EUROPEAN ASTRONOMICAL SOCIETY

NEWSLETTER

Issue 26. December 2003

Contents

EDITORIAL

This is the second issue of 2003, that is supposed to appear just before Christmas and after each JENAM. This year's JENAM in Budapest is acknowledged to be among the best in JENAMs history. The local organizers deserve our most sincere congratulations for the choice of the location, the planning and the warm hospitality the participants enjoyed. The scientific outcome is summarized in this issue, as almost all the convenors, kindly sent to us brief reviews of the mini-symposia.

To my opinion this year is also marked by good news for astronomy succeeding to be well funded by the European Union under FP6. The I3 projects, awarded reflect the good coordination of the astronomical teams in Europe and the official extension of our discipline towards astroparticles, the new community to be organized. A detailed account is given by the EU officer P. Moschopoulos. However I regret that AVO missed this opportunity to be funded although it is a high priority project for astronomy.

Andre Heck is giving a very challenging report about the impact factors of the astronomical journals and some fatal errors connected with it. I address a very warm welcome to Mark Freitag, a young colleague, who accepted to give his thoughts and comments about EAS. I wish this column "Young people's corner" becomes a regular feature of our Newsletter. The Society must represent and focus to the young astronomers to survive. Brigitte Schmieder and Guillaume Aulanier have prepared an article on the latest progress in "Solar Astronomy", a feature that we started in the previous issue aiming to be a regular one in the future.

The news from networks and announcements are there as usual. I point out the web addresses from EU, kindly given by S. Davies, presented at the job market. The new very powerful tools developed by CDS, described by Francoise Genova are worth seeing, I urge you to try for your research and education projects. Due to my greediness to provide you with lots of astronomical news, I created a bit of confusion to Francesco Paresce and Andre Richichi from ESO, (hoping they have not resented this), but I think you will be happy to see lots of news on interferometry.

Finally the 1st announcement of JENAM 2004 appeared and I wish many people meet in Granada, where the Spanish Society is co-organizing the conference.

Mary Kontizas

Message from the President

A hectic summer of meetings included the IAU General Assembly in Sydney and our own JENAM in Budapest. Most of us will by now have recovered and made the transition back to more mundane activities. For those colleagues who could not attend the JENAM, several observations are in order.

Despite the fact that the IAU held its General Assembly a month previously, the JENAM was well attended. Partly due to the excellent organizational efforts of our Hungarian hosts, and partly because of the exciting programme that only marginally overlapped the science covered in Sydney, nearly four hundred colleagues enjoyed a culturally as well as scientifically stimulating week in Budapest. The 70th anniversary celebration symposium for radio astronomy drew colleagues from around the world, including even from Australia!

Our first JENAM Job Market can only be termed a grand success. Aimed especially at young researchers, it also included advertisements of relevance to colleagues of all ages and interests. Not only jobs in Europe but also from many other countries were on display. This is clearly an initiative that will become a standard as well as important feature of future JENAMs.

During the EAS business meeting, a well-attended session was held to present the results of national discussions on future investment priorities. Here too there is clearly enough interest to consider including similar sessions in future. Our own initiative to summarize national planning documents ("Investment Priorities in European Astronomy: an overview of national planning documents") was also presented and stimulated input from additional communities, which we have now added to the summary. This draft document has been spread around the community, through the EAS affiliated societies, with a deadline for comment of about 1 December 2003. Colleagues wishing a copy may consult the EAS web site (http://www2.iap.fr/eas/) after 1 December, or email me (butcher@astron.nl) to request an email copy (in PDF format). Negotiations with the European Science Foundation have begun with a view to formal paper publication under the ESF flag sometime in 2004.

Venues for the coming JENAMs were also discussed in Budapest. There is no shortage of interest in hosting JENAMs.

In 2004, we will join our Spanish colleagues in Granada during the week of 13-17 September, among other things to hear about the first results from the Spanish community's new 10-m optical-IR GranTeCan telescope and new 40-m mm-wave radio telescope. For information see the 1st Announcement elsewhere in this Newsletter or http://www.iaa.csic.es/jenam2004/.

For 2005, we expect to receive an invitation from our Belgian colleagues to hold the JENAM in Liège.

For 2006, we have again to contend with an IAU General Assembly but this time on our own doorstep, in Prague. The EAS Council has suggested that we hold our business and discussion meetings in Prague during the General Assembly week, but that we not schedule our own scientific sessions. An interesting additional proposal is to approach our sister societies world-wide about holding a joint Job Market under IAU auspices. We will be entering discussions on these matters with the IAU Executive Committee and our Czech colleagues in the coming months.

And for 2007, we have an invitation from the Armenian community to host that year's JENAM in Yerevan. We will start working with our affiliated society colleagues in Armenia to explore details starting in the coming year.

On the topic of future priorities, I would like to draw members' attention to an important international workshop that is planned for 1-3 December in Munich. The programme will be to consider world-wide planning for future large scale facilities. The inter-governmental Organization for Economic Cooperation and Development (OECD) is sponsoring the workshop, and attendance is at the invitation of member governments only. This initiative derives from the perceived need among science policy officials in many national governments for an overview of where our field is going, how much it is going to cost and when major funding will be required. It is an initiative the community of astronomers should support. At the time of writing, the list of attendees was not yet known, but European members of the organizing committee are: Ian Corbett (ESO; chairman), Ed van den Heuvel (Amsterdam), Adrian Russell (Edinburgh) and Paolo Vettolani (Bologna).

In addition to developing a general overview of the field, two issues have arisen from our own overview of national priorities that will inevitably want to be confronted during the workshop:

(a) the extent to which existing international organizations (e.g. ESA/CERN/ESO) can be expected to provide adequate organisational vehicles for all future large scale, regionally and even globally organized research facilities, and

(b) the steps that national communities should take to ensure that the demographic evolution of the astronomical research community will be appropriate to ensure that we can effectively address the agreed scientific imperatives.

There also appears to be a growing feeling among policy makers that the new field of astroparticle physics (including gravity wave astrophysics) should be considered a part of astronomy. Scientifically this of course makes good sense, but has sociological and planning consequences that have yet to be explored.

In any case, we intend to keep our members informed about the outcome of this as well as of possibly also a second, follow-on workshop.

Harvey Butcher

Multi-Wavelength Study in Solar Physics

The Sun is an extraordinary fascinating laboratory offered to the Humans which can be studied in order to understand some aspects of the fundamental physics which affects the Earth environment. The Sun is a star among others in the Universe. It is a very normal star, in the middle of the Herzsprung Russell diagram, of the M5 class. Gravity is the main source

of the Sun energy, which drives thermo-nuclear reactions in its core. The latter use the gravitational energy so as to produce fusion reaction, which in turn produce some free energy. This latter energy is evacuated from the core to the solar surface sequentially by radiation, conduction and finally by convection. Another major source of energy comes from the rotation of the Sun around its axis. This energy is at the origin of a dynamo mechanism, which is mostly located at the bottom of the solar convection zone, namely the tachocline layer. This dynamo locally amplifies and distorts magnetic fields, which are then transported to the surface by buoyancy and convection. At the solar surface, there is a strong coupling between convection (manifested by granules and supergranules) and magnetism, forming sunspots and smaller network elements. The first models of the solar atmosphere were one-dimensional. It was raised in the middle of the last century that the temperature is falling with height to a local minimum in the chromosphere (4200 degrees) and then rises to millions of degrees in the corona. How the corona could be heated? Acoustic waves were first invoked to explain this increase in temperature, but nowadays with the armada of satellites observing the Sun, scientists realized the importance of the three dimensional nature of the solar atmosphere. The plasma at the solar surface is dominated by gas pressure, but as the altitude increases, magnetic forces dominate the structuring and dynamics of the corona. Various mechanisms, all based on magnetism, can nowadays explain the heating of the coronal plasma, either via Alfven waves (alternative currents) or by magnetic reconnection (direct currents).

To make a real progress in our knowledge we need to get all the facets of solar activity. Coordinated campaigns of observations between ground based instruments and space missions are mandatory to obtain full multi-wavelength coverage for given events. International campaigns are announced via the Web, either by using the EOF operation centers of space instruments (MEDOC in Orsay and NASA-GSFC in the USA) or using a network developed by Americans in 2000 (MAX MILLENIUM). Ground based instruments observe in and close to the visible range, sometimes in infra-red wavelengths, a domain which is still observable through the Earth atmosphere. We will quote the European Observatory in Canary Islands which hosts telescopes on the Teide (the French Italian magnetograph THEMIS, the German telescopes VTT and the new Gregory) and in LaPalma (the Swedish telescope SST and the dutch open telescope DOT). The task of JOSO (Joint organization of Solar Observations) was to create this European facility which was achieved after 20 years of efforts. The perpetual renewal of the telescopes is a manifestation of the vitality of Solar Physics in Europe.

The space instrumentation is well developed since 15 years. Let us quote first the Japanese telescope Yohkoh working during 10 years (1991-2001) in the X-ray domain. It provided fantastic movies of the Sun nearly during a full solar cycle. The European American mission SOHO, with its twelve instruments, was launched in December 1996 and is still operational, even though it had temporarily been lost in 1998 for 2 months! The three coronographs onboard SOHO provided observations of unprecedented quality for ejections of coronal mass (CME), even when at the minimum of solar activity. The number of CMEs varies from one to a few per day. CMEs that occur on the solar disk, especially close to the central meridian are important from the space weather point of view because they are likely to interact with Earth's space environment. When this happens, it produces aurorae, magnetic storms and sometimes dramatic effects such as power outages on Earth and satellite damage. This new area of research is being developed under the name of Space Weather.

