the IMF, binarity, ages and distances are crucial in unravelling the mysteries of galaxy and structure formation, the reionisation of the IGM by the first stars, etc.

These research areas are the following:

• The structure and composition of the outer solar system.

• The mass function of-low mass stars, brown dwarfs (BD) and planets.

• The direct detection and imaging of extra-solar planets.

• The formation mechanism of stars and planetary systems.

• The formation of star clusters and their evolution.

• The surface structure of stars.

• The accurate distance to galactic Cepheids, the Large Magellanic Cloud and globular clusters.

• The baryonic composition of the galaxy's spheroid.

• The physical mechanisms responsible for stellar pulsation, mass loss and dust formation in stellar envelopes and evolution to the Planetary Nebula and White Dwarf stages.

• The structure and evolution of stellar and galactic nuclear accretion disks and associated features (jets, dust tori, Narrow-line Regions, Broad-line Regions, etc).

• The nature of the Milky Way nucleus surrounding the central black hole (BH).

• Interacting binary evolution and mass transfer mechanisms.

• The structure of the circumstellar environment of stellar BH and neutron stars.

• The evolution of the expanding shells of novae and supernovae and their interaction with the interstellar medium and its chemical enrichment.

• The mass distribution of the galaxy beyond the solar circle.

• The internal dynamics of star clusters and tidal interactions with the galactic potential.

Naturally, as the VLTI evolves in this time interval through the four development phases briefly outlined above, the quality and volume of information to be garnered in most areas will grow allowing fainter, more distant and/or more complex objects to be studied with greater accuracy.

This is the executive summary of a report with the same title prepared by the author for ESO in February 2001. The complete text can be found at: http://www.eso.org/projects/vlti/science/VLTIscienceMarch2001.pdf

2p2 Team News

H. JONES, E. POMPEI and the 2p2 Team

Personnel Movements

Team member Patrick François returned to the Observatoire de Paris after several years with the team, his last of which was as Team Leader. We wish him continued success back in France. Patrick's responsibilities have been taken over by John Pritchard, who joined the 2p2 Team in April. Before joining ESO, John was a New Zealand Science and Technology Post-Doctoral Fellow, hosted by Copenhagen University Observatory. John has interests in Magellanic Cloud Eclipsing Binaries and was already a frequent visitor to La Silla before commencing work at the observatory.

In April we were also joined by Ivo Saviane and Rainer Madejsky. Ivo previously held a postdoctoral position at UCLA, studying stellar populations in dwarf galaxies, globular clusters, and the chemical evolution of galaxies. Rainer is a part-time team member and EIS Visitor, presently on leave from his university in Brazil, the Universidade Estadual de Feira de Santana. His scientific interests include interacting galaxies and the evolution of galaxies.

News from the 2.2-m

It has been a busy time at the 2.2-m telescope and there are three articles in this issue of *The Messenger* that cover recent activities at the 2.2-m in detail.

In March, Fernando Selman, Lutz Wisotzki and Alain Gilliotte commissioned two grisms (red and blue) for use with the Wide Field Imager (WFI). They offer a combined wavelength coverage of around 400 to 900 nm with dispersions of around 0.7 nm per pixel. For more details, see their special article about the new grisms and the possibilities they open for wide-field slitless spectroscopy with the WFI.

The 2.2-m telescope has been running under the VLT-style Observing Software for nearly half a year. This means that Observing Blocks are prepared and executed in a manner similar to that at the VLT, NTT and 3.6-m tel-

