



NEWSLETTER

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Editorial

Last September the term of the President has finished. Harvey Butcher is the new president and we wish him success. At the same time we decided to change the appearance of the Newsletter gradually. This issue has several new ideas and features but we still have a lot to do for the artistic and colourful improvement.

New features in Newsletter

Bob Fosbury's talk inspired the president, to suggest a column with title **Sceptic's Corner** for which we intend regularly to solicit constructive criticism of developments of importance to our community. Our goal is to provide a forum for disentangling competing interests and discovering inconsistencies in proffered arguments. This first column addresses the Astrophysical Virtual Observatory and we hope sets the tone for future contributions. If you are sceptical about something of potential interest to colleagues, please marshal your thoughts and contact the editor.

News from OPTICON is also a new feature dedicated to providing news of general interest resulting from the activities of the OPTICON Infrastructure Coordination Network. This first contribution focusses on the current discussion on the role of medium-sized telescopes in the VLT and GranTeCan era. Similar news from our second ICN network, RADIONET and European VLBI network are presented. As usual we are giving a short report of the previous JENAM 2001 in Munich, which was a big success. As a participant, I express my congratulations to the local organisers and the colleagues from "Astronomische Gesellschaft" for the hospitality.

I still feel unhappy with the poor participation of young people in our Newsletter. Their corner is not filled this time but it is not abolished. There must be very many skeptical young people. Please speak up! I finally remind you all to support the next JENAM in Portugal, particularly now that our Portuguese colleagues have just joined EAS. The 1st announcement is already included as we always do in the late autumn issue.

Thank you JEAN-PAUL

On behalf of the EAS members and the council members who served within 1997-2001, I would like to express our special thanks to the previous president Jean-Paul Zahn

for being so cooperative and helpful all these years. We had a great time together and we believe fruitful. We wish him a great success to his new role as editor of the EAS series of Publications just established.

Mary Kontizas

NEWS FROM EUROPEAN NETWORKS

OPTICON working group on the future of Medium-sized telescopes.

OPTICON, the Optical Infrared Coordination Network, is an EU funded network which is bringing together European astronomers with a wide range of mutual interests. The overall network, and its various working groups, is described at the inevitable website which is found at www.astro-opticon.org. You are encouraged to visit this site for more information. This article reports on one of these activities, a working group on the future of European 'Medium-Sized' telescopes. This group comprises representatives of almost all the major European observatories, including those which are European funded but physically located outside the geographical boundaries of Europe (eg in Chile and Hawaii).

The advent of a new generation of large telescopes (eg VLT, Grantecan, Gemini etc) requires a re-evaluation of the role and future of Europe's existing 2-4m instruments. In many cases these are fine telescopes, well able to deliver world class science into the foreseeable future. However it is clear that these facilities must be operated within much more restricted financial limits than when they were the flagships of various national astronomy programmes. At the same time, the expansion of the European Union to the east is increasing the pool of talented individuals who might wish to use these facilities. The working group is considering three particular issues.

1) Exchange of telescope time between agencies. A survey of European facilities by Dr Rene Rutten (and available from the OPTICON website) has revealed considerable duplication of basically similar instrumentation at observatories operated by different national agencies. Technical support of these instruments is an overhead on each observatory which could be reduced if some of this equipment could be decommissioned and other examples retained on their respective telescopes for longer observing periods. As a precursor to such co-ordination, efforts are underway to arrange bi-lateral agreements for the mutual exchange of observing time between comparable facilities to reduce the number of instruments which are required to be supported at each site. Ex-

changes between the ING, Calar Alto and the Galileo telescope are already underway or under detailed discussion. For more information contact Rene Rutten (rgmr@ing.iac.es), Roland Gredel (gredel@mpiahd.mpg.de) and Ernesto Oliva (oliva@tng.iac.es)

2) Widening European access. Although most agencies allow observing applications from outside their national communities, there are cultural and practical difficulties in taking advantage of these opportunities. In order to level the playing field and encourage a wider use of European facilities by those astronomers without guaranteed national access, the working group will make a proposal to the next EU framework programme. The precise nature of this proposal is still being defined as we wish to take advantage of experience already built up under framework five by the Instituto de Astrofísica de Canarias (see <http://www.otri.iac.es/eno/>). One possibility being discussed is to propose that the EC fund the provision of time on, and access to, a suite of European operated telescopes (including perhaps those in the Canaries, Calar Alto, France, Hawaii and Chile) under a proposal called 'COMET', the Coordinated Operation of Medium-sized European Telescopes. A number of EU accession countries are already being consulted about the COMET proposal. For more information on this activity, please contact the OPTICON co-ordinator John Davies (j.davies@roe.ac.uk)

3) Education and Outreach. Recognising the attraction of astronomy to young people, the working group is also considering how some of the smaller European telescopes might be exploited for education and training from school-age children up to PhD student level. This effort will be co-ordinated with several robotic telescopes which have specific educational goals. For details of an existing summer school graduate programme see <http://www.iap.fr/eas/schools.html> and for schools education see <http://www.faulkes-telescope.com/> and <http://www.ing.iac.es/PR/schools/>

