

als for VLT wide-field ( $1 \times 1'$ ) 3D optical spectrometers are under consideration (see Monnet, 2002).

One other technique has found application for dividing up the field subsequent to feeding the spatial elements to a spectrometer and that is a development of the image slicer. Originally image slicers were used to increase the throughput of slit spectrometers for a point source by stacking slices along a narrow slit. Applied in two dimensions mirrors can be used to reformat a square field onto a long slit which is then packed on to the detector (e.g. for the MPA instrument 3D, Weitzel et al., 1996, which is the fore-runner of the VLT instrument SPIFFI). In common with all methods the limitation is detector area, and as CCDs have grown larger so have the areas encompassed by 3D instruments, whilst the sampled size on the sky has remained relatively constant. A survey of the commissioned and planned 3D instruments, or instruments with an integral-field capability, around the world showed the astonishing number of 26. Truly, this is a burgeoning field and many integral field instruments are planned for the large telescopes, and for NGST. Within two years there will be three IFU-capable instruments on the VLT – VIMOS, FLAMES and SINFONI.

### 3. The Euro3D RTN

Europe currently has the lead in the development of integral-field devices

and many of the instruments currently in use, or planned, are for telescopes in which European institutes, including ESO, have strong participation. The need to foster good communication and interchange between these groups, which represent all the different 3D methods sketched above, led to the formation of an OPTICON 3D Spectroscopy Working Group. This group identified that, whilst individual instruments are diverse and the responsibility for removal of the instrument signature must rest with the instrument builders, there existed a lack of instrument-independent data analysis software. The Euro3D RTN was proposed and planned by this group.

A 3D data format for the exchange of 3D data and a software platform for the development of analysis tools form two of the cornerstones of the Euro3D effort. A draft format for a Euro3D format has been issued and the essence of the format, which is FITS, is a stacked spectrum image with a table to reference each spectrum to its position on the sky plane. For the data analysis tools, it was decided to write individual applications in C and to use a scripting language such as Python, Tcl/Tk or IDL for analysis scripts. The I/O library would be adapted from the extensive Lyon Oasis libraries for the Euro3D format.

The RTN consists of a network of eleven institutes – Astrophysikalisches Institut Potsdam, Institute of Astronomy Cambridge, University of Durham,

Max-Planck-Institut für Extraterrestrische Physik, Garching, Leiden Observatory, CRAL Observatoire de Lyon, Laboratoire d'Astrophysique de Marseille, Istituto de Fisica Cosmica "G. Occhialini" of the Italian CNR in Milan, Observatoire de Paris section de Meudon, Instituto de Astrofísica de Canarias, ESO – all of which have active involvement in 3D spectroscopy projects. Full details of the RTN are available on the Web at: <http://www.aip.de/Euro3D/> and there are also links to detailed descriptions of the 11 3D instruments with which the RTN members are involved. The coordinator of the network is Martin Roth at AIP Potsdam ([mmroth@aip.de](mailto:mmroth@aip.de)) and questions about participation or interest in the scientific or software activities should be directed to him.

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## Forty Years ESO – Public Anniversary Activities

C. MADSEN, ESO

Readers of *The Messenger* will be well aware of ESO's 40th anniversary in October this year. This is most certainly a reason for ESO's friends to celebrate. Beyond the professional astronomers, engineers and other people with direct links to the organization, this includes many people all over Europe, e.g. amateur astronomers, science teachers, and people with a general interest in science. At the same time, the European Intergovernmental Research Organizations constitute fine examples of how, through collaboration, European countries can interact and achieve ambitious goals. Thus the success of ESO reaches beyond the confines of professional Astronomy.

Taking account of this, ESO's Education and Public Relations Department has worked intensively with partners in the publishing world and plane-

taria to ensure that the 40th anniversary will also become a visible event in the public arena.

Among the activities and products that will be ready in the autumn are a major book, a CD-ROM, a video and a planetarium show.

