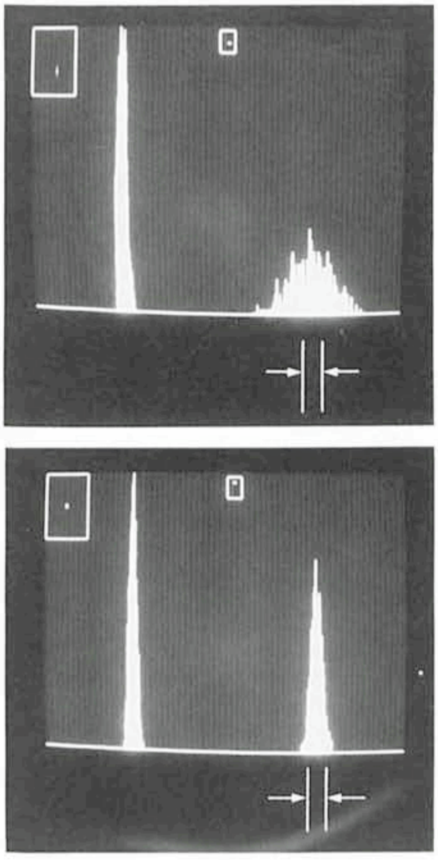


Figure 4: *non-stabilized (upper) and stabilized (lower) runs with the fast loop. The arrows below the* y-histograms indicate a width of 1/2 pixel.

the imaging in stabilized mode will be possible only at wavelengths ≥ 580 nm. A second dichroic reflecting the blue light will be ordered soon; then also wavelengths ≤ 580 nm can be stabilized, although one has to be aware that the seeing parameter scales as $r_o \propto \lambda^{1.2}$, therefore the stabilization is more effective for longer wavelengths.

The digitalization and the display of image information is performed by a fast video digitizing VME card. The centre of gravity within the subframe and the new mirror coordinates are calculated with a 68010 microprocessor (also VME based). The entire operation: reading out of the subframe, digitalization, calculation of new coordinates and repositioning of the mirror takes 4 msec for a 16 × 16 subframe or 2 msec for an 8 × 8 subframe. The total cycle time is then 24 msec; two samples (i.e. 50 msec) are needed to acquire a frame (Shannon sampling theorem). Therefore the stabilization starts to be effective if the atmospheric coherence time is longer than 50 msec. It was mentioned earlier that good seeing has a typical time scale for image motion of 200 msec; therefore under such conditions DISCO is expected to improve the resolution.

3. Present Status of the Project, Results from the First Laboratory Tests

The fast moving mirror was delivered to ESO in September 1986; in dynamic tests in the optical lab it was verified that the surface remains flat during the fast motion. The microprocessor was acquired; all the software was written in assembler language to obtain maximum speed in calculations. In the mean time the structure and the mechanical functions of the adapter are being manufactured by external European firms, and these will be delivered in the summer of 1987.

In the laboratory, first tests of the DISCO fast loop have been made. Atmospheric image motion was simulated using a galvanometer scanner mirror, which was excited with electrical noise having a power spectrum similar as in [2,3]. A pinhole source was imaged with this mirror and the stabilizing mirror onto a CCD camera. In this way, apparent image motion along one axis was simulated. The results of the stabilization are shown in Figure 4: it contains photographs of the video display of the VME control system. The upper photograph is the non-stabilized case: in the upper right box is the momentary ("real-time") image of the reference star in the selected subframe (in this case 16 × 16). The upper left box shows a zoomed display of the centres of gravity, as calculated by the microprocessor. The lower curves are histograms of the centres of gravity in *x* and *y* direction. Comparing the upper and the lower picture, a significant improvement in the *y*-histogram is noticed. The microprocessor also gives the number of centres of gravity, which would be contained in a circle with a preset radius ("energy concentration"). Taking a radius of 1/4 pixel the stabilized image has 570 out of 1,023 samples in the circle, the non-stabilized has 190 out of 1,023 samples. We notice that these simulations were made with high S/N ratio, and on one axis. Under such conditions the centre of gravity can be calculated with an accuracy of 1/10 of a pixel. Further tests to simulate different observing conditions at the telescope will be carried out in the next months.