In the following, we focus on one particular joint campaign, where three instruments were involved: the stratospheric Flare Genesis Experiment (FGE), the Transition Region and Coronal Explorer (TRACE) and Yohkoh, the latter two being orbiting around Earth.

The TRACE telescope is a Cassegrain design with a 30cm aperture and a field-of-view of one-tenth of the Sun. The telescope is divided in four quadrants, each of which was defined for a specific wavelength band, by segmented multilayer coatings on matching quadrants of primary and secondary mirrors. The resolution of the instrument is Nyquist-limites by the CCD detector to one arcsecond and the focused image is recorded on a phosphor-coated CCD sensitive to the ultraviolet (UV Lalpha, 1550Å 20 to 80000K) and extreme ultraviolet (EUV 171Å, 195Å, 284Å plasma between 1 to 2 MK) wavelengths. The telescope is pointed through the use of a guide telescope and limb sensor. The camera (1024 X 1024) was manufactured by Lockheed Martin Fairchild system. The instrument computer system consists of 2 processors: the control computer and the Data Handling Computer. Data are compressed to about 0.5 to 5 bits per pixel according to the quality of images we want.

With TRACE we observe a corona that is extremely dynamic and full of flows and wave phenomena. We see that loops evolve rapidly in temperature, with associated changes in density. This dynamic nature points to a high degree of spatio-temporal variability, in regions which were traditionally refered to as quiescent! The loops are predominantly hotter within the first 10,000 to 20,000 km from the loop footpoints. This confirms that the inner part of active region have a higher average temperature. Yohkoh with its 3-5 MK temperature filters exhibited short dense loops at low altitudes over active regions.

How to relate this fascinating evolving loops in the corona to the magnetic carpet of the Sun which is also tremendous animated? the Michelson Doppler Imager (MDI) onboard SOHO provides the longitudinal magnetic field only, with a cadence of 96 min and a spatial resolution close to 2 arcsecond. This is not always sufficient to follow the fine magnetic structure evolution. Thus an American group at John Hopkins University made the proposal to launch a balloon hanging telescope over the Antarctica. The advantage of this place is that the balloon can achieve a complete circle in 17 days around the South pole, observing continuously the Sun, and coming back to its initial place. The atmosphere is dry and the turbulence is minimum at 36 km high in the atmosphere, so that the

spatial resolution does not suffer by atmospheric blurring. In this case adaptive optics is not needed, contrary to many ground based observations. The Antarctica program started in 1988 by the detection of Gamma ray of a supernova. Because of its success and its low cost (1% of a space-based experiment) other experiments could be launched. In January 2000 Flare Genesis telescope was launched and very impressive data were retrieved. The advanced 80cm telescope is mounted in a cylindrical thermal control frame. The mirror is made of ultra-low-expansion glass and the telescope body of graphite-epoxy fiber which is stable in length over wide temperature ranges. This polarization-free telescope supplies images to a liquid-crystal-based vector magnetogram, which can measure magnetic features at a resolution of 0.2 arc-second, 10 times better than MDI. An electrically tunable lithium-niobate Fabry-Perot provides a spectral resolution of about 0.015 nm. An Image Motion Compensator (IMC) senses translational motion of the images and reduces, or removes, it with an agile tip-tilt mirror. The tip-tilt mirror developed for the FGE uses magnetostrictive actuators. The observations consisted of images in three lines: Ca I at 612.25 nm (for the photosphere) in intensity and Dopplershift, Fe I at 630.25 nm (a line very sensitive to magnetic fields) which can provide the Stokes parameters, and H I at 656.28 nm (for the chromosphere), in intensity in the blue wing.

During four hours of observations FGE observed an active region which was dominated by the strong emergence of magnetic flux tubes. FGE has revealed how the magnetic flux gets fragmented as it gradually emerges through the photosphere. Its vector magnetograms permitted for the first time to clearly identify the shape and the effects of the emerging tubes: the flux does not emerge everywhere as smooth Omega-shapes, as it was usually believed in the past, but also in many places as U-shapes, the latter being accompanied by numerous magnetic explosions. FGE also revealed that the magnetic flux emerges in the form of inhomogeneous sea-serpents located between the two main polarities of the active region. Theoretical magnetic extrapolations of the observed magnetic carpet to the higher altitudes provided a three dimensional view of the magnetic field: the low loops with their U-shape (below 1000 km above the photosphere), the Omega-shaped loops, visible as Arch filament system visible in H I (between 1000 and 5000 km in altitude) and higher field lines corresponding to the EUV loops observed by TRACE, mixed with the hotter loops visible by Yohkoh. All these multi-wavelength observations thus were combined so as to construct a unified three-dimensional view of the flux emergence process in active regions.

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SKEPTIC's CORNER

WRONG IMPACT!

Abstract

Unreliable impact factors have been published over a few years by ISI for at least the *Astrophysical Journal* and *Astronomy & Astrophysics*. Why did this happen? How serious is this? Read on for a few details.

The bibliometric context

Counting publications is nowadays one of the ways to evaluate research. It is the foundation stone of *bibliometrics*, itself part of the larger concept of *scientometrics*. To be said in short terms, scientometrics is supposed to be an evaluation of science through 'objective' criteria, while bibliometrics is centred on publications. In practice, scientometrics is often reduced to bibliometrics (see e.g. Schubert 2001). Most of (if not all) the information used today in bibliometric studies is produced by the *Institute of Scientific Information (ISI)*. See for instance Abt (2003) for a presentation of ISI and of its products.

Bibliometrics triggers many criticisms (refer for instance to a brief synthesis in Heck 2002, as well as to the references quoted therein). Opponents claim that bibliometrics does not deal with the substance of research, *i.e.* the progress of knowledge, but that it is mainly concerned with the productivity of 'papers' and with their citations in subsequent publications (often referred to as *impact* - see hereafter).

But bibliometrics has also many proponents. It has the advantage of being simple and easy. It readily quantifies the productivity of people and organizations. It has become an activity *per se*, a kind of pan-disciplinary *audimat* of research, keeping busy many people world-wide and being taken very seriously in a number of circles, especially by sociologists and politicians of science, as well as by decision makers and takers.

It is however true that bibliometrics is a limited and partial tool, hence an unsatisfactory one, that must be convolved with other indicators if one wishes to perform efficient comparative evaluations and especially if one has to deal with persons with similar qualifications, but different activity profiles, within the same organization.

When speaking of astronomy-related institutions, people involved in service activities (resident astronomers operating instruments, maintainers of resources and databases, ...) and in other tasks (developers of instrumentation, data/information handling specialists, ...) would be largely disadvantaged by the only consideration of bibliometrics since their primary activity is not aimed at publishing. The same remark would be of application for staff members spending a significant amount of their time in teaching, supervising theses, and so on.

All such activities belong however to the research context, even if one agrees with Moravcsik (1973) that it is necessary to distinguish between scientific activity, scientific production and scientific progress. Additionally, quality, importance and impact of a specific work must be distinguished.

Why wrong impact factors for some astronomical journals?

ISI's impact factors (IFs) are defined as the average ratio (for each journal) of the number of citations to papers in it to the number of papers published, averaged over the previous two years (Abt 2003). They can be used for weighting counts of publications when evaluating individuals, institutions, proposals, projects, etc.

Here again opponents have a long list of criticisms (refer again to Heck 2002) among which the most serious one is perhaps that IFs fail to address the variation of quality *within* a journal.

But let's face it: scientometrics and bibliometrics are flourishing disciplines (see again Schubert 2001). They have led to a number of important papers for astronomy and astrophysics. See for instance the review by Abt (2000) and the list of publications[1] compiled by the author.

It is difficult to assess exactly how extensive is the usage of IFs by evaluation bodies. It would seem, however, they are more frequently used in Europe than in the rest of the world. In any case there is a definite need to explain the following. In the early 1990s, the editors of the major astronomical journals agreed on some common requirements from authors[2] and to simplify reference lists. For instance, the abbreviations of some journals seemed unnecessarily long. Thus for the *"Monthly Notices of the Royal Astronomical Society"* and the *"Publications of the Astronomical Society of the Pacific"*, usually referred to as *"Mon. Not. R. Astron. Soc."* and *"Publ. Astron. Soc. Pacific"* respectively, it was decided to use the compact acronyms MNRAS and PASP. Similar measures were recommended for the dozen major journals[3]. It is estimated that those short acronyms saved 60 pages per year in the *Astrophys. J. (ApJ)* each year.

ISI's IFs for two journals – *Astrophys. J. and Astron. Astrophys.* – dropped however drastically in 1998. Inquiries to ISI showed that, for that period and as result of an algorithm modification, the references to *Astrophys. J.* had been appropriately credited to that journal but those to *ApJ* had not, and similarly for the other journal (Abt 2003, Sandqvist 2003). The problem being corrected in 2001 for ApJ and in 2002 for A&A, their IFs recovered to their normal levels – putting an end, as pleasantly commented by McNally (2003), to "MNRAS' surge of glory".

It is still a mystery why ApJ and A&A were affected, and why, for instance, MNRAS and AJ *(Astronomical Journal)* were not.

And now?

As information received from ISI does not hint at a publication of corrected data for the years concerned, the usage of the corresponding numbers should be avoided (ApJ for the years 1998-2000 and A&A for the years 1998-2001).

On a more sociological stand, it may never be possible to assess the possible damage caused by the usage of wrong IFs, especially the human damage at the level of individuals, projects, etc., that underwent selection/competition where weights involving those incorrect ratings might have been used.

