posures longer than 32 S, the resolution will remain at the present value of 1 S.

Tests have been done with the new shutter timing cards using the CCD cameras on the 2.2-m and Danish 1.5-m telescopes. For the 2.2-m telescope, the shutter error has decreased by a factor of nearly 16 from about 190 mS to 12 ± 3 mS. For the 1.5-m Danish telescope, the improvement is about a factor of seven to 27 ± 3 mS, both in the sense that the resultant exposures are greater than those requested by the above amounts. It is expected that these delays will be reduced even further with the installation of a system of detecting a feedback signal from the actual shutters. Observers should find that they can now do accurate photometry (one per cent or better) using bright stars with exposures as short as two or three seconds. *B. Jarvis, ESO*

A New IHAP Feature: Images in Polar Coordinates

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Many astronomical objects show special symmetries, which generally need special techniques for image enhancement. At our institute, for example, investigations on structures in Cyan coma images of comet Halley and in electronographic images of several S0 galaxies are at work. In the course of these analyses it showed up that for morphological studies it is useful to represent the images in a way which already takes the (circular) symmetry of the objects into account. For this purpose I developed an algorithm which performs the transformation of images between cartesian and polar coordinates. In polar coordinates the images still have two dimensions with the abscissa representing the radial distance r from the centre of the object and where the ordinate shows the azimutal angle φ. $\varphi = 0°$ represents the direction of the x-axis in the original cartesian image and then φ runs positive anticlockwise.

Because the transformation is not isometric the resulting r,φ-image does no longer contain e. g. counts per pixel, but nevertheless gives the information that at a position defined by radial distance r and azimutal angle φ the counts per area of the cartesian pixel have a certain value. This means: if you already calibrated the cartesian image in physical units like erg/cm^{2}s or mag/($''$)^2, the resulting polar image shows the correct flux or surface brightness distribution.

INTENSITY

FIG. 1
NGC 2217
BLUE

A) CARTESIAN

B) POLAR

FIG. 2
NGC 2217
(B-V)
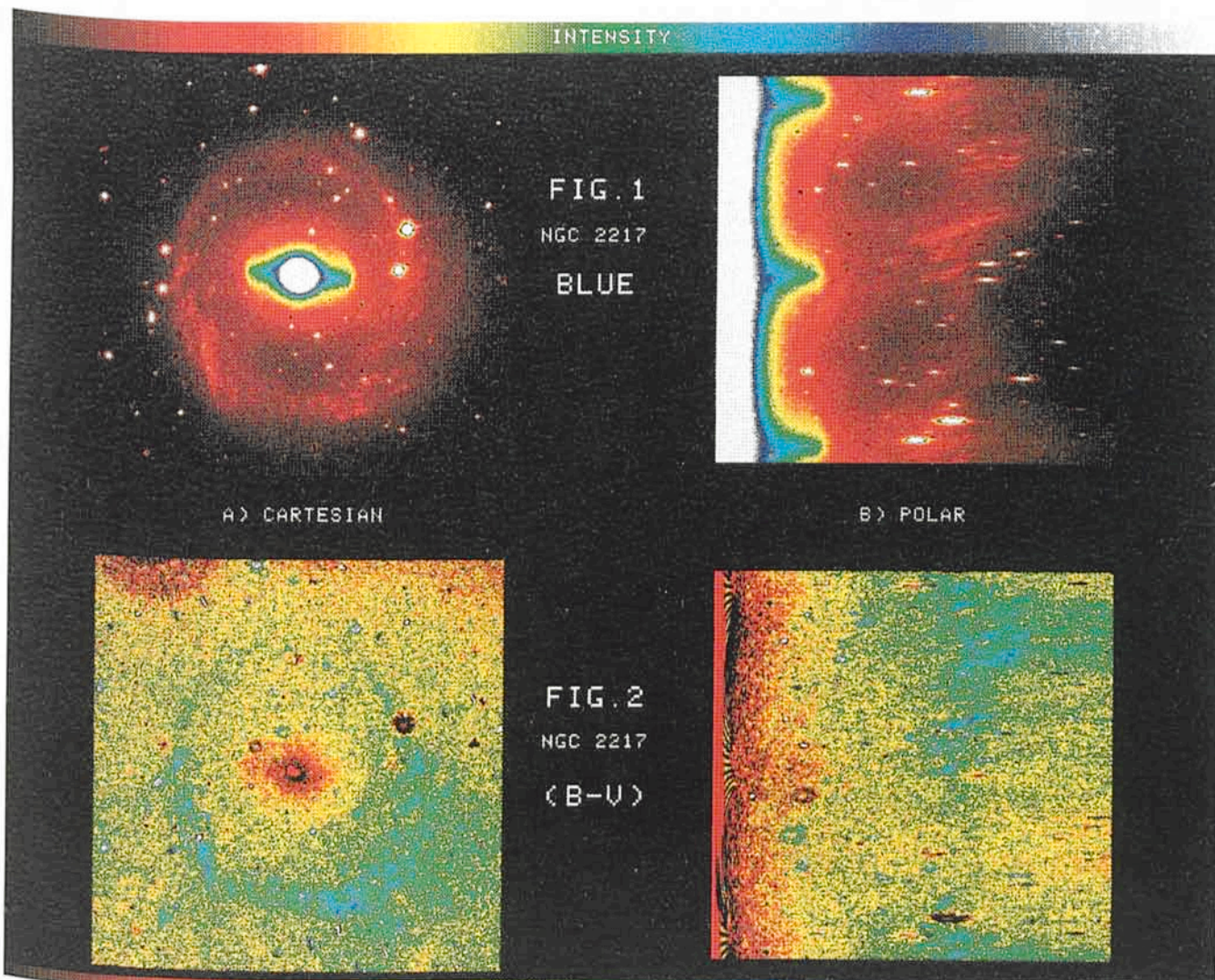
This algorithm has been incorporated into the IHAP-system running at an HP 1000 F computer at our institute as two new IHAP commands. XYRP transforms cartesian to polar coordinates and RPXY transforms backwards from polar to cartesian coordinates. The transformation equations are defined in the usual way,

