Deep images of extremely distant radio galaxies such as 3C 255 (and 3C 300.1 observed during the same run) taken in excellent seeing conditions, show that these objects do not look like nearby giant elliptical radio galaxies. Evolutionary links between these objects and nearby giant elliptical radio galaxies are still speculative. They may well constitute a different population.

The presence of very faint objects near 3C 255, having similar colours, speaks in favour of a very distant aggregate of galaxies. It might be a cluster core in the process of formation as 3C 326.1 (McCarthy et al., 1987) or 3C 294 (Spinrad et al., 1988) could also be.

I express my thanks to Professor H. van der Laan for the observing time allocated to this project, and to J. Breysacher and D. Hofstadt. This work was greatly helped by information on the seeing coming from Vizcachas. In particular, it was extremely important to know that before and when I was taking long exposures at the 2.2 m telescope, the seeing was constant and near 0.65 arcsec. It is a pleasure to thank M. Sarazin and the team at the seeing monitor for making these data available. I am grateful to all the ESO staff at La Silla who made these observations possible, in particlar P. Le Saux and C. Gouiffes (resident astronomers), E. Barrios and L. Baudet (setting of the instrument), Bahamontes (assistance at the telescope), and S. Vidal (data retrival).

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A New and Improved Camera for the 1.5 m B & C Spectrograph

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A new dioptric camera was installed on the Boller and Chivens spectrograph at the ESO 1.52 m telescope in February 1989 to replace the old Schmidt camera. This allowed the removal of a focal reducing lens in front of the spectrograph slit designed to match the f/15 beam of the telescope to the f/8 focal ratio input of the spectrograph. The focal length of the new camera is 127.0 mm compared with 143.5 mm for the old camera. This means that the effective dispersions of all gratings as found in the recently published Boller and Chivens manual must be multiplied by 1.13 (= 143.5/127) when used at the 1.52 m telescope. The new slit scale is 9.2 arcsec mm^{-1} (compared to 19.4 arcsec mm^{-1} before) and the detector scale along the slit is 0.68 arcsec $pixel^{-1}$ (with 15 μm pixels, compared to 1.28 arcsec $pixel^{-1}$ before). Note also that the new TV slit-viewing field is now reduced by a factor of 2 giving a new field of about 1.5′ × 1.1′. The Nyquist sampling criterion is satisfied with a slit-width of 1.5 arcsecs (15 μm pixels and a small grating angle). For larger grating angles (say 10° or more), the grating demagnification must be considered (see Users' Manual).

Observers should also note that, like the old camera, a ghost spectrum will appear on the detector when the grating angle is between 21.5° and 29°. This will occur for all gratings. The ghost spectrum appears (at much reduced intensity) parallel to the real spectrum but displaced symmetrically with respect to the real spectrum about the optical axis of the spectrograph. This poses a problem for long-slit spectroscopy.

A major advantage of the new camera is that observers now have an almost unvignetted field along the spectrograph slit. Also, a three times improvement in efficiency over the old camera is obtained from 4000 Å up to at least 10000 Å (the longest wavelength measured). Using CCD # 13 (RCA) with grating # 13 (508 Å mm^{-1}), the absolute efficiency of the system (telescope + spectrograph + CCD) was measured to be 18% at 5445 Å. Figure 1 shows the total system efficiency from 4000 Å to 10000 Å for CCD # 13 and this grating and CCD combination.

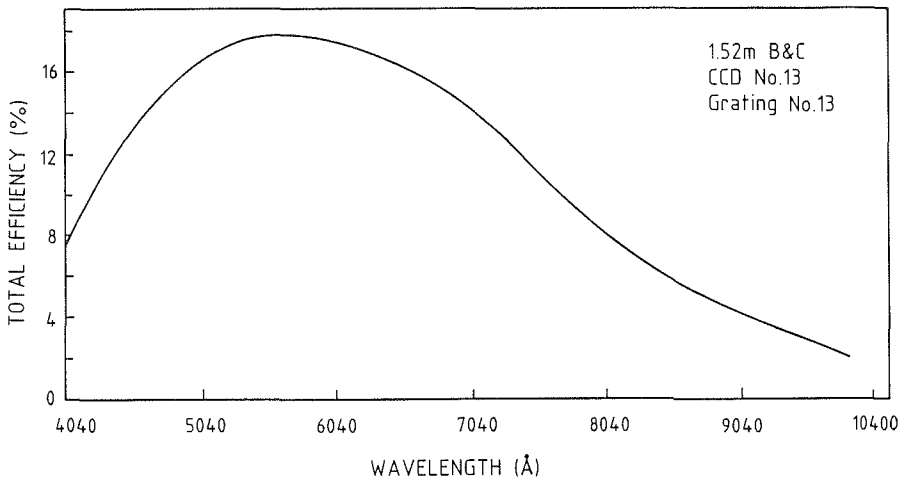

Figure 1: *Total system efficiency of the 1.52 m telescope and Boller & Chivens spectrograph fitted with the new camera.*

MIDAS Memo

ESO Image Processing Group

1. Application Developments

The echelle package for reduction of CASPEC spectra has now been ported to the new MIDAS. This new version is basically compatible with the previous one, with minor modifications to support other instrument formats like ECHELEC and EFOSC in echelle mode.