Bibliometric indices are questionable in various respects and one should never rely blindly or entirely on them. This is why they are often used together with other indicators, such as peer evaluation, discoveries and recognition (awards, honours, invited lectures, etc.). These other indicators have also their own share of shortcomings and ultimately it is always advisable to use all of them *only* as a support to a frank discussion between wise men and women, possibly behind closed doors.

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[1] Updated in each volume of the *Organizations and Strategies in Astronomy (OSA)* series and online at http://vizier.u-strasbg.fr/~heck/osa-bib.htm

[2] See, *e.g.*, *Astron. Astrophys.* 235 (1990) E1-E2, *Astron. J.* 100 (1990) 1 and *Astrophys. J.* 357 (1990) 1.

[3] The exercise was sometimes pushed too far by some managers of lesser astronomical journals.

News from Organizations

ESA

SOHO - back on track, but not quite out of the woods

The SOHO High Gain Antenna (HGA) anomaly started on 4 May 2003 with an on-board fail-over to the Low Gain Antenna (LGA), triggered due to two missing encoder pulses from the antenna pointing mechanism (APM). The antenna is driven by 2 motors: one for the azimuth (Z-axis) and one for the elevation (Y-axis). Each motor has an encoder disk with 2 holes mounted on the drive shaft, giving 2 pulses per revolution. Each motor revolution is 240 steps; one encoder pulse should occur every 120 steps. The missing steps were on the Z-axis only.

Subsequent intermittent encoder pulses were observed, although the synchronisation with the 120 step cycle was erratic. Two main failure scenarios were possible: Either the motor was stepping properly and the antenna was moved along, but the telemetry was wrong, or the telemetry was correct and the antenna was falling behind.

SOHO inhabits a wide elliptical halo orbit around the L1 point. The Z-axis drive is therefore crucial to keep the HGA oriented towards Earth. On May 25 we were at the extreme of the halo orbit; the antenna Z-axis had to start moving in the opposite direction from May 25 onward. However, to "preserve the evidence", Z-axis movements were frozen.

A test was designed to measure the position of the earth in the antenna pattern by moving the spacecraft in yaw (azimuth) and moving the antenna Y-axis while measuring the received signal strength. The test was performed on 4 June, but the results were inconclusive due to a systematic offset in both Z and Y axes.

On 12 June, nominal antenna pointing movements were resumed. Again, two pulses were missed on the Z axis. It was apparently an intermittent problem, but we could still not say categorically if it was a telemetry problem or a motor/mechanical problem. Another off-pointing test was designed for 18 June, giving a second position of Earth in the antenna pattern. Taken together with the earlier results, this would reveal the actual antenna movements versus the telemetry. The result was clear – the antenna was stuck.

After the test, still on June 18, the B side (redundant) motor electronics were tested, without success. Later, high- and low-speed movements on both A and B side electronics were combined with raising the motor operating temperature, with no breakthrough.

In an effort to increase the motor torque, the mechanism was exercised using both nominal and redundant motor electronics and windings simultaneously. The antenna moved. A strategic decision was then made to move the antenna to the so-called "sweet spot", at a Z-axis angle of about -18_. This position maximizes the coverage over the year given the nominal orbit parameters, when coupled with a 180_ roll every half orbit (3 months) – see Figure 1. This was perhaps the most important step to get SOHO back on track and made more drastic recovery options such as orbit changes obsolete.

Following the successful movement with double windings, single winding tests were performed with varying thermal settings, but with no success. The antenna can still be moved with double windings, but there is a risk of getting permanently stuck at an unfavourable position. The antenna is therefore "parked" at the "sweet spot".

In antenna terminology, blind spots are dubbed "keyholes", from their typical appearance in e.g. radar coverage maps: A greyed-out circular zone of exclusion near the antenna, and a greyed-out sector due to an obstacle, combining to look very much like a keyhole. Although the SOHO HGA coverage doesn't look like a keyhole
Figure at:
Quicklook:
http://zeus.nascom.nasa.gov/~shaugan/SOHOorbitbeam.tif
or
High-res:
http://zeus.nascom.nasa.gov/~shaugan/SOHOorbitbeam.tif
we use the term "keyhole periods" to refer to times when normal downlink operations are impossible due to the HGA anomaly.

The situation looked somewhat bleak, with expected keyhole periods covering about 18 days every 3 months when using normal 26-metre DSN stations. The immediate outlook for these periods was to use the Low Gain Antenna (LGA) to receive low-rate housekeeping data only, with almost zero science content.

As SOHO descended into its first keyhole period, however, a number of discoveries helped to alleviate the situation: 34- and 70-metre DSN stations were able to hang on to the HGA signal longer than expected (due to lower receiver noise temperatures than 26-metre stations). And it was discovered that a 34-metre station could receive medium-rate telemetry through the LGA! (Medium rate telemetry contains all real-time science data except the MDI high-rate programme, but recorder dumps are not possible.) 70-metre stations were even able to get high-rate telemetry through the LGA, enabling recorder dumps in addition to the medium-rate telemetry. SOHO was back in business!

During the first SOHO keyhole, there was frantic activity trying to mobilise the bigger DSN dishes on unusually short notice, and to maximise the use of the recorder given the known (or estimated) dump times. The situation was changing almost every day, with new lessons learned about the antenna beam pattern and DSN capabilities. Fortunately, since the determination that the antenna was stuck, just about all the news was positive.

During the second keyhole (September-October 2003), the net loss of medium-rate telemetry was negligible, thanks to a great line-up of large DSN stations. The only big loss was carried by the MDI instrument, which uses high-rate telemetry when no recorder dumps are needed. Continuous contact with high-rate and no recorder dumps had originally been planned for the entire period; with no high rate on 34-metre stations, and the need for large recorder dumps, the impact on MDI was quite severe.

But large DSN stations don't stand in line at your service all the time: In the so-called "Mars Contention Period", November 2003-March 2004, extremely few 34- and 70-metre resources will be available for SOHO. Alternate solutions are being investigated – long recording sessions of low bandwidth data from key instruments (global helioseismology) and adding ESA's New Norcia station to the line-up are particularly interesting options. However, some technical issues remain unresolved, and the SOHO science teams are bracing themselves for outages during the next two keyhole periods.

Stein V.H. Haugan
Ton van Overbeek
Bernhard Fleck
ESA

OPTICON

The OPTICON proposal for funding under the sixth framework programme as an Integrated Infrastructure Initiative was favourably evaluated and as this article goes to press we are negotiating a contract worth up to 19.2 million Euro with the EU. The evaluators deselected a few joint research activities (JRA), removed three telescopes from the proposed access programme and instructed us to reduce the number of networking activities. The final award was about 50% of the request, so some further consolidation was undertaken at a board meeting in Chania, Crete in September. The final suite of activities can be summarised as follows.

The co-ordinator will be the University of Cambridge (Prof. Gerry Gilmore).
Network N1 will manage the consortium with a distributed team at Cambridge and the UKATC in Edinburgh (John Davies). Additional support for the Access programme will be supplied by the IAC in Tenerife.
Network N2 will assist in the coordination and integration of the observing facilities at the Canarian Teide and Roques de los Muchachos observatories, (European Northern Observatory).
Network N3 will identify needs and develop actions to structure the European astronomical community around several large projects such as a European Large Telescope, High time Resolution Astrophysics, UV-astronomy Network, software and interoperability (including AVO).
Network N4 will develop proposals to enhance synergies between space and ground astronomy.
Network N5 will develop programmes to bring optical-IR interferometry into main-stream astronomy.
Network N6 will provide a forum for telescope directors to monitor and enhance the OPTICON transnational access programme and bring forward co-ordination of plans on developments of mutual interest.

The trans-national access programme will provide access to 17 infrastructures comprising 18 optical-infrared telescopes of between 1.5 and 4m aperture and 4 solar telescopes. A list of these telescopes is on the EAS website.

JRA-1 will develop the concepts, designs and technologies required for the next generation of Adaptive Optics capabilities which will equip 8-10 m telescopes over the next decade.
JRA-2 will define, fabricate and fully characterize a high speed low noise detector for Adaptive Optics and Interferometry applications having high sensitivity.
JRA-3 will Investigate the scientific applications and technological challenges required to develop new high speed detectors for applications in astronomy.
JRA-4 will Develop tools that will enable a larger number of astronomers without specialized technical knowledge to use interferometers for their research and the growth of the interferometric community in Europe.
JRA-5 will Develop technologies for Integral Field and Multi-Object Spectroscopy and Imaging. This will include technology road-mapping to establish the most promising avenues and links with SME and other research organizations.
JRA-6 will Develop technologies for Integral Field and Multi-Object Spectroscopy and Imaging. This will include technology road-mapping to establish the most promising avenues and links with SME and other research organizations.

Close cooperation with the other astronomy I3 and the wider European community will be maintained. A fuller list of activities, with contact details, will appear on the OPTICON website at www.astro-opticon.org once the contract has been signed. Urgent enquires can be directed to jkd@roe.ac.uk

John Davies
OPTICON Project Scientist

ESO's VLT INTERFEROMETER

The VLT interferometer (VLTI) on Cerro Paranal saw first light (first fringes to be precise) in 2001 with the 40cm diameter test siderostats and the 8m diameter Unit Telescopes (UTs) using the test camera/combiner VINCI. Since then, progress in implementing the various planned upgrades to the facility has been steady and fruitful. All four very large telescopes have been integrated into the VLTI and have all been combined in pairs to observe a number of targets successfully. Five baselines have been used now out of the available six, UT3/UT4 being the only one not used yet as there is only one delay line on the required side of the tunnel.