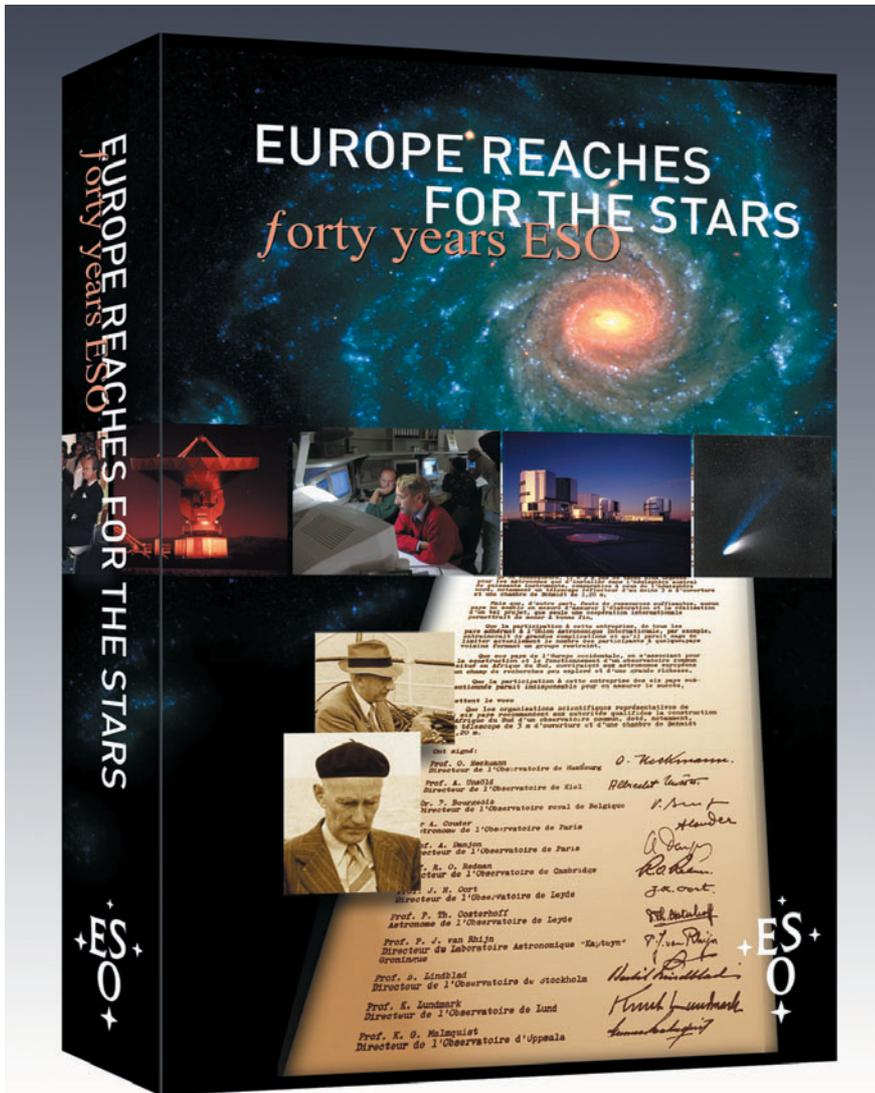
*Geheimnisvolles Universum – Europas Astronomen entsleiern das Weltall* is the title of an 'anniversary book', published by the German Kosmos Verlag. Comprising 208 large-format pages with more than 150 colour pictures, the book is written by science journalist Dirk Lorenzen, known from German Radio and author of *Deep Space* and *Raumsonde Galileo*. The original version of the book is published in German, but other language versions are planned.

Although published on the occasion of the 40th anniversary of ESO, the book



is a forward-looking book, dealing with some of the hottest topics of contemporary astronomy. It looks at the technology and, by means of interviews with both ESO staff and visiting observers, offers a very human account of the people now engaged in front-line astronomical research. A chapter describes an observing night at Paranal and provides an outlook to the future, in particular the ALMA and the OWL projects.

For readers who are interested in the past, the book includes a chapter with some historical aspects and milestones in ESO's development, and a fascinat-



video clips from Paranal, the CD-ROM also contains spectacular 3D images of astronomical objects, thanks to a unique rendering software developed by Planetary Visions.

The CD-ROM will initially be available in English and German, with a French version under preparation.

On the background of the status of post-World War II astronomy in Europe, the video *Europe Reaches for the Stars – Forty Years ESO* traces the evolution of ESO, from the humble beginnings until today – with the VLT in full scientific operation and VLTI in the development stage – and projects the current successes into the future.

The 50-minute film includes rich historic footage not shown before and interviews with the past directors general. Scientific highlights are exposed, both in the context of the general development of Astronomy and the research activities at ESO.

The film is produced by ESO's EPR department and will initially be available with English narration.

Finally, a planetarium show with the title *Les mystères du ciel austral* has been developed in collaboration with APLF, the association of French-language planetaria and with the help of its sister association in the German-speaking countries (ADP). Prof. Agnès Acker from the Louis Pasteur University of Strasbourg and Marc Moutin, head of the planetarium at the Cité de l'Espace in Toulouse, have been the driving forces behind the project, with the technical preparation of the show being executed by Master Image Group of France.

This show, which focuses strongly on the VLT and the recent scientific results, is initially produced in two versions, customized for France and Germany, and other language versions may be produced.

ing description of the early search for sites by the German astronomer Jürgen Stock, whose work played a key role as the ESO Council took its initial decision about where to locate the observatory.

Dirk Lorenzen is also the author of the CD-ROM entitled *3D Atlas of the Universe*, which is produced in a collaboration between ESO, USM (Munich) and Planetary Visions (University College, London). Apart from audio and

## First Teachers Training Course at ESO HQ was a Great Success

A. BACHER, R.M. WEST, ESO

On August 20–24, 2002, School Teachers from a dozen different European countries (including eastern countries) came to ESO HQ to learn about recent developments at ESO. The training course called FAST2002 (Frontline Astrophysics for School Teachers) consisted of several lectures and workshops.

The lectures were given by ESO astronomers and dealt with ESO in general, VLTI, OWL, and Science at ESO.

During the first three workshops, the

teachers went through three of the four ESA/ESO Astronomy Exercise Series (see *The Messenger* No. 107, March 2002), trying out different methods of determining astronomical distances.

The fourth, major workshop aimed at creating new exercises. Two different topics were discussed in great detail. One was to determine properties of a Transneptunian Object using six different images, kindly provided by Olivier Hainaut (ESO La Silla).

The other topic was about Extrasolar

Planets. Results taken at the Leonhard Euler Swiss Telescope at La Silla by the group of Michel Mayor were elaborated in ways that students of different ages can understand. This included the determination of planetary parameters and how to judge if life would be possible on the planet (concept of "habitable zone").

In addition there was a poster session, where the participants presented projects about their own educational work.