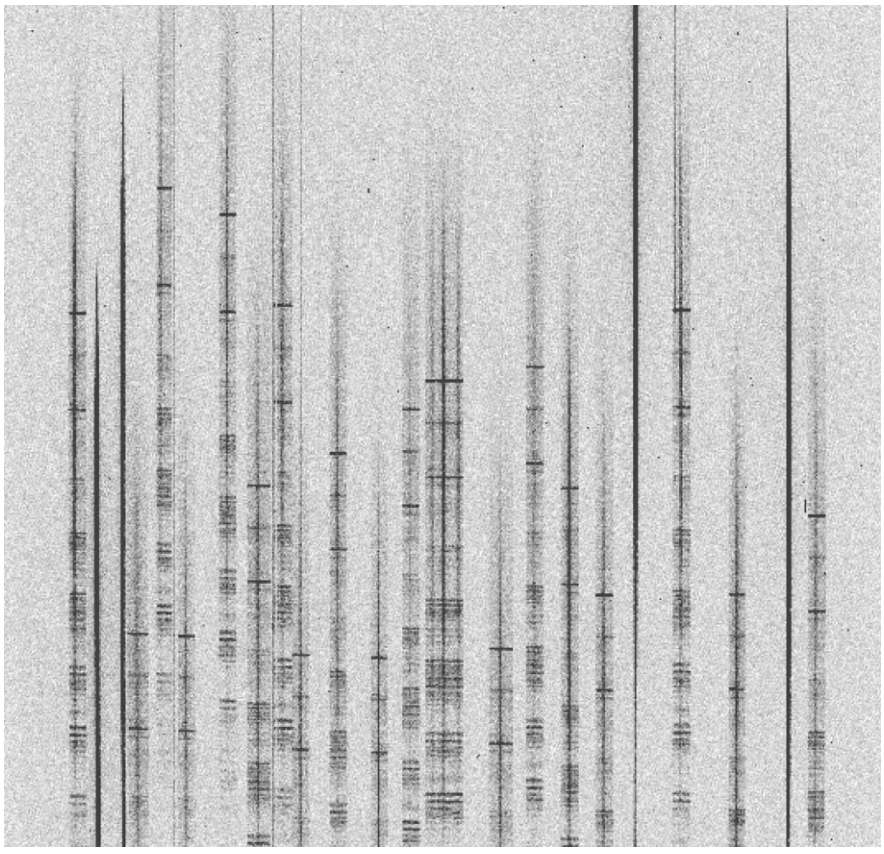

Figure 1. Twenty-minute exposure of galaxy spectra from the EIS 61 field, taken with the Danish 1.54-m in multi-object spectroscopic mode.

escopes. An article by Selman et al. describes the development of this software and how it was put in place over the existing control software.

Recent work by J. Manfroid and F. Selman has demonstrated that the amplitude of the flat-field calibration error plays a significant role in photometric accuracy with the WFI at the level of a few per cent. The accompanying article by Manfroid, Selman & Jones describes a dithering technique that allows observers to correct for this, with examples demonstrating its effect on some photometry. Any observers requiring WFI photometry to better than a few per cent are encouraged to look into this procedure.

Multi-Object Spectroscopy at the Danish 1.54-m

Multi-Object Spectroscopy (MOS) was recently performed successfully with DFOSC at the Danish 1.54-m telescope. The observational procedure requires one to take a pre-image of the required field(s), send the image files to Copenhagen (where a punching machine creates the mask), and finally to ship the mask(s) back to La Silla in time for the spectroscopic observations. The mask is placed in the DFOSC slit wheel and aligned on the sky using a MIDAS procedure (kindly made available by P. Leisy of the NTT Team and modified for use at the Danish 1.54 by E. Pompei). The procedure calculates the offsets between the object centres and those of the corresponding slitlets, correcting for the alignment by applying a fine rotation to the DFOSC slits wheel.

To make this possible, it is necessary to bypass the DAISY acquisition system, through a C-shell script that accepts direct input from the instrument workstation to the PC controlling DFOSC. The new mode was tested during February 2001 in Danish time, with Prof L. Hansen (Niels Bohr Institute, Copenhagen University). Long slit spectra of galaxies in the EIS field 61 were successfully acquired: Figure 1 is a 20-min exposure of a field full of spectra. A new flat-field lamp will soon be installed in the sky baffle, to allow the acquisition of flats without the need to change telescope position, hopefully expediting calibration.