Cuurently, three 60 m long-stroke delay lines are operating in the 120m-long tunnel at the center of the observation platform. These delay lines are the system's key feature that allows it to reach the stringent beam compensation and tracking requirements. The measured flatness of the rails is now better than 25μm over 65m with an absolute position accuracy of 30μm. The relative position error of the carriages has been measured to be ~20nm over a 50ms integration time. Of particular significance have been the recent commissioning of the first user-dedicated instrument MIDI working in the N band (8-12μ) and the adaptive optics system MACAO/VLTI on UT2 and 4. This last essentially removes all aberrations except piston (Strehl ~50% in K for V<13 guide star, ~25% for V<16) and, therefore, increase system sensitivity by several magnitudes.

In order to test and verify the VLTI facility from a scientific point of view, a number of nights with as wide a combination of instrumental modes as possible were allocated to the observations of scientifically interesting celestial objects during the commissioning and science verification periods. This policy was formalized by the issue of a call for proposals to the ESO astronomical community for shared risk science observations during periods P70 and P71 with VINCI and the siderostats and its involvement in the science demonstration program using the UTs and MIDI.

The results have been spectacular with the number of papers appearing in the literature jumping from zero in 2002 to over a dozen this year (see the article by Richichi and Paresce in the ESO Messenger of December, 2003 for a more detailed description of these first results). All the data obtained during these periods have been released to the ESO community and

are available on the ESO archive. The available data up to August 2003 is summarized in Table 1. The VLTI became normally accessible to the community for open time observations in P73. 30 proposals requiring MIDI were submitted in response to the call for proposals for P73 and will be reviewed by the OPC as any other proposal for ESO telescopes. A complex and extensive system of user support, data quality, and archiving has been developed by ESO to assist users of the VLTI facility.

We encourage any interested astronomer in the ESO community to avail themselves of these facilities. The VLTI, its scientific objectives and the status of the data release programs are described in detail on the website: http://www.eso.org/projects/vlti/

Table 1. Statistics of the VINCI commissioning observations. A total of 321 independent objects have been observed.

Archive (Raw data)	Number of OBs	Total number of files	Number of nights	Size (Gb)
2001	4827	19308	206	25.2
2002	4966	19864	235	35.9
2003	6125	24500	180	56
Total	15918	63672	621	117.2

A brand new instrument will become available in 2004 namely AMBER that will extend significantly the capabilities of the VLTI by its ability to perform 3- way beam combination allowing phase closure imaging and increased spectral resolution. It will operate in the J,H,K' bands (1-2.4ι) at selectable spectral resolutions of 35, 1000, and 10,000. Its field of view will be in the range 0.06-0.24" with a minimum fringe spacing of 1-2 mas and reaching a limiting uncorrelated magnitude of K=13 with the UTs. In addition, we expect to have the FINITO fringe tracker up and running soon to allow on axis fringe tracking in the H band of bright sources (H<12) observed at longer wavelengths thus significantly increasing the visibility measurement accuracy of these objects and the limiting magnitude of both instruments.

Two more AO systems will be added to the remaining UTs by 2004. Three more delay lines will also be installed in the next year allowing coverage of more than 90% of the AT stations. Finally, the first two 1.8m moveable Auxiliary Telescopes will be integrated in the VLTI facility by the end of 2004 and account for an enormous increase in the critical u,v plane coverage. They represent a special plus for the facility in that they can be used exclusively for interferometry without having to resort to the already heavily subscribed UTs.

The scientific objectives of this first phase of the VLTI development are centered on the exploitation of the increased sensitivity and precision of the facility with the various devices described above. In particular, the capability to perform real i.e. model-independent imaging on moderately bright complex sources (K<14) by determining the phase of the fringe packet in addition to its visibility opens up the possibility of accurate and faithful reconstruction of astronomical scenes. These would include, for example, the morphology of dust torii in nearby AGN, the structure of the circumstellar envelopes of mass losing giants, and long lived stellar surface features such as spots and faculae in the star's magnetic network.

In summary, the VLTI is working well in all its aspects. This year will see the addition of adaptive optics, fringe tracking, mid IR interferometry and the 3-way beam combiner at 2ι AMBER. The future looks particularly bright for ever more compelling science.

Francesco Paresce
VLTI Project Scientist, ESO

More news about VLTI

Another highlight of this intense period of expansion of the VLTI is represented by PRIMA, a sophisticated system planned for late 2005 which will permit to observe simultaneously two system of fringes, one from the science target and one from a nearby reference star. By choosing a suitably bright reference star within approximately one arcminute, PRIMA will permit to extend the sensitivity of the VLTI by several magnitudes on the science targets: a limiting magnitude of about K=20 is predicted. PRIMA will thus permit for the first time to study a large numbers of faint objects, including extragalactic ones which have been until now extremely difficult targets for interferometry.

An additional advantage of PRIMA will be the possibility to measure very accurately the angular distance between the reference star and the science target. It will do so by measuring the relative phase of the two fringe systems, and accuracies of order 10 microarcseconds are predicted. This will permit to obtain very precise differential astrometry, enabling among other things to measure the small shifts in the photocenter of a stellar image caused by the gravitational pull of an orbiting body: a fundamental tool to complement the high-precision radial velocity surveys for extrasolar planets.

As if all these additions were not enough to keep the ESO astronomers and engineers busy, as well as their colleagues in the European optical interferometry community, other projects are already taking shape for a second generation of instruments that will follow soon the present one. Among these, we mention upgrades and modifications to MIDI and AMBER to accept a larger number of beam combinations, and the GENIE nulling-interferometry instrument. The former will be fundamental to move one step closer to actual interferometric imaging, while the latter is an ESA-sponsored project to demonstrate on the ground technological concepts for the DARWIN mission, while at the same time performing a preparatory survey of the level of exo-zodiacal dust in several hundreds of stars.

A. Richichi

RadioNet: Advanced Radio Astronomy in Europe

Over recent years European radio astronomy and the European VLBI Network (EVN) (http://www.evlbi.org) in particular, has been the beneficiary of significant funding from the European Commission (EC). These grants have funded such things as Research and Technical Development (RTD) projects, Marie Curie research networks, an Infrastructure Cooperation Network and an Access programme for the EVN.

The EC's Sixth Framework Programme (FP6), which started this year and runs until 2008, broadened the scope of such support and created an instrument known as an Integrated Infrastructure Initiative (I3). I3s are designed to bring together a broad group of institutes to collaborate in a range of areas. European radio astronomers felt that this was an opportunity not to be missed and so put together a broad programme in a proposal called RadioNet.

In late July of this year we heard that RadioNet had been well-rated, in fact it was first among all astronomy proposals. Contract negotiations with the EC have now been completed and we expect to receive ~12.4 MEuro for European radio astronomy over the next five years, starting in January 2004.

The RadioNet programme has three strands:

– Trans-National Access (TNA). This programme is the largest in RadioNet and is designed to encourage and increase the European user base of the radio telescopes run by Europe. These include the EVN, MERLIN, IRAM, JCMT, WSRT and the two single-dishes at Effelsberg (100m) and Onsala Space Observatory (20m mm telescope). This programme provides the additional running costs needed to support these users and will pay for the travel expenses incurred by eligible users for making their observations or reducing their data. Once RadioNet receives its funds information on how to apply for access to these telescopes will be broadly distributed.
– Joint Research Activities (JRA). There are three technical R&D programmes within RadioNet:
  • ALBUS is focused on improving user software for cm-wave interferometers
  • AMSTAR will develop new technologies for RadioNet's mm/sub-mm facilities
  • PHAROS will build on the successful FP5 FARADAY project and develop low-noise, *phased* receiver arrays to be installed at the foci of large radio telescopes.
– Networking Activities. This area is designed to enhance the communication between scientists, engineers, programmers etc within the European radio community and to strengthen the links to our colleagues who work in other wavebands. It will be funding science and engineering workshops, working visits between institutes, training schools and more.

A RadioNet web-site has been established (http://www.radionet-eu.org). This will be the main interface of the community with RadioNet and will be developed further once funding has started.

Philip Diamond
University of Manchester, RadioNet Coordinator
pdiamond@jb.man.ac.uk

CDS

The new Aladin version is available

Aladin is an interactive sky atlas software tool developed by the Centre de Données astronomiques de Strasbourg (CDS). It allows users to visualize digitized images from any part of the sky, to superimpose entries from astronomical catalogues, and to interactively access related data and information from SIMBAD, NED, VizieR, and many archives. The applet version is directly accessible via a Web browser. To display your own catalogue or image data, and save your work, download the standalone version.

Among the new functionalities implemented in the new Aladin version are: i) an enhanced filtering capability for catalogue data, ii) organisation of data in an hierarchical data tree, and display of image fields of view, iii) manual catalogue registration (in addition to the previously implemented image registration), and iv) interaction with the VOPlot table visualizer developed by the Indian VO. In addition standalone users may also create a data tree for local data, and for any data available by URL. Several science usage examples are available from the Web page.

Some of the new functionalities have been developed in the frame of the Astrophysical Virtual Observatory project (AVO – RTD project funded by the European Commission) and of the Images Distribuées Hétérogènes en Astronomie project (IDHA – funded by the French Ministère de la Recherche). Aladin makes use of standards developed by the International Virtual Observatory Alliance (VOTable, SIAP, UCD), whose interoperability activities are funded by the VO projects around the world, and by the OPTICON European Thematic Network.

