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The Space Telescope European Coordinating Facility Begins its Activity

P. Benvenuti, ST-ECF

As announced in the *Messenger* No. 31, on the 23rd of February 1983, the Directors General of the European Southern Observatory and of the European Space Agency signed the Agreement concerning the establishment of the Space Telescope European Coordinating Facility (ST-ECF). One year later, on the 1st of March 1984, the ST-ECF began its activity on the ESO premises in Garching.

It should be recalled that the prime purpose of the ST-ECF is to enhance the capabilities within Europe for the scientific use of the Space Telescope and of its data archive. Indeed the ST-ECF shall become the European focal point of ST related activities: it will coordinate the development of ST-related data analysis software in Europe and with the Space Telescope Science Institute in the U.S., develop original application software for the reduction and analysis of ST data, create an efficient means of archiving, cataloguing, retrieving and disseminating non-proprietary ST data, provide a convenient source of detailed knowledge in Europe of the modes of operation and performance of the Space Telescope and of its complement of scientific instruments. Depending on availability of resources, it will also provide European ST users with limited access to the ST-ECF computer time and software, in particular for those who do not have their own data reduction facilities.

Please be informed that ESO-Chile has a new postal address:

EUROPEAN SOUTHERN OBSERVATORY (ESO)
Casilla 19001
Santiago 19
Chile

In order to provide an efficient service, the ST-ECF should be able to communicate with the User Community in a timely manner. We are therefore planning to issue a quarterly ST-ECF Newsletter which will be distributed free to all the interested parties. For the time being, we asked the ESO *Messenger* to host this article as a precursor of the Newsletter.

A more direct and technical communication channel, via computer link, is under consideration with those European Centres and Networks which are more involved in the development of data analysis software.

At present, the ST-ECF staff on board is limited to the Head (the author), formerly IUE Observatory Controller at VILSPA, Madrid, the Deputy Head, Dr. Rudolf Albrecht, formerly of Space Telescope Science Institute, and the Secretary, Miss Britt Sjöberg. Dr. T. Courvoisier, now at the EXOSAT Observatory in Darmstadt, has been appointed as one of the Instrument Information Scientists and will take up duty in June. All the remaining vacant positions have been advertised and the recruiting activities are under way; we are aiming to complete the staffing of the ST-ECF by mid 1985. Our organigram is shown in Fig. 1; it consists of two groups: one is responsible for monitoring the status and performance of ST and its instruments, and for designing specific algorithms and application tasks for the reduction of ST data. The second group is responsible for the coordination and development of data analysis software and for the archive system.

The prime interface for the activity of the ST-ECF is the ST Science Institute in Baltimore. First contacts have been already established and we are now aiming to set up an effective collaboration in the areas of development of application software, performance of scientific instruments and data archiving. It is expected that the ST-ECF staff will regularly spend part of their time at the ST ScI, in order to maintain an up-to-date knowledge of the ST project.

The activity of the ST-ECF has so far been devoted to the preparation of an implementation-development plan, to the recruting of personnel and to the definition of the Host System (High Level Command Language) within which the ST application software will run. The latter point is of great importance to European users and we are therefore aiming at a thorough, albeit quick solution. The problem will be discussed with those responsible for the major European Centres and Networks in forthcoming meetings and workshops and details on the matter will be published in the first issue of the ST-ECF Newsletter.

I would like to conclude this first, short information note on the ST-ECF by saying that we will be happy to answer any questions you may have on our activity and we look forward to your suggestions and comments. Please do not hesitate to contact us: our extensions at ESO are 290/291 (P. Benvenuti) and 287 (R. Albrecht).