The effectiveness of this system will be checked when it is installed. The final implementation was the result of interaction between the Copenhagen University (in particular Per Kjaergaard Rasmussen, Michael I. Andersen, Morten Liborius Jensen and Anton Norup Soerensen) and the 2p2 Team.

The MOS mode has been offered since the beginning of March this year but is only available in Danish Time (not ESO Time). Any observer wishing to use it must include the time for pre-imaging time in the estimate of the total time requirements.

Commissioning the Spectroscopic Mode of the WFI at the MPG/ESO 2.2-m Telescope at La Silla

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1. Introduction

For Period 68, the Wide Field Imager at the MPG/ESO 2.2-m telescope at La Silla will offer, in addition to the imaging mode, a spectroscopic mode. This will be accomplished by the installation of a grism in front of the WFI triplets to allow for slitless spectroscopy. The combination of the wide field of view, the grism, and the simultaneous availability of the whole set of WFI filters, make this a unique instrument in the southern skies. The instrument will be operated in VLT mode, with the instrument package with the spectroscopic templates already released.

In a preliminary ESO internal report by Hermann Boehnhardt, now at Paranal, the following case was made for the spectroscopic mode of the WFI. This mode will allow survey work for stellar, nebular objects, and galaxies with special characteristics. The main goal would be the registration and identification of such sources by their spectral signatures to establish population and distribution statistics and to prepare in-depth follow-up investigations by dedicated research programmes with other telescopes and instruments.

A rough estimate of the gain in sensitivity for the WFI at the MPG/ESO 2.2-m telescope as compared to objective prism spectroscopy at Schmidt telescopes gives: gain in aperture by a factor of 4–5, gain by CCD sensitivity as opposed to photographic emulsion by a further factor of 20 or more, for a total factor of 100 in sensitivity gain. The advantage of the WFI in spectroscopic mode with respect to standard CCD spectrographs at 2–4-m-class tel-

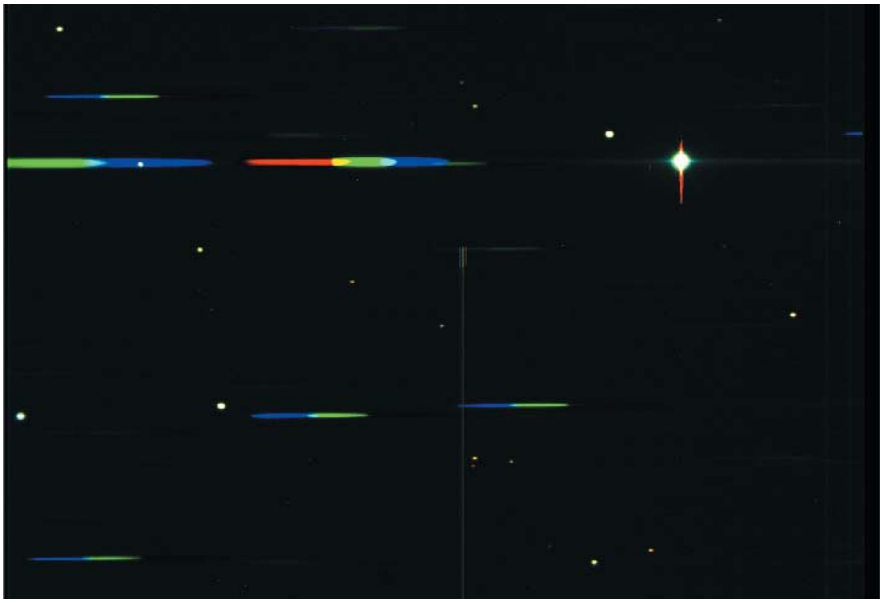

Figure 1: Portion of chip 51 showing the spectra of several stars taken using the WFI and grism B50. Notice the large amount of flux going into the 0th and negative orders. Also notice the white, 0th order image on top of one of the spectra; from its colour it is obvious that this is not an emission feature.