Aladin Web page: http://aladin.u-strasbg.fr/aladin.gml
AVO Web Page: http://euro-vo.org/
IDHA Web page: http://cdsweb.u-strasbg.fr/IDHA.html (in French)
Indian VO: http://vo.iucaa.ernet.in/~voi/
International Virtual Observatory Alliance: http://ivoa.net/
OPTICON: http://www.astro-opticon.org/

ANNOUNCEMENTS

1st Announcement for the "Saas Fee" Winter School

«THE SUN, SOLAR ANALOGS AND THE CLIMATE" Davos, Switzerland, March 15 to 20, 2004

The Swiss Society of Astrophysics & Astronomy (SSAA) is now organizing its 34th Advanced Course in Astronomy and Astrophysics. This winter school will be held in Davos, Switzerland from March 15 to 20, 2004. The course will address the subject of the solar variability and its interaction with the terrestrial climate.

The course is intended mainly for post-graduate astronomers and physicists who wish to broaden their knowledge in the field. More information on the course program, general information and registration is available on the following web-site: http://www.pmodwrc.ch

Isabelle Rfiedi

Odessa Summer Schools

Starting from 1982, the Department of Astronomy and Astronomical Observatory of the Odessa National University (Ukraine) organize annual conferences and summer schools

on various topics. This year we have organized a conference dedicated to the memory of Prof. V.P.Tsessevich (1907-1983), the famous scientist, popularizer and organizer of science. The topic was dedicated to one of directions of his research, namely the interacting binary stars. Many participants from different countries took place in this meeting. Selected papers will be published in the special 16-th issue of the journal "Odessa Astronomical Publications", which will be available on-line at http://oap16.pochta.ru

Now the conferences are morally supported by the Ukrainian Astronomical Association and the Euro-Asian Astronomical Society, the EAS affiliates. We welcome You to our future conferences!

Ivan Andronov
http://il-a.pochta.ru

YOUNG PEOPLE's CORNER

EAS AND JOBMARKET IN JENAM 2003

My name is Marc Freitag, after getting my PhD at the Observatoire de Genève, I went to Bern Universität as a postdoc, then to Caltech and I am now working, still as a postdoc, in Heidelberg. For the first time this year, I have taken part in a JENAM conference. It took place in Budapest, from the 25th to the 30th of August. Here I expose my impressions about the "job market" session held during this meeting, as well as a few thoughts about the EAS and astronomy in Europe in general. What follows is not meant to be an impartial description or a particularly well informed account, just personal views. I apologise in advance for any inaccuracy I may write (and I am sure there will be many). I was asked to write this small report because the viewpoint of a (relatively) young astronomer may be of interest to others. So please take it for what it is, the opinion of a random JENAM participant, and feel free to disagree and tell me what your view is!

THE "JOB MARKET" DURING JENAM

Organising a job market sector in t he JENAM meeting is definitively a very good idea and there is no doubt many young colleagues would agree on this. I haven't myself tried to meet potential employers as I am not currently looking for a position. From what I've seen on the bulletin boards where one could sign up for an interview and what I've heard from other participants, it seems that there was not so many actual one-to-one job talks conducted. But it is probably normal for the first time this is arranged. In any case, this shouldn't be taken as a reason not to renew this in the future. It will probably take some time to acquire momentum and become a tradition similar to job interviews during AAS meetings but my opinion is that it may also contribute to bring more people to future JENAM conferences. Incidentally, before and during the conference, I had the impression that only few colleagues considered it important to go to JENAM, which I think, if true, is a regrettable fact.

There was also a special session about the job market. It featured talks by representatives of the European Union on the various Marie Curie actions to promote intra- and extra-European researcher mobility (see other article in this issue), of ESA on scientific career opportunities (http://www.esa.int/SPECIALS/Careers_at_ESA/SEMH7XXO4HD_0.html) and of the ESO on their fellowship program (http://www.eso.org/gen-fac/adm/pers/vacant/fellows2003-4.html). Stephen Davies spoke for the EU programs, Fabio Favata for the ESA and Peter Shaver for the ESO. The information given was very interesting, quite the kind I would have found very useful, when I completed my PhD and was looking for what to do next. I cannot summarise it without being inaccurate (I didn't know I'll report on this session when I was attending it!). It would have been illuminating to get figures about the number of applicants per year to the different programs and the fraction who get accepted. For instance, the Marie Curie fellowships seem notoriously difficult to get.

JOINING THE EAS

Let me now make a few comments about the EAS. I think having an European Astronomical Society (a being member of it) is not a luxury but should be considered an important tool to organise astronomy in Europe. From my (limited) experience, getting stronger links between European astronomers and astronomical institutions is a necessity, if only to slow down the "brain drain" toward the US job market, i.e. allow European researchers to stay on their home continent (if not in their home country) with good professional and material conditions. Certainly, this is particularly difficult in eastern countries. For young researchers, there is an obvious tendency to look toward the United States when trying to figure out how to make career. Whether a reality or not, to many it appears much easier to find an interesting PhD project or a nice postdoc position or just stay "in the business" after a few postdocs on the other side of the Atlantic Ocean. Having no particular knowledge about the sociology and recent history of science, I don't know exactly how this trend started but I have clear clues about what keeps it going. One thing is that there are indeed many good places to do astronomy in the US, another is the famous flexibility of their job market. But still another, which is much less objective and even more pervasive, is that their is a deep if diffuse belief that science is done in a more effective way over there. This point of view seems to be nearly institutionalised in some places in Europe where it is a non-written but well-known rule that the winning strategy to get a good position is to first get one (or at least an offer) in the US! No wonder the best way to meet other young European postdocs from various countries is to go to Caltech, Princeton or Northwestern University, to cite a few places I've visited!

Astronomy in the US is certainly great and diverse. But so it is also in Europe. In particular our cultural diversity is an invaluable treasure (although, not being gifted for languages, I have to admit I find it very convenient that English can be used to discuss with any colleague!) and I find it's a pity we're not trying harder to enjoy it by creating more links between us. Sometimes I think we're just too busy looking to the west, and I don't have Spain or Portugal in mind.

In consequence I would be very happy to see the EAS becoming a stronger organisation with more members. Unfortunately, joining the EAS is not such an easy thing. I've

tried it in Budapest without much success, apparently. One difficulty, as many of the readers of this newsletter probably know, is that one needs two members to support one's application and, sad to say, finding them among the JENAM participants took me more than a coffee break! And all the blame cannot be put on my social skills... But I finally found my sponsors, filled in the form and... mailed it from my institute in Germany because the people in charge of the EAS stand at the conference wouldn't accept it for fear of loosing it! However, the procedure apparently failed. I got no news from the EAS and my name is not to be found in the on-line directory. I suspect it is because I forgot to ask my sponsors to send a confirmation mail to the EAS... So I admit I didn't follow the rules but should becoming a member really be such an obstacle course?

EUROPEAN COMMISSION

Current List of existing Astronomy Research Training Networks

Directorate D
The human factor, mobility and Marie-Curie activities

Current Research Training Networks in the field of astrophysics, astronomy, cosmology, etc. funded through the European Community's Fifth Framework Programme and which may or may not be looking for young researchers are given below. If you require further information please visit the web address given and contact the network directly. For details of vacancies in other Research Training Networks please go to http://improving.cordis.lu/rtn/. For details of other existing opportunities (e.g. Individual Marie-Curie Fellowships) please go to http://www.cordis.lu/improving/code/vacancies.htm.

Note that there are certain conditions which must be met for appointment in a Research Training Network funded through the Fifth Framework Programme and these are given at http://www.cordis.lu/improving/networks/faq.htm#q5. Other useful information is also available at http://www.cordis.lu/improving/networks/young.htm.

Research Training Networks funded through the Sixth Framework Programme are expected to start from the end of 2003. Details of possible vacancies in these networks will be found by going to "Opportunities" at the Marie-Curie Actions website: http://europa.eu.int/mariecurie-actions.

Other useful sources of information are the Researchers Mobility Portal (http://europa.eu.int/eracareers), PLOTEUS (http://www.ploteus.net/), EURES (http://europa.eu.int/eures) and the Marie-Curie Fellowship Association (http://www.mariecurie.org/).

For undergraduate students, opportunities exist (e.g. ERASMUS) within the programmes managed by the Education and Training Directorate General of the Commission (http://europa.eu.int/education).

Network Acronym	Website Address
CMBNET	http://www-astro.physics.ox.ac.uk/cmbnet/
IGM	http://www.ast.cam.ac.uk/~rtnigm/
Sources of Gravitational Waves	http://www.eu-network.org/
POE	http://astro.ic.ac.uk/~mrr/poe.html
AO-ELT	http://www.eso.org/instruments/aoelt/
The Early Universe	http://www-thphys.physics.ox.ac.uk/users/SubirSarkar/eunet.html
PLATON	http://www-solar.mcs.st-and.ac.uk/~thomas/platon/
Young Stellar Clusters	http://www.aip.de/groups/starplan/ecrtn.html
Gamma Ray Bursts	http://zon.wins.uva.nl/~rwijers/rtn/
SHARP-EYE	http://www.sharpeye.org/
Type Ia Supernovae	http://www.mpa-garching.mpg.de/~rtn/
PLANETS	http://www.mpia-hd.mpg.de/PLANETS/
TOSTISP	http://www.sp.ph.ic.ac.uk/rtn/
ESMN	http://esmn.astro.uu.nl/index.html/Home.html
Turbulent Layers	http://cluster.irfu.se/rtn/
SISCO	http://star-www.dur.ac.uk/cosmology/SISCO/
Quasar Variability	http://www.lsw.uni-heidelberg.de/users/swagner/enigma.html
Applied Cryodetectors	http://www.physics.ox.ac.uk/cryodetectors/default.asp

Stephen Davies
Project Officer
Research Training Networks
Research Directorate General
European Commission

EU NEWS

ASTRONOMY AND THE OUTCOME OF THE FIRST CALL FOR RESEARCH INFRASTRUCTURES UNDER FP6

Standard Disclaimer

This document expresses solely the current views of unit RTD-B.4 of the European Commission's services. Readers should not regard these views as a statement of the official position of the European Commission nor indeed of its Directorate-General for Research.