It is planned to have a first test of the instrument at the telescope towards the end of 1987. Provided that the seeing conditions will be appropriate, we hope to demonstrate that DISCO can be a valuable tool for those aiming at high-resolution imaging. The full implementation of the facility is expected to take place during 1988.

References

(1) Roddier, F., Progress in Optics, **XIX,** ed. E. Wolf (North-Holland, Amsterdam), 281–376.

(2) Merill, K.M., Favot, G., Forbes, F. and Morse, D., *S.P.I.E.,* **628,** 125, 1986.

(3) Aime, C., Petrov, R.G., Martin, F., Ricort, G. and Borgnino, J., *S.P.I.E.,* **556,** 297, 1985.

(4) Thompson, L.A. and Ryerson, H.R. *S.P.I.E.,* **445,** 560, 1984.

MIDAS Memo

ESO Image Processing Group

1. Application Developments

The Inventory package for detection and classification of objects has been significantly improved by Dr. A. Kruszewski. He will in the coming month integrate these modifications in MIDAS.

In order to provide a high-quality crowded field photometry system, the ROMAFOT, package (Buonanno, R., Buscema, G., Corsi, C.E., Ferraro, I., Iannicola, G.: 1983, *Astron. Astrophys.* **126,** 278) has been adopted by MIDAS as the standard system for this purpose. The implementation of this package is done in close collaboration with Dr. R. Buonanno and is expected to be terminated during the summer. General MIDAS tables for exchange of information between the different packages are being designed to make combined use easy.

The Time Series Analysis package for unequally spaced data developed by the ST/ECF was fully implemented and will be released in the 87 JUL 15 release of MIDAS. It includes different methods for calculation of Power spectra and periodicity determination of data in MIDAS tables.

As a result of the collaboration with the Image Processing Group in Trieste, two new commands for interactive analysis of spectra developed by F. Pasian and G. Sedmak, are under testing. The commands, being the nucleus for future interactive developments, will be available in the 87 JUL 15 release.

2. MIDAS Hot-Line Service

As announced in the last issue of the Messenger, a MIDAS *Hot-Line* service has been started. Questions and problem reports concerning MIDAS can be sent to the Image Processing Group by Telex (52828222 eso d, attn.: MIDAS HOT-LINE) or electronic mail (SPAN: ESO MC1:: MIDAS or EARN/BITNET: MIDAS @ DGAESO 51).

A MIDAS Support telephone extension was created with the number + 49-89-32006-456 (note: the number was misprinted in the last MIDAS Memo). This extension can be used in urgent cases to obtain help with MIDAS-related problems.

3. New MIDAS Directory Structure

In anticipation of the portable MIDAS, a new directory structure will be introduced for the MIDAS system. The general structure has been based on the AIPS model but adapted to the special needs of MIDAS. It will allow a clear separation of the released version of MIDAS and of the local code which has been developed for the MIDAS environment. Special directories will be created for calibration data, tutorials and test procedures. The structure will also be used for the portable version and thus support different operating systems (e.g. VAX/VMS and UNIX). This will make it possible to maintain support of old releases of VAX/VMS.

4. Status of the Portable MIDAS

The development of the portable version of MIDAS is now well under way and still on schedule for release in the spring of 1988. The new version of the ST routines which interface application programmes to the system has been written in C and based on a set of operating system dependent OS routines. The ST and OS levels have been tested successfully on the beta-test sites. These tests included a number of different UNIX implementations on computers such as Bull SPS 9, Apollo DN 570, DN 3000, DSP 9000 (Alliant FX), Sun 3/160 and HP 9000.

The new set of TB routines for table access will be tested in May-June. It is expected that a VAX/VMS version of the OS routines will be made during the summer after which performance of the implementations can be compared. Also during the summer, a conversion of the application code from VAX-Fortran to standard Fortran-77 with five well-defined extensions will be started.