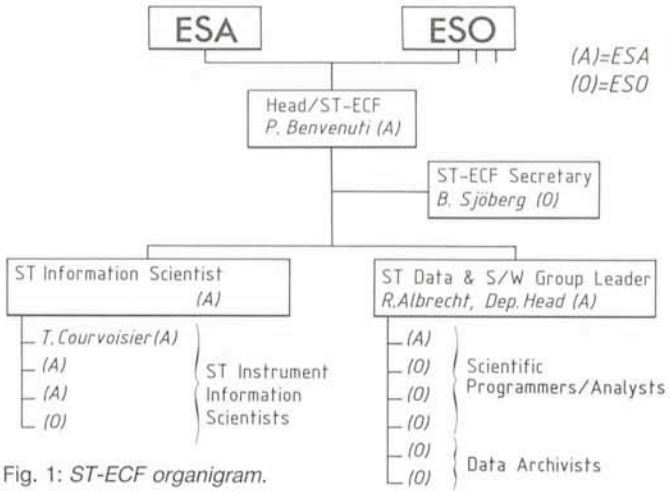

Fig. 1: *ST-ECF organigram.*

Progress in High Resolution Spectroscopy Using a Fibreoptic Coudé Link

G. Lund, ESO, and R. Ferlet, Institut d'Astrophysique, Paris

Experiments with a prototype 40 m optical fibre link between the 3.6 m telescope and the CES have already been described in the *Messenger* No. 31, and by Lund and Enard (1983). Further tests of this system, carried out in February 1984 using slightly different optical fibres and a highly efficient image-slicer, have confirmed the usefulness of a fibre link as an alternative to a 4-mirror coudé train. Gains in sensitivity typically of the order of 1.5 magnitudes in comparison with the classical CAT-slit-CES combination were obtained, thus permitting for the first time good spectra of 11th magnitude objects to be achieved with a resolution of 80,000.

New Fibre and Image Slicer

The new fibre link differs from the prototype tested in November 1982 only in the types of fibre and image-slicer used; two similar fibres, types QSF 133/200 AS and QSF 133/200 ASW, were tested at several wavelengths between 3900 Å and 10025 Å. These fibres were selected for their high purity silica composition, for their expected optimal transmission at respectively "red" and "blue" wavelengths, for their high degree of beam aperture conservation and for their core diameter of 133 μm which corresponds to 2.6 arcsec on the sky at the 3.6 m telescope prime focus.

When projected onto the image-slicer, the 10.5 times magnified image of the fibre output end is divided into four slices as shown in Fig. 1. The total height of the reassembled slices just matches that of the Reticon pixels. This arrangement is achieved by designing the image-slicer so as to provide a slice width of around 350 μm, corresponding to a spectroscopic resolution of 83,000 at 5000 Å. The use of a fibre larger than 133 μm would necessarily imply a loss either in resolution, or in geometrical efficiency at the detector. In preparation for the future commissioning of a new short (F/2.5) camera + CCD detector at the CES, a larger 200 μm core fibre was installed simultaneously with the other two. Although this new mode of operation will limit the spectral resolution to 35,000, the use of a larger fibre will not only enable a larger (4 arcsec) effective sky diaphragm to be employed, but will also improve the overall system transmission by around 15%.

The image-slicer tested in the recent tests is of the "Modified Bowen-Walraven" type, to which our attention was first drawn by Tom Gregory at La Silla in 1982. The slicer, as depicted in Fig. 1, consists of 3 optically polished and molecularly adhered silica elements in which the incident light is either directly transmitted, or totally internally reflected until it reaches the exit condition at the other side of the slicer. If the slicer is carefully made, transmission losses (excepting Fresnel reflections at the input and output faces) can be as low as

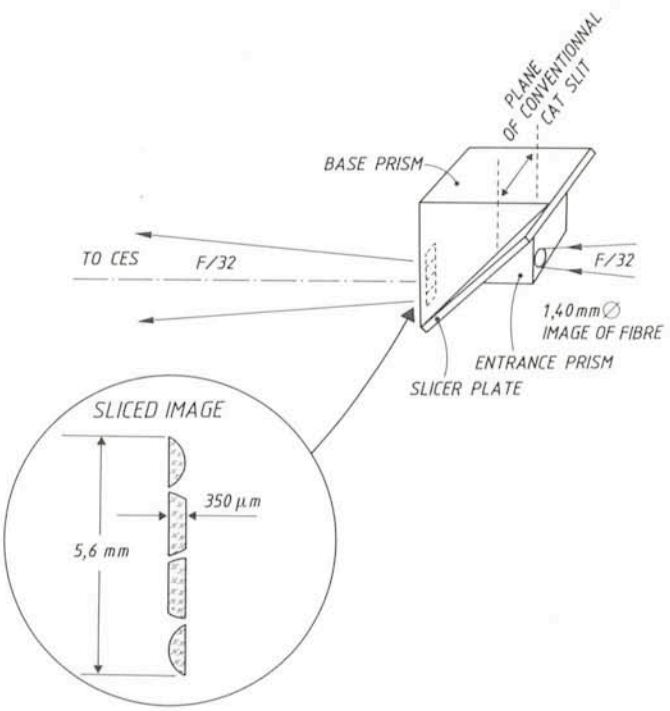

Fig. 1: *Modified Bowen-Walraven Image-Slicer at the input to the ESO high resolution CES. The slicer matches the 10.5 times magnified image of the output end of an optical fibre to the rectangular configuration of the Reticon detector pixels.*