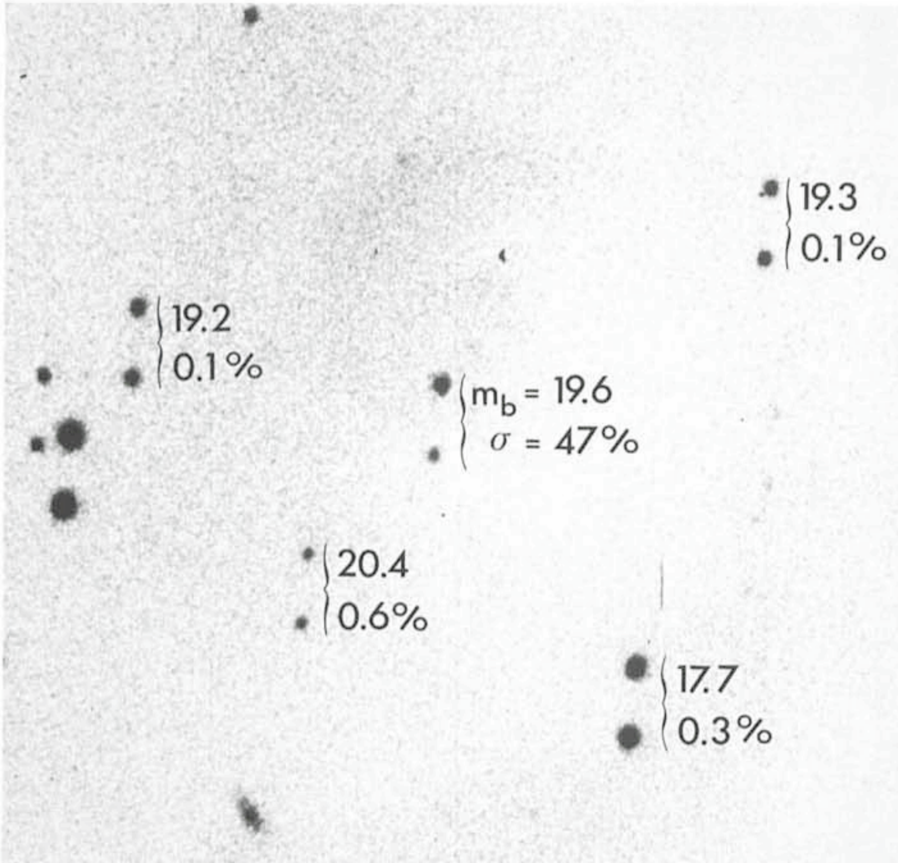

Figure 2: *The field centred on the western hotspot of the double lobe source Pictor A (0518-456) observed with the Wollaston prism in EFOSC. The position angle was 289°3, visual apparent magnitudes and the intensity difference $\sigma = 100\ (I_1 - I_2)/(I_1 + I_2)$ are indicated. The highly polarized object was discovered by Röser and Meisenheimer (4) and identified with the radio hotspot.*

metric accuracy as explained above, these values are likely to be upper limits.

The standard star measurements reveal however a systematic shift of ~0.6 % for all the measurements, that is one of the two images is systematically brighter than the other one. More data will be needed to understand whether this effect, which is easily taken into account during data reduction, is peculiar to the standard star measurements or indicates a systematic instrumental effect like a slightly higher transmission for one of the two beams produced by the Wollaston.

3. The Observations of the Highly Polarized Object in a Radio Lobe of the Radio Galaxy Pictor A

A highly polarized object was identified by Röser and Meisenheimer (4) as the optical counterpart of the western radio hotspot of the double lobe source Pictor A (0518-456). They identified the object in an EFOSC observation through their Savart plate and a B filter, and measured a linear polarization of 29.6 % with splitting in the N-S direction.

We repeated the observations with the Wollaston in the same B colour and at three different position angles. Figure 2 shows a part of a 20-min CCD frame including the object and listing the B magnitudes for the stars in the field and the relative intensity difference

$$\sigma = 100\ (I_1 - I_2)/(I_1 + I_2)$$

The magnitudes were derived from comparison with a standard field by Graham observed on the same night and should be accurate to 0.1 magnitude. A quarter of moon provided a relatively bright sky background which can limit the accuray of the photometry at faint magnitudes. The high resolution RCA (pixel = 15 μm = 0″34) was used. Images of stars have FWHM around 1 arcsec; the high-polarization object has a non stellar structure as found by Röser and Meisenheimer (4).

Our three polarization measurements give the following results: P.A. 174°3 σ = 25 %, P.A. 244°3 σ = 19 %, P.A. = 289°3 σ = 47.5 % where the accuracy of the polarization is about 1 % at 20th magnitude. This limit could be improved with multiple observations taken in dark time and an optimized data reduction technique as e.g. described in (5). The results confirm the exceptional nature of the object and the suggestion by Röser and Meisenheimer that the optical polarization could be higher than 50 % at a position angle close to the one of the radio polarization. They also represent a most encouraging start for this new observing mode of EFOSC.

Acknowledgements

We would like to thank Dr. Röser for his advice on this project and S. Cristiani for his valuable support during the test observations.

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MIDAS Memo

ESO Image Processing Group

1. Application Developments

Several upgrades of commands have been made and will be released in the next MIDAS release 87JAN15. Major improvements were made on the Multivariate Analysis package which now includes many new methods and commands. In particular, it is now possible to do discriminant and correspondence analysis on tables. A new module was written in the Data Analysis part of MIDAS. It implements three methods to analyse Time Series Analysis with unequally spread data.