STAFF MOVEMENTS

Arrivals

Europe:

BROCATO, Enzo (I), Student
HEYER, Hans (D), Laboratory Technician (Photography)
JOHANSSON, Lennart (S), Fellow
NEUVILLE, Hélène (F), Adm. Clerk Purchasing
POSTEMA, Willem (NL), Mechanical Design Engineer

Departures

Europe:

AURIÈRE, Michel (F), Fellow
AZZOPARDI, Marc (F), Associate
BORTOLETTO, Favio (I), Fellow (Astronomical Detector)
CAVAZZINI, Egildo (I), Associate
MALASSAGNE, Serge (F), Designer/Draughtsman
STAHL, Otmar (D), Fellow

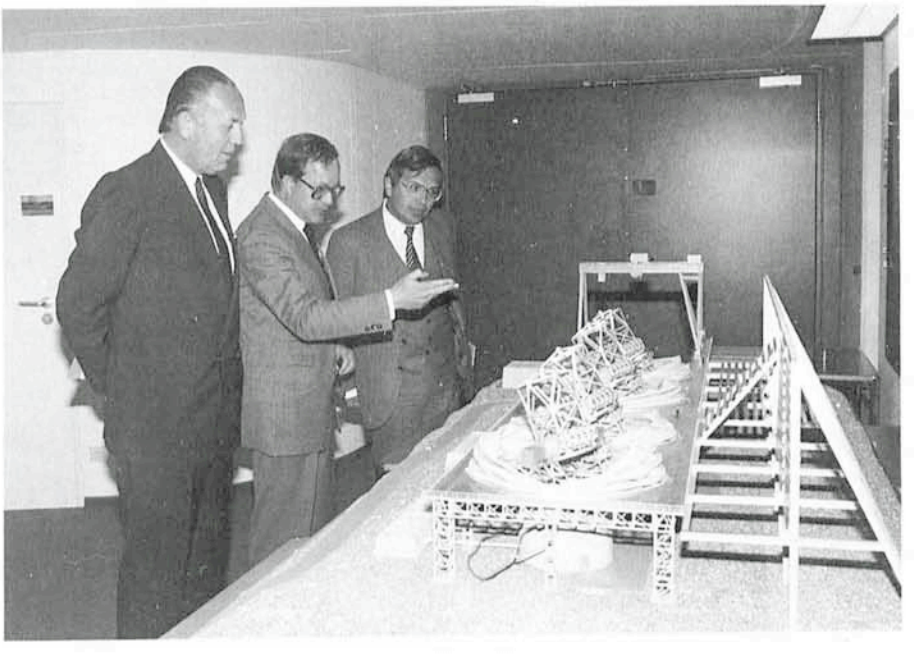
New ESO Posters and New Edition of ESO Publications and Picture Catalogue Available

Eight beautiful colour posters (60 × 80 cm) have just become available. They show the most recent aerial view of the ESO observatory La Silla, a model of the ESO 16-m Very Large Telescope, the Supernova 1987 A in the Large Magellanic Cloud, Messier 104 – the Sombrero Galaxy, the barred spiral galaxy NGC 1365, Comet Halley and the Milky Way, the Large Magellanic Cloud, and the Eta Carinae Nebula.

If you want to know more about prices and how to obtain the posters or any other material – like slide sets, colour prints, postcards, video tapes, brochures, books, etc. – please apply for the new edition of the ESO Publications and Picture Catalogue. It is free of charge and will be sent to you on written request to the ESO Information and Photographic Service, Karl-Schwarzschild-Str. 2, D-8046 Garching b. München.

The Chilean Consul General Visits ESO

The Chilean Consul General in Munich, Mr. Hans Zippelius, visited the ESO Headquarters on May 12, 1987. After an introductory stroll through the building, the discussion focussed on the various ESO projects, including the Very Large Telescope. From left to right at the VLT model: the Consul General, Dr. R. West (ESO) and the Chilean Consul in Munich, Mr. Rodolfo Berlinger.



El Cónsul General Chileno visita ESO

El Cónsul General de Chile en Munich, Sr. Hans Zippelius, visitó la sede de la ESO el día 12 de mayo de 1987. Después de una visita de introducción por el edificio, la discusión se concentró en los varios proyectos de la ESO, incluyendo el Gran Telescopio (VLT).

De izquierda a derecha con el modelo del VLT: El Cónsul General, Dr. R. West (ESO) y el Cónsul Chileno en Munich, Sr. Rodolfo Berlinger.