As a follow-up to the information on FP6[1] published in the EAS newsletter of June 2002, it would be useful to present here a summary of the outcome of the first call for Research Infrastructures.

The first call[2] had an indicative budget of 190 million $ and proposers could apply for:
– a single-participant Transnational Access activity implemented as a Specific Support Action (TA-SSA);
– an Integrating Activity implemented as Integrated Infrastructure Initiative (IA-I3), combining networking activities with the provision of transnational access and/or joint research activities;
– an Integrating Activity implemented as Coordination Action (IA-CA), allowing for networking activities only.

At call closure, on 15 April 2003, 154 proposals were received, requesting a total funding of approximately 1 billion $. This represented an oversubscription by a factor of five. Most (84) of the proposals simply applied for the provision of Transnational Access. Another 58 proposals were multi-partner I3s, typically large, both in terms of participants and budget requested, often integrating all main players in a specific class of infrastructures. I3s also attracted infrastructures which were previously funded from the FP5 thematic programmes, as well as new (not funded by the activity in FP5) fields like astroparticles, space technology, sensors and accelerators. Finally, 12 proposals were submitted for Coordination Actions.

Due to the high oversubscription, although 72% of the proposals were above the scientific threshold (3,5 points out of a maximum of 5), it was possible to include in the short list only the top 22% of all proposals. Moreover, a clustering of the proposals was observed at 4,5 points. This was indeed the actual financial threshold, meaning that for a proposal to secure selection, the mark "excellent" (5/5) should have been attributed, by the evaluation panel, to one or more evaluation criteria.

The short list that has served as a basis for the opening of contract negotiations includes 9 Transnational Access proposals, 14 I3s and only 1 Coordination Action. Therefore, I3s of very good quality that represented entire scientific communities could not be included in the short list due to lack of funding.

Under such circumstances of acute financial pressure, the outcome for Astronomy seems not bad at all: The I3s on Optical/IR and Radio-Astronomy, Opticon and Radionet, have both been included in the short list and contract negotiations are on their way.

The next opportunities for bottom-up financing of Research Infrastructures lie within the call for Design Studies, Construction of new Infrastructures and Accompanying measures[3], open since 11 November 2003 with a deadline of 4 March 2004.

To complete the picture, the Commission Work Programme for 2004-2005, when finalised, will also include details on the distribution of the remaining budget of approximately 195 million $[4] for Research Infrastructures.

Panayotis MOSCHOPOULOS
European Commission - DG Research

[1] The Sixth European Community framework program for R&D, 2002-2006.

[2] Call identifier: FP6-2002-Infrastructures-1. The call documents are still available on the site: http://fp6.cordis.lu/fp6/call_details.cfm?CALL_ID=49

[3] Call identifier: FP6-2003-Infrastructures-4. Web site: http://fp6.cordis.lu/fp6/call_details.cfm?CALL_ID=76

[4] This amount corresponds to all Research Infrastructures activities other than Communication Network Development.

REPORT FROM JENAM 2003

The 12th Meeting of the European Astronomical Society (EAS) was held in the period of August 25-30 in Budapest, Hungary. The meeting covered the basic fields of astronomy and astrophysics focusing on what will be the major goals of research in the coming decades. During the meeting, both the fundamental astronomical knowledge and the exciting new results in observational and theoretical astrophysics was presented by experts in the field. Young scientists originating from European institutes and workshops had opportunities to highlight a number of more specific interesting new results. Space and time for poster presentations was a significant part of the meeting. 11 Minisymposia covering selected fields of astronomy was also organized during the Conference, including invited speakers, oral contributions and poster sessions. An interesting new feature was the Job Market held for the first time at a JENAM. Young researchers looking for work was able to make contact with potential employers. One plenary session discussed the national priorities for large investments across Europe. The Lorönd Eötvös University, Budapest, hosted the event – attracting nearly 400 people – with the meeting organized by Roland Eötvös Physical Society in collaboration with the Konkoly Observatory of the Hungarian Academy of Sciences.

Lajos G. Balazs, chairman of the LOC,
co-chairman of the SOC

Active Stars and Interacting Binaries

The minisymposium Active Stars and Interacting Binaries was originally planned for two days. As the interest was growing fast, soon the minisymposium filled up almost four days, so finally two full minisyposia was held cutting the title into the two related subjects.

Active Stars

The palette of magnetic phenomena from active stars to the Sun lasted for two full days of 26-27 August. The organizers, Katalin Olöh, van Driel-Gesztelyi Lödia and Klaus G. Strasmeier, paid special attention to ask young astronomers (postdocs or PhD students) who were already known experts of their field, for invited talks, this way fulfilling one of the main tasks of EAS to bring together the young scientists. This decision proved to be a very good idea.

The basic topics covered the theory, specifically the heating meachanisms and magnetic flux emergence on active stars and on the Sun with special emphasis on close binaries. We discussed the results of observing (photometry, spectroscopy) and modelling different features which originate from the magnetic activity of the Sun, solar type stars and active close binaries. Most of the invited talks presented new results.

The first day was mainly devoted to the theory and the following invited talks were presented: Observing the Sun as an X-ray star: Recent Results (S. Orlando, G. Peres, F. Reale), Heating mechanisms in the atmospheres of cool stars and the Sun (R. Erdölyi), What Thin Flux Tube Models Can Tell Us About Star Spots (T. Granzer), Emergence and loss of magnetic flux on the solar surface (L. van Driel-Gesztelyi), Where is the dynamo in close binaries located? (W. Holzwarth) and Magnetic Activity and Dynamics of Close Binaries (A.F. Lanza, M. Rodono). A. Gimenez gave an intereting talk on Observing stellar variability with the OMC onboard INTEGRAL. The invited talks of the second day concentrated on observations and modelling: Evolution of stellar active regions (M. Weber), Spots on FK Com: active longitudes and "flip-flops" (H. Korhonen, S.V. Berdyugina, I. Tuominen), The radiative and magnetic properties of solar type stars (I. Ribas, E.F. Guinan), Lithium (and other light elements) and stellar magnetic activity (G. Cutispoto), The Halpha line as diagnostics of magnetic activity in single and binary stars (A. Frasca, S. Catalano, E. Marilli).

All the 12 invited and 9 (not listed) contributed talks were very carefully prepared and excellently presented and we could read several interesting posters on various topics. The authors of the contributions came from Bulgaria, England, Greece, Hungary, Italy, Latvia, Russia, Slovakia, Spain, Turkey and the United States. The attendance of the symposium was high and we had long and lively discussions after all talks, and near the posters in the breaks. The presentations will be printed in the Astronomische Nachrichten (AN) as original science papers. Katalin Olöh, Konkoly Observatory, Budapest.

Interactive binaries

The topic "Interactive binaries" started on Friday with foreword of Dr. Hric – convenor of the minisymp. The session continued with several invited talks by Pierluigi Selvelli, Vojtöchöimon, Joana Mikolajewska and Laurits Leedjörv and contributed talks by Bochkarev, Andronov, Friedjung, Iijima, Pustylnik, Schmidtobreick et al. We can not omit posters by Niarchos, Gölis, Djuraöeviö, Sholukhova, Claudi, Lyratzi, Kotnik-Karuza, Zacs, Dobrotka, Iliev, Kafka, Lipunova, Vanko and some other co-authors that completed the whole frame of the topic about interesting systems of interacting binaries, some examples of cataclysmic variables and some symbiotic stars. It was the idea to connect many contributions from few communities but with common attributes. Active stars is very good event in previous topics, because we can expect activity on many secondaries of the systems mentioned above. We can summarise, that the main idea was to present interesting physical processes in interacting, cataclysmic and active stars, their behaviour and observational properties.

Ladislav Hric and Maria Bartolomejovö,
Slovak Astronomical Society

Radio Astronomy at 70: from Karl Jansky to microjansky

It was 70 years ago, in 1933, when the synergy between scientific discovery and technological advances enabled Karl Jansky to open a new window on the Universe, thus marking the birth of radio astronomy. Since then, radio astronomy has made huge progress, resulting in the improvement of sensitivity over the last decades by many orders of magnitude and approaching micro-arcsecond angular resolution. It has become one of the major tools for studying the Universe. Radio galaxies with their enormously energetic clouds of relativistic electrons and cosmic jets that extend up to millions of light years into space, quasars, pulsars, gravitational lensing, cosmic microwave masers, extra solar planetary systems, a broad spectrum of chemical elements from hydrogen to complex interstellar molecules, and the cosmic microwave background radiation were all discovered by radio telescopes. Radio telescopes have also been used to measure the relativistic bending of electromagnetic waves which pass near the limb of the Sun, to establish the existence of gravitational radiation, to measure continental drift, and most recently to measure the finite speed of gravity waves. The progress of radio astronomy is driven by the needs of fundamental science and is based on the state-of-the-art developments in technology.