Collaboration with external sites is now starting to give some results. We have received a programme from IUE/VILSPA to read GO tapes from IUE-SIPS directly into MIDAS. The table editor has been upgraded by the SDAS group at STScI in Baltimore. We will distribute these programmes together with the standard MIDAS release.

2. FITS

Two major issues have been discussed in the FITS committees in the last years, namely: generalized FITS extensions with application to table and catalogues, and a longer physical block length of FITS tapes. Both the European FITS Committee and the AAS Working Group on Astronomical Software have during this year endorsed these proposals to be effective from January 1, 1987.

The proposal for generalized FITS extensions provides a design for future extension to the FITS tape format. It preserves compatibility with existing FITS tapes and software, including the "random groups" and other extensions of FITS, but its generalized design will permit a wide variety of new types of extensions in the future. A specific "Table" extension was also endorsed. This format provides a FITS standard to transmit tables and catalogues of astronomical data on tapes. A detailed description of the format can be found in Harten et al. 1985, *Mem. S.A. It.* Vol. **56,** p. 437.

In view of the increasing amount of digital data and the high tape densities available now, the original physical block length of FITS tapes (i.e. 2880 bytes) has become inefficient for transfer of large amounts of data. The long block proposal will allow FITS tapes to be blocked by a factor of up to 10 while the logical record length will remain 2880 bytes. If a FITS tape is written with long physical blocks according to this proposal, it MUST have the logical keyword "BLOCKED" equal to true in the first logical header record. This only indicates that the tape may be blocked. The detailed proposal can be obtained from the FITS committee.

The 87JAN15 release of the FITS read/write commands in MIDAS will support both table extensions and long blocks. However, it is recommended not to write long block FITS tapes during the first time since it will still take some time before most of the old FITS reading programmes from other institutes have been upgraded.

3. System

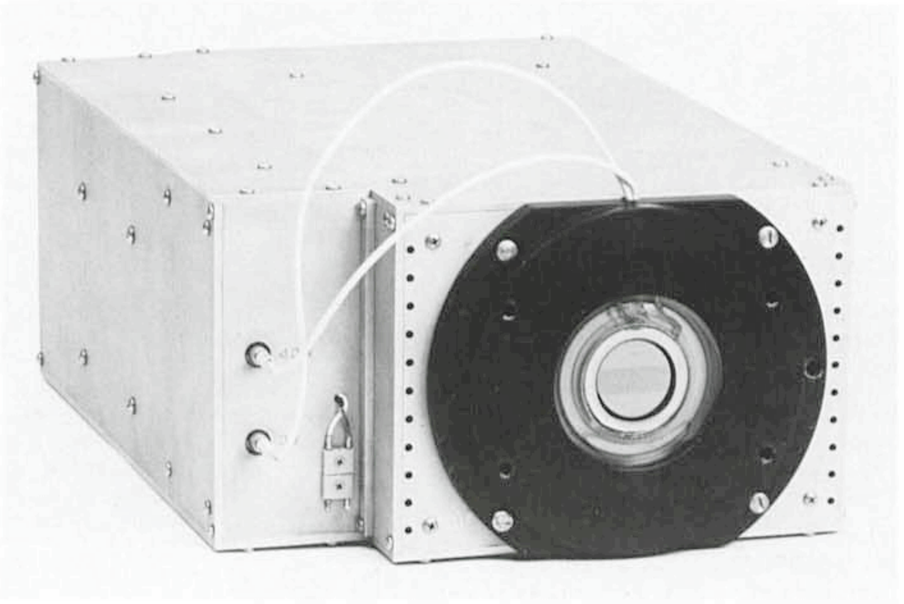
The MIDAS system has had two new improvements:

- It is now possible to have several MIDAS sessions working on the same disk directory in parallel.
- The user-mode options have been expanded to include the possibility of executing commands in a "prompt" mode, i.e. you are prompted for each parameter (also displaying the current default value) when executing a MIDAS command.

A "MAMA" for ESO

A photograph of the MAMA photon-counting detector system which was recently delivered to ESO. This detector, manufactured by Ball Aerospace Systems, has a bi-alkali photocathode and 1024 × 256 pixels. The head unit contains the detector tube and the front-end electronics. A second box (not shown) contains the event location and memory electronics. It will be tested in Garching in the coming months, and the first astronomical tests will take place at the Coudé Echelle Spectrograph in mid-1987.

M. Cullum



First Results with PISCO

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1. Introduction

PISCO is the acronym for the new ESO polarimeter and stands for Polarimeter with Instrumental and Sky COmpensation. The design of the instrument has been developed by K. Metz and the main principles have been published in two articles in *Astronomy and Astrophysics* (Metz, 1984, 1986). The instrument has been built at the Universitätssternwarte München with the technical and financial support of ESO and is now offered to visiting astronomers at the 2.2 m telescope at La Silla. This article briefly describes the instrument and first results obtained during a test run in September 1986.

2. Optical Layout

The outline of the whole instrument is shown in Fig. 1. PISCO can be described as a two-channel polarimeter (see e.g. Serkowski, 1974, for polarimeter designs). In contrast to the usual design it uses, however, no Wollaston prism but a modified Foster prism to separate the ordinary and the extraordinary beam. This design has the advantage of a large (45°) and wavelength-independent beam separation.

The principal new feature of PISCO is the possibility to correct directly for the sky polarization and partly also for the instrumental polarization. The sky compensation is achieved by using two apertures and two phase plates with different orientation of the optical axes. The combined sky light is then unpolarized. However, the sky compensation mode is normally useful only for linear polarization measurements since the sky light exhibits an extremely low circular contribution. In addition, the sky compensation only works well if the sky intensity is not too large compared to the intensity of the object and if the sky