IUE DATA DISTRIBUTION

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ABSTRACT

The IUE project is described, with special emphasis on the IUE data management and archive retrieval.

This paper briefly describes a more specific data center providing also a service to the astronomical community, or more precisely a group of data centers dedicated to a given instrument.

This instrument is the IUE (International Ultraviolet Explorer) launched on Jan. 26, 1978 and collecting since then spectral images of all kinds of celestial objects in the ultraviolet wavelength range.

The IUE characteristics have been detailed elsewhere (Boggess et al., 1978). We will just remind here that combining the two on-board spectrographs (working respectively in the ∿1150-2000 Å and ∿1800-3000 Å ranges) and the two dispersion modes (low: 6 Å resolution - high: 0.1-0.2 Å resolution), essentially four different types of spectra can be obtained.

IUE is the first completely active "space telescope" with a 24h/day operation much similar to that of ground-based telescopes, with visitors actually coming to the ground stations and participating in the planning and the observational loop - a major difference being that the telescope is not a few meters away in an adjacent dome, but geosynchronously orbiting in space at an average distance of 40,000 km.

Practically all types of objects have been successfully observed with IUE. Already at the XVII IAU General Assembly in Montréal, Meteor, the Assembly Journal, commented that "[IUE was] the first 18-inch telescope in history to provide material for an entire Joint Discussion, and all within 18 months of its first flight".

C. Jaschek and W. Heintz (eds.), Automated Data Retrieval in Astronomy, 29–31.

After this general advertisement for the project, let us see now more concretely what is the IUE output. This is basically a two-dimensional image of 768 pixels over 768 pixels, each pixel with 256 possible intensity levels (8-bit representation). After observing with IUE, the users go home with:

- magnetic tape(s) containing the raw image(s) and various steps of a standard reduction;
- photowrites, two-dimensional photographic representations of the raw image(s) and various steps of the reduction;
- calcomp plots, one-dimensional graphic representations of the gross and net spectra, as well as of the background.

IUE is a collaboration between three agencies which are presently sharing the observing time according to their initial investment in the project: NASA (2/3), SERC (1/6) and ESA (1/6). However the satellite is operated from two stations only: GSFC, run by NASA for NASA observers, and VILSPA, run by ESA for SERC and ESA observers.

Here is a short statistics of the images collected during the three first years of IUE operations (take into account two first months of commissioning and the fact that operations have been gradually speeded up):

Long wavelength spectra (LWR camera)	low dispersion	6643
	high -	3612
Short wavelength spectra (SWP camera)	low dispersion	7397
	high -	3391

Totals:	low dispersion	14040	long wavelength	10255
	high dispersion	7603	short wavelength	11388
		21643		21643

The IUE data management is regulated as follows by the Memoranda of Understanding between the agencies:

- the observers have a reserved use of their data for a period of six months;
- the data are deposited at the data centers (one for each agency: NSSDC for NASA, WDC-C for SERC, and VILSPA for ESA;
- the data are available to the international scientific community (after the reserved period);
- lists of all observations conducted are published (refer to NASA & ESA IUE Newsletters).

An astronomer interested in getting some IUE images (only magnetic tapes are provided in this service) should contact the closest data center and refer to the images by image number. We are now considering to access our archive in the future also by other keys, as object identifiers, object types, coordinates,...

Concludingly, let me just stress that IUE is a foretaste of what will be the Space Telescope to be launched by the Shuttle in 1984-85

and which will carry various auxiliary instruments of different types. I have here a provisional figure of 3 10^9 bits transmitted downwards every day. It is obsviously time to start thinking on the problem of managing, archiving and later distributing these data.

REFERENCE

Boggess et al. 1978, Nature 275, 377.

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