The Table File Editor has been significantly improved. The new editor uses the Term Window package in such a way that it is device independent, using a terminal definition file which also

supports X11 Window systems. The editor incorporates a large number of commands that can be executed directly (in command mode) or by using keypad and function keys (keypad and function key modes).

2. Data Analysis Workshop

The annual ESO/ST-ECF Data Analysis Workshop took place April 18–20. It consisted of 1½ day scientific meeting centred on reduction software for direct imaging followed by one day with user meetings for both MIDAS and ST-ECF. Approximately 100 people participated in the meeting where more than 15 papers were presented. Proceedings of the scientific session will be published.

The next Data Analysis Workshop is expected to take place in the week April 23–27, 1990, with emphasis on reduction procedures for spectral data.

3. Support of X11 Window Systems

The portable MIDAS has now a full set of graphics and image display facilities. To provide these capabilities for a majority of workstations, major emphasis was placed on the X11 Window Manager implementation. The X11 system, being the industrial standard for window display systems, will be offered by almost all vendors making workstations. The MIDAS implementation image display with X11 was developed partly in collaboration with Trieste Observatory where much of the initial work was done. The MIDAS Display routines were tested successfully on workstations from DEC, HP, Stellar and SUN. Of special interest is the verification for DEC windows which also will be offered with VAX/VMS on VAX stations.

4. MIDAS on New Systems

Two new systems were tested and benchmarked with MIDAS, namely: DEC station 3100 and IBM 6150 systems. The DEC station 3100 uses a R2000 MIPS processor and was tested with Ultrix 3.0 while the IBM 6150 has a ROMP RISC processor running under AIX 2.2. *Please note that the mentioning or testing of specific computer systems is not in any way an endorsement.*

5. Portable MIDAS

As of the 89 MAY release, the portable version of MIDAS is the only official version of MIDAS being maintained and developed. The portable MIDAS can be used on both UNIX and VAX/VMS systems. Only the lowest level of routines differs from system to system while all user interfaces and application programmes are identical, no matter which type of system is used.

The START and STEP descriptors in MIDAS images have in the portable version been changed from single to double precision in order to provide sufficient accuracy for spectral reductions. For people working on VAX/VMS systems, this modification is transparent since the new version can also read the old single precision descriptors; the opposite is *not* true. In general, data files in the internal MIDAS format cannot be used on other systems due to differences in the binary formats. Thus, it is strongly recommended to store data in the FITS formats which is computer independent.

The 89MAY release contains the vast majority of applications available in old VMS-MIDAS including full support of graphics and image display. The major exceptions are the CCD and Long-Slit packages which both are being improved to provide better support of ESO instruments. The final testing and verification of these package will be done in the coming months with an expected release in the 89NOV version.

6. 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.: 52828222eod, 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.

Test Images for Two-dimensional Photometry Software

F. MURTAGH, ST-ECF, ESO; affiliated to Astrophysics Division, Space Science Department, European Space Agency,
and R. WARMELS, ESO

A collection of test images was the focus of a satellite workshop of the recent Data Analysis Workshop. It was held on Monday, April 17, and provided an opportunity for the participants to compare analyses carried out with a wide range of 2-dimensional photometry packages.

The analyses carried out on the test images include the following: S. Ortolani (Padua Observatory) looked at the globular cluster 47 Tuc and NGC 3210 using DAOPHOT (P. Stetson, Dominion Astrophysical Observatory), INVENTORY (A. Kruszewski, Warsaw Observatory), and ROMAFOT (R. Buonanno et al., Rome Observatory). The last two packages have been incorporated into ESO's image processing system MIDAS, and are extensively documented in its user manual. F. Valdes (Kitt Peak National Observatory) carried out analyses on almost all test images using the FOCAS system (F. Valdes, KPNO). This UNIX-based package is available both as a stand-alone system or under Kitt Peak's IRAF image processing. A range of the test images was also investigated by M. Mateo (Mount Wilson and Las Campanas Observatories) using the DoPHOT package. D. Koo (Lick Observatory) studied the SA68 galaxy field images using a wide range of packages. These were APEX (Anglo-Australian Observatory), APM (Cambridge, England), COSMOS (Royal Observatory, Edinburgh), CURRIE (Rutherford-Appleton Laboratories), FOCAS, GROTH (Princeton University) and VIC (University of Victoria, British Colombia). Other analyses were carried out by A. Penny (Rutherford Appleton Laboratories), A. Kruszewski, N. Eaton (University of Durham), and M. Aurière (Observatoire du Pic-du-Midi). Results are also available for the CAPELLA package, which were obtained by A. Llebaria (LAS, Marseilles) and B. Debray (ESTEC).

Together with results of the Data Analysis Workshop, the results of the analyses will be published in an ESO Workshop and Conference Proceedings volume. It is foreseen that these pro-