$$X = r * \cos \varphi \text{ and}$$
$$Y = r * \sin \varphi$$

where X, Y as well as r,φ represent the "world coordinates" of the images. In this way all other IHAP features then are applicable to the polar images as well.

Figures 1a and b show the application of the XYRP command on an electronographic B-image of the SB0 galaxy NGC 2217. The cartesian image (Fig. 1a) shows a barred nucleus and weak spiral arms whereas in the polar image (Fig. 1b) these "spiral arms" appear as an almost perfect circular ring, that has no connection to the "bar" and exhibits spike like structures. This impression is even enhanced in the (B−V)-polar image in Figure 2. Here the "spikes" show up as blue features, what indicates that they are places of recent or ongoing star formation, whereas the bar is almost invisible in this picture. These images show an example of one possible application of the newly developed IHAP commands facilitating morphological studies. Several more of such investigations are in progress at the Astronomisches Institut der Ruhr-Universität Bochum, undertaken by my colleagues, who already applied this feature with great success. The two new commands will be implemented at the ESO IHAP sites.

MIDAS Memo

ESO Image Processing Group

1. Application Developments

A set of applications for reduction and calibration of photographic plates has been implemented by A. Lauberts. These procedures are based on his experience with the analysis of the ESO/Uppsala survey. Although they are optimized for the treatment of Schmidt plates, they will also be useful for other types of photographic material.

The table file system has been significantly upgraded both in performance and functionality. It now provides full support of integer types ($I*1$, $I*2$, and $I*4$). This is of special interest for X-ray astronomy which often deals with small numbers of events.

2. Support of DEC Windows Under VAX/VMS

MIDAS has been successfully implemented on a VAX station 3100 under VAX/VMS 5.1 with DEC windows. Working with our standard X11-based IDI routines and a VMS specific interface for the client-server communication, it required only a minor upgrade of the display software to use the VAX station as an image display station for MIDAS. The initial version of the communication interfaces was kindly provided by M. Pucillo and P. Santin from Trieste Observatory whom we thank for their significant help.

The full graphics facilities in MIDAS are being tested. Thus, full MIDAS support of VAX/VMS work stations will be available in the 89 NOV release of MIDAS.

The VAX- and DEC stations based on Ultrix with DEC windows are already fully supported, so that MIDAS now covers the whole range of work stations from DEC.

3. MIDAS on New Systems

After requests from several institutes, we have successfully implemented MIDAS on an IBM PS/2 system under AIX. These systems are also offered with X11 window systems which make them interesting as low end work stations. *Please note that the mention or testing of specific computer systems is not in any way an endorsement.*

4. MIDAS Hot-Line Service

The following MIDAS support services can be used to obtain help quickly when problems arise:
- EARN: MIDAS @ DGAESO51
- SPAN: ESOMC1::MIDAS
- Tlx.: 528 282 22 eo d, attn.: MIDAS HOT-LINE
- Tel.: +49-89-32006-456

Users are also invited to send us any suggestions or comments. Although we do provide a telephone service we ask users to use it only in urgent cases. To make it easier for us to process the requests properly we ask you, when possible, to submit requests in written form through either electronic networks or telex.

KURT WALTERS (1912–1989)

Dr. Kurt Walters died.

Dr. Walters has been ESO's legal advisor in Europe and also for Chile.

Living in Hamburg and closely associated with Prof. Heckmann, ESO's first Director General, he had in the early days of our Organization a major role in the development of ESO's relations to its member states and to Chile, where he contributed, in particular, to the successful negotiation of the ESO Convention with the Chilean government.

His calm, reflective personality, combined with an excellent judgement, was widely appreciated.

Dr. Walters terminated his work for ESO in 1976 with the beginning of ESO's relocation to Garching.

He died at the age of 77 years.

G. Bachmann (ESO)