The JENAM-2003 Symposium "Radio Astronomy at 70: from Karl Jansky to microjansky" has provided a stage for discussing various aspects of modern radio astronomy. Its scientific programme lased for four days was centered around about 30 oral review presentations. They covered, among others, the following area:

– Early years of radio astronomy developments in Europe (F. Graham-Smith), USA (B. Burke) and worldwide;
– Low-brightness radio/microwave background and cosmology;
– Astrophysics of extragalactic radio sources – lighthouses of the Universe;
– The Galaxy: continuum and spectral line radio constituents;

– Radio astronomy of atoms and molecules in the universe – from hydrogen to precursors of biological matter;
– Radio astronomical relativistic experiments (pulsar timing, astrometry);

An important component of programme included invited presentations on synergies between radio and other domains of astronomy. These included talks by T. Courvoisier (gamma-ray), D. Schwartz (X-ray), G. Gilmore (optics), J. Cernicharo (IR and sub-mm).

The last session of the symposium reviewed major large-scale initiatives in radio astronomy which will define its progress in the coming decades: the Atakama Large Millimetre Array (ALMA), Low Frequency Array (LOFAR), Square Kilometre Array (SKA), the next generation space-borne radio astronomy missions, as well as upgrade of existing facilities with an emphasis on broad-band real-time link between the elements of antenna arrays (EVLA, e-MERLIN, e-VLBI) were presented by leaders of these projects.

The Symposium gave an opportunity to discuss developments in radio astronomy amongst a broad professional astronomical community and enable a multi-disciplinary discussion of various subjects and perspectives of astronomical studies. Such its mission will be continued by the Symposium Proceedings which are to be published by the EDP Sciences in the EAS Astronomy Series in 2004.

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The UV sky, linking the present to the future

The relatively compact program for the mini-symposium *"The UV sky, linking the present to the future"* was very timely since the launch of the GALEX mission and the results of the first four years of FUSE operations have shown clearly the relevance and the richness of Ultraviolet range for astrophysical study. This is often overlooked in the quest for more fashionable results.

The presentations clearly showed that really fundamental astrophysical and even basic physics questions are waiting to be addressed by the science community through the methods of astrophysical experiments (i.e. observations) in the Ultraviolet. The development and recognition of the importance of hydro-magnetic phenomena in all astrophysics has opened up new fields of study allowing us insights in the physics of star formation and death, as well as the complete evolutionary processes in between. The enormous influence of binaries on the overall evolution of stars and the ways in which these supply us with all the mysterious objects giving rise to gamma-ray bursts, super-massive and low-mass black holes all, are crying out for new observational material which can only be obtained with serious efforts in the UV. It was also highlighted that one of the vital issues to be addressed in the context of star formation and starbursts is their relation to the population characteristics of galaxies at all stages of evolution. This can not be addressed in any sensible way unless we have a much better understanding of the fastest evolving stars with their short lifetimes and high temperatures, which make them prime targets for Ultraviolet observations. A number of critical questions in the field of the understanding of the evolution of intergalactic abundances, is only accessible in the region which contains 90% of the known matter in the Universe ($z<2$), requiring access to the Ultraviolet domain. A very strong case was made for the importance of molecular astrophysics in the UV, as an additional tool for very powerful studies of many astrophysical questions.

Recognizing the needs for prime UV observational programs, especially in the wide European community, the meeting concluded that an interest group should bring itself into being to assure that critical expertise and experience are not going to disappear from our common heritage. To coordinate the activities and the interests of the scientists in these fields in Europe, a UVNET group (Chairperson Prof. A.I Gómez de Castro, UCM, Madrid Spain) was formed as part of the larger OPTICON collaboration. The presentations of the meeting are available on the world-wide-web at URL
http://www.mat.ucm.es/~wso/

Willem Wamsteker
Ana Ines Gómez de Castro

Special Session "Astronomy Education in Europe"

The European Astronomical Society aimed to contribute to and promote the advancement of astronomy, in its broadest sense, in Europe, by all suitable means and in particular:
a) by providing an independent forum for the discussion of subjects of common interest.
b) by providing means, whereby action can be taken on those matters which appear desirable to be handled at the European level.

One of the subjects of common interest is the astronomy education, taking into account its absence in most of the curricula of different countries, an unprecedented proliferation of astrology and other pseudosciences and the stronger role of the mass media and internet in spreading the scientific information.

All these, persuaded the IAU to adopt (during its last General Assembly at Sydney) a special Resolution and the EAS to organize for the first time a special session on the same topic. It was opened by prof. Syuzo Isobe, the former chair of the IAU Commission 46. Many communications (oral or posters) from Bulgaria, Germany, Greece, Hungary, Romania, Russia, Spain, and even from USA were presented. They concern the education at different levels in the primary, secondary schools or university, as well as the role of the planetaria or mass media for the astronomy education.

The Proceedings will be published in Japan
Magda Stavinschi

Dynamics of formation, evolution, and stability of planetary systems

This symposium had its origins in a merger of two proposals (motivated by gaps in the program of the IAU General Assembly held in Sydney in July), one from B. Erdi for "on stability of orbits in the solar system", and one from V. Trimble "on the formation and evolution of systems of extra-solar-system planets". The result was a program with 11 invited lectures, 11 contributed talks, and 12 posters, covering formation and evolution of planetary systems, solar system dynamics, dynamics of exoplanet systems, and observations of exoplanets. The highlights, and the people who presented them, included: dynamical interactions in planetary systems were discussed, including the strong resonant and secular interactions observed in exosystems, and an explanation of how dynamical processes such as resonant migration and planet-planet scattering can account for the populations seen (G. Laughlin).

Some basic features of co-orbital dynamics of a protoplanet embedded in a massive gaseous disk and held on a fixed circular orbit were presented and the effect of co-rotation torque on runaway planetary migration shown (F. Masset).

Recent developments in the theory of disk-planet and planet-planet interactions were reviewed, including results of recent simulations of protoplanets interactive with turbulent protostellar disks and implications for the formation of resonant multi-planet systems (R. Nelson).

G. Ogilvie presented aspects of the secular evolution of inclinations and eccentricity in protoplanetary systems with both a circumstellar disk and one or two planets.

There are some new ideas on the origin of Kuiper belt objects in which an original compact disk of planetesimals had an outer edge not much beyond 30 AU. The major planets were formed inside this, and Neptune migrated to its present position via energy and angular momentum exchange with the residual planetesimals. In this way, it pushed some of the original planetesimals out to present location of KBOs (R. Gomes).

G.W. Wetherill originally proposed a scenario to sculpt the asteroid belt into its present shape, and A. Morbidelli has carried out numberical simulations based on this. The idea is that planetary embryos of Lunar and Martian masses were formed by runaway grown in the region of the terrestrial planets and in the asteroid belt. In the former region, they gave rise to the terrestrial planets by mutual collisions, while, in the latter region, the combination of mutual encounters and resonant perturbations exerted by Jupiter removed all the embryos in a few million years. In the process, about 99% of the asteroids were removed, with the remaining 1% acquired exceited orbits. This explains the two main characteristics of the present main asteroid belt, the orbital excitation and its mass deficit. Some of the embryos, rich in water and scattered out of the asteroid belt, were accreted by the terrestrial planets, thus explaining the water budget of the earth and the D/H ratio. The relation between resonance and stability in exoplanet systems was discussed.

In this way, the stable regions of phase space have been located, and real exoplanets indeed are found close to the computed stable regions (J. Hadjidemetriou). E. Pilat-Lohinger has investigated stable motions in binary systems for two types of planetary behavior, S-type motion (where a planet orbits around one star) and P-type motion (where a planet circulates around both stars). A detailed analysis was presented of how stability depends on the masses and eccentricities of both the planet and the binary, and also on the orbital inclination of the planet to the binary plane. The results have been applied to the close binaries wehre S-type orbits have been discovered. Astrometry plays an outstanding role in dynamical studies of planetary systems, with capabilities for determining orbits and masses not matched by other techniques. A. Quirrenbach provided a review of ground-based and space-based astrometric programs planned for the next decade and what we can expect to learn from them.

Finally, D. Fischer introduced the data base on more than 100 exoplanets and their statistical properties, indicating the observational selection effects and how the planets found so far carry information about proto-planetary disks, timescales of formation, and dynamical evolution. She also indicated how the results of on-going and future searches can be expected to increase the information available.

Balint Erdi
Virginia Trimble

Early stages of star formation

The main goal of the short meeting, held on the 27-28th August, was to cover relevant open problems related to the understanding of physical processes which lead to the onset of star formation and shape the properties of nascent stellar aggregates. This minisymposium addressed problems related to the timespan in which stars gain most of their final mass – starting with the fragmentation and collapse of molecular cloud cores to the time when the forming protostars become visible in the optical.

Observational and theoretical problems related to these early phases were discussed. Among them were the structure and chemistry of molecular clouds, dynamical and radiation processes related to star formation, slow versus rapid mode of star formation, and formation mechanism of very low mass objects. In addition some phenomena related to later phases, when the objects start to become visible in the optical, such as jets and disks of pre-main sequence stars and the FUor phenomenon were also touched upon. Properties of the star formation process in the early universe were summarized in an invited talk.

