELESCOPE (FAUST)
(N005)

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The Far Ultraviolet Space Telescope is a compact, wide field-of-view, far ultraviolet instrument designed for observations of extended and point sources of astronomical interest. The instrument was developed under Professor G. Courtes of the Laboratoire d'Astronomie Spatiale and the French Space Agency (CNES); it was originally used in sounding rocket work by both French and American investigators. The instrument was modified for flight on the space shuttle and flew on the Spacelab 1 mission as a joint effort between the Laboratoire d'Astronomie Spatiale and the University of California, Berkeley.

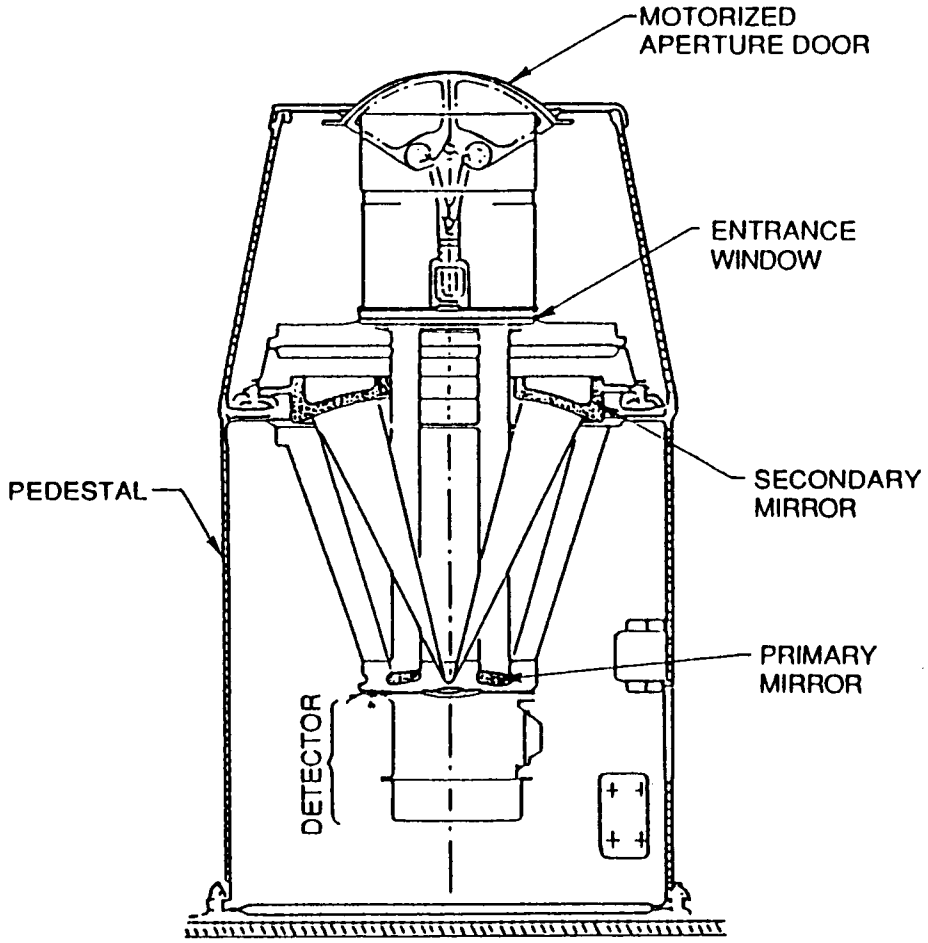
The prime experiment objective is to observe faint astronomical sources in the far ultraviolet with sensitivities far higher than previously available. The experiment will cover the 1300 to 1800 Å band, which is inaccessible to observers on Earth.

The observing program during the mission consists of obtaining deep sky images during spacecraft nighttime. The targets will include hot stars and nebulae in our own galaxy, faint diffuse galactic features similar to the cirrus clouds seen by the Infrared Astronomical Satellite (IRAS), large nearby galaxies, nearby clusters of galaxies, and objects of cosmological interest such as quasars and the diffuse far ultraviolet background.

The instrument is an f/1.12 Wynne camera with an effective collecting area of 150 cm^2 and a field-of-view of 8 deg (Fig. IV-1). The imaging capability is 2 arc min over the entire field-of-view. The telescope used a photographic detector system for the Spacelab 1 and sounding rocket flights. For the ATLAS 1 flight, a new all-electronic, photon counting imaging detector has been developed by the Space Astrophysics Group at the University of California, Berkeley. The new detector will provide very high sensitivity. Because the data may experience intermittent background contamination from geophysical or shuttle related causes, the new detector also provides the ability to select the highest quality data from the continuous data stream. The data will be monitored in real time at the Payload Operations Control Center.

The overall instrument, which includes a sealed container with a mechanical door, is a cylinder 60.0 cm in diameter and 120.3 cm in length. When used in a photometric mode with a bandpass of approximately 500 Å, the limiting magnitude for a 20-min observation is V = 17. Diffuse sources as faint as 27th magnitude per square arc second can be detected.

The instrument will be hard-mounted on the pallet and will be operated automatically by a computer. Should this new automatic mode fail, the instrument can be operated in a manual mode by the payload crew. Secondary data concerning various observation parameters and housekeeping data will be available to the Payload Specialist and to the experimenters at the Payload Operations Control Center.



FigureIV-1. Schematic of the FAUST telescope.