Nine invited speakers presented the most important aspects of the topic in invited talks: Zoltan Haiman: The earliest astrophysical structures and the reionization of the Universe Joao Alves: Initial Conditions of Star Formation Ralf Klessen: Star Formation in Turbulent Interstellar Gas Clouds Francesco Palla: The Slow Mode of Star Formation: a Critical Appraisal Philippe André: Submillimeter Observations of Protostellar Cores: Probing the Initial Conditions for Star Formation John Bally: Dynamical and Radiation Processes in Star and Planet Formation Jochen Eisloeffel: The Formation and Early Evolution of Very Low Mass Objects Ray Jayawardhana: Observational Clues to Brown Dwarf Origins Olivier Chesneau, C. Leinert, F. Przygodda et al.: MIDI/VLTI Interferometer.

The summary of this minisymposium was given by Hans Zinnecker. In all, 24 oral contributions and 13 posters were presented during the two days of the minisymposium.

Jochen Eisloeffel and Maria Kun

Synergies in Wide Field Observations

A Total of 19 oral contributions, 8 of which were invited, along with 11 posters were presented by scientist coming from 13 different countries. The meeting aimed at gathering specialists of the most diverse astronomical areas, having in common the need for wide field surveys, and discuss possible synergies to optimize the observing strategies: an issue of special importance for large survey projects which are highly demanding in terms of total observing time.

A wide range of topics was covered, introduced by the invited talks:
Reviewing Transit Hunting Programs: Progress and Discoveries (R. Street),
AGN Variability: Models and Observations (M. Hawkins),
Large Scale Clustering of Galaxies in the SDSS (A. Szalay),
Trans Neptunian Objects searches using Subaru telescope (D. Kinoshita),
Searching for Near Earth Objects (A. Boattini),
Infrared Surveys with VISTA (J. Emerson),
The VLT Survey Telescope (VST) and OmegaCAM (E. Cappellaro),
Using the AstroWise system for Wide Field Imagers like OmegaCAM (E. Valentijn).

The variety of arguments, yet linked by the quest of synergy, made this meeting rather unconventional and stimulated interesting discussions among the attendees, coming also from other JENAM Minisymposia.

Among the various points emerging from the discussions, I want to stress the following. Technological progresses, allowing the construction of wide field imagers with large CCD mosaics, huge data flow and reduction/archiving problems, more and more imply the realization of large public surveys conducted and managed by a central institution/organization, as opposed to the traditional allocation of time to individual, scientifically focused, observational programs. This, in turn, requires that the central organization be more and more capable of recognizing and incorporating into the survey planning, in a synergic way, the scientific requests coming from the community.

The Minisymposium was concluded by a panel discussion focused on synergies in wide field variability surveys, a subject on which the discussion was initiated in a previous meeting held on September 2002 in Lampedusa isle (Italy) (see http://www.mporzio.astro.it/~marco/variables/ and also G. Bono, M. Castellani, D. Trevese 2003 Mem. SAIt, 74, N.4; http://sait.oat.ts.astro.it/MSAIt740403/index.html). Among surveys, monitoring of variable phenomena has special requirements both in terms of time baseline and sampling, so that in some case individual projects can hardly be realized without a synergic effort among scientists of different areas.

Wide field monitoring plays a central role in the scientific case for a telescope like VISTA (http://www.vista.ac.uk/jifbid/case/index.html) and a synergic variability survey for the detection and analysis of Supernovae, Active Galactic Nuclei and variable stars appears in principle quite feasible with the VLT Survey Telescope (VST) (http://www.na.astro.it/~twg/first.html) which is under construction at Paranal.

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Gravitational Astrophysics

The minisymposium Gravitational Astrophysics was intended to bring together researchers from gravitational physics and astrophysics to support activities of the gravitational physics section within the EAS-EPS-joint astrophysics division. The minisymposium had two invited talks and ten contributed ones. Additionally to a poster session with five posters, a discussion session about the speed of gravity concept took place. The scientists contributing to the minisymposium came from Czech Republic, France, Germany, Hungary, Russia, Ukraine, USA, and Yugoslavia. The audience of the various talks varied up to about thirty.

The topics covered by the various contributions were (no titles of talks are given in the following) relativistic reference frames; gravitational (micro-)lensing and deflection effects on electromagnetic radiation, particles, and gravitational waves; dark matter structure and structure formation in the Universe; propagation of high-frequency gravitational waves; gravitational waves from capture of stars by massive black holes and from inspiraling binaries; post-Newtonian expansions of the relativistic binary dynamics and of the relativistic time delay; collapse of self-gravitating systems.

The lively discussions during the two-days minisymposium on gravitational astrophysics showed that the participants had a lot of information to exchange.

Gerhard Schafer

Joint European and National Astronomical Meeting for 2004

JENAM – 2004

13th European Meeting for Astronomy and Astrophysics

13-17 September, 2004, Granada, Spain

First Announcement

The many scales in the Universe

Looking at the Universe at different scales is the most comprehensive way of learning about the Universe. It also serves the purpose of gathering together astronomers and astrophysicists of wide ranging interests in a single meeting. These scales offer different (but complementary) physics for discussion: from the very largest scales, the origin of the Universe (including dark energy, dark matter and exotic particles), to the sun and the solar and other planetary systems. The aim is to encompass all branches of astronomical research from the theoretical, observational, and instrumentation points of view. Learning what our colleagues are doing in other areas while going in depth in our own fields of research is the main objective of this 2004 Joint European and National Astronomy Meeting (JENAM). Furthermore, teaching and popularizing astronomy are important for the present and future of astronomy, thus there will also be a place for these activities.

Besides the scientific sessions the LOC aims at organizing a fair where scientific publishers, industrial companies with interest in astronomy, large astronomical institutions and organizations, and science museums and planetariums may have a place for exhibiting their products and/or facilities, and where professionals of astronomy can contact them directly. This is a new feature from former JENAM's that we hope will increase the interest of the community for attending the meeting.

1. Scientific Organizing Committee - SOC — (An asterisk means that confirmation is pending.) E. Alfaro (Granada, *co-ordinator*), R. Bender* (Munich), G. Bernabéu (Alicante), H. Butcher (Dwingeloo, *co-chair*), M. Castellanos (Madrid), R. Domínguez Tenreiro (Madrid), F. Figueras (Barcelona), M.A. Gómez-Flechoso (Madrid), J. Gorgas (Madrid), B. Gustaffson* (Upsala), A. Herrero (La Laguna), E. Lellouch* (Meudon), V. Martínez (Valencia), V. Martínez Pillet (La Laguna), J.M. Rodríguez Espinosa (La Laguna), E. Salvador (Barcelona, *co-chair*), A. Sánchez Lavega (Bilbao), J. Silk (Oxford), M. Stavinschy* (Bucarest), J.C. del Toro Iniesta (Granada).

2. Local Organizing Committee - LOC — A. Alberdi, E. Alfaro, I. Bustamante, C. Cano Cortés (*secretary*), B. Cantero, L. Lara, S. López de Lacalle, A.C. López Jiménez, F. Rendón, J.F. Rodríguez Gómez, J. Ruedas, J.C. del Toro Iniesta (*chair*).

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3. Agenda — The meeting will be organized into plenary sessions plus up to six parallel sessions covering all astrophysical scales plus instrumentation, teaching and popularization of astronomy (see the Web site for details). Senior invited speakers will review the most important developments achieved in recent years and junior invited speakers will talk more in detail about selected topics. These young speakers are usually proposed and financed by their own institutions, so please send your suggestions to the SOC. A Job Market will also be organized so that potential employers and employees can meet and discuss. Business meetings of the two organizing societies will take place also during the week.

4. Conference Venue — The meeting will take place in Granada's Palacio de Congresos (Conventions Centre) where halls will be allocated for both plenary and parallel sessions; small seminar rooms for executive meetings of the organizing societies have also been booked in within the premises. The facilities include enough additional room for posters, for commercial (scientific press, technology companies, etc) or organizational (ESO, ESA, OPTICON, RadioNET, etc) exhibitors and for coffee breaks. A small cafeteria will also be available throughout the conference hours. Granada can be reached by plain from Madrid and Barcelona airports; the Málaga international airport is 75 min far from Granada by car (buses are also available). Please contact our secretary, Ms. C. Cano (jenam2004@viajeseci.es), if you need any help for transportation. Visa may be required for citizens from some countries. Please make sure that you fulfil the eventual requirements. If you need some help, do not hesitate in contacting the LOC.

5. Accommodation — Lodging of all classes will be available. Information and booking procedures will appear soon on our Web site.

6. Social Events — The foreseen social events are listed on the Web pages.

7. Financial assistance — The registration fee can be waived upon request totally or partially to a number of participants who may need special support. Those participants will be kindly required to present a communication. Following our tradition, the Sociedad Española de Astronomía (SEA) will cover the registration fee of its Junior members. Details will be specified soon on the Web site and on the next EAS newsletter.

8. Registration fee — Please check the information on our Web page.

European Astronomical Society, Versoix, Switzerland. 2,225 likes Ã· 9 talking about this. The European Astronomical Society (EAS) promotes and advances...Â It is with great sadness that we announce the passing of Professor Nichi D'Amico, the president of the Italian Institute for Astrophysics INAF. The latest Tweets from European Astronomical Society (@EAS_astro): "We are pleased to announce the opening of registration and abstract submission for EAS 2021! More details on the conference webpage: https://t.co/x1BLYybEzU". Dr Jorryt Matthee has been awarded a 25,000 â‚¬ MERAC Prize by the European Astronomical Society for the Best Doctoral Thesis in the past three years. The award is by the FONDATION MERAC (Mobilising European Research in Astrophysics and Cosmology), a non-profit foundation based in Switzerland to recognize and support early career astrophysicists. Dr Matthee's thesis presents spectacular results that have transformed the way we see and understand distant galaxies across time.