The working group is a vibrant one, with many ideas being discussed and developed at our meetings, further details of which can be found at www.astro-opticon.org/medium.html

John K. Davies (J.Davies@roe.ac.uk),
OPTICON Project Scientist

RADIONET Infrastructure Cooperation Network in Radio Astronomy

The European Commission in Brussels is funding RADIONET for 4 years at an average level of

euro200000/yr to coordinate activities and new initiatives in radio astronomy in Europe. The main emphasis is being given to activities and initiatives in radio interferometry at centimetre and millimetre wavelengths. The Infrastructure Cooperation Network includes the major radio astronomy facilities in Europe working at centimetre wavelengths and forming the distributed facility, the European Very long baseline interferometry Network (EVN), as well as a number of institutes working at millimetre wavelengths. RADIONET has 11 partners - all radio astronomy institutes - in Finland (Metsahovi Radio Observatory), France (IRAM and Bordeaux Observatory), Germany (MPIFR), Italy (Institute of Radio Astronomy), Poland (Torun Center for Astrophysics), Spain (National Astronomical Observatory), Sweden (Onsala Space Observatory), the Netherlands (ASTRON and the Joint Institute for VLBI in Europe - JIVE), and the UK (Jodrell Bank Observatory). JIVE is coordinator. Nine of the partners are members of the Consortium managing the European VLBI Network. There are also two members of RADIONET from outside the Europe - the Australia Telescope National Facility in Australia and the Herzberg Institute for Astrophysics in Canada. Both participate in the Square Kilometre Array activities. The partners meet formally once a year to review progress and to hear comments from the users of the EVN, and representatives of the European Commission and the European Astronomical Society (EAS). At other times of the year, RADIONET organizes meetings and workshops as part of its coordination activities. Once a year, a Round Table meeting is planned to take place at JENAM with OPTICON, RADIONET's counterpart in optical/infrared astronomy, to discuss priorities for ground-based astronomical instrumentation and other issues. The first such meeting took place at the Munich JENAM.

RADIONET will focus on coordinating the more effective use of the European VLBI Network (EVN), and building up the necessary scientific, technical and organisational consensus for the future major facilities in radio astronomy: the Atacama Large Millimetre Array (ALMA) and the Square Kilometre Array (SKA). Instrumental developments in radio astronomy in the future are focusing primarily on greatly increasing the sensitivity of the measurements by increasing the collecting area of the telescopes.

Specific objectives of RADIONET are:

1) EVN

The EVN has recently completed a major upgrade of its facilities, including the bringing into operation of a state-of-the-art 16-telescope data processor at JIVE. To capitalize on these substantial national investments, RADIONET is coordinating the standardization of ob-

servation and maintenance procedures at each telescope and, where necessary, their modernization so that operations are brought to the same levels of good practice throughout the EVN. The aim is sustained reliable operation for the Network as a whole. Workshops are being organized by the EVN Technical and Operations Group on operational practices, optimum maintenance, and automated systems, to be followed by implementation at the telescopes. Another study is looking into replacing "delayed data transport" (using tapes or computer hard disks) with optical fibre links from the telescopes directly to the data processor.

2) VLBI Schools and Symposia

RADIONET is helping coordinate VLBI Schools to disseminate knowledge of VLBI techniques, as well as EVN Symposia to provide a forum for presenting new results, particularly for young astronomers in Europe. These take place in alternate years with EVN institutes each taking a turn in hosting one of these activities.

3) ALMA

During the current design and development phase of ALMA, topical workshops are being organized with RADIONET support, on technical and scientific topics which impact the ALMA science or technical cases.

4) Square Kilometre Array (SKA)

In the preparatory phase of this global project, the scientific case for the SKA is in the process of being refined, a number of technical solutions to providing an affordable 106 square metres of collecting area are being developed, and potential collaborations are being mapped out. RADIONET is providing a framework within which the discussions in Europe can take place with the aim of generating a formal proposal for the facility at the end of the 4 year period of RADIONET funding or shortly thereafter.

Richard Schilizzi (RadioNET Coordinator)

REPORT FROM JENAM 2001

This year the 10th Joint European and National Astronomical Meeting was held in Munich, together with the 75th Annual Assembly of the Astronomische Gesellschaft. It was hosted by the Ludwig-Maximilian Universität, and drew an attendance of nearly 600 people, who were offered a wide choice of topics between the ten mini-symposia and the five joint discussions, plus a colloquium on European astronomy in the 20th century.

All sessions were of great interest, right from the beginning with the lectures of the awardees of two highest distinctions of the AG, that of the Karl-Schwarzschild medal, Prof. Keiichi Kodaira, and that of the Ludwig-Biermann Förderpreis, Dr. Stefanie Komossa. Dur-

ing the following days, the participants particularly enjoyed the highlight talks which, in the tradition of AG, were delivered by outstanding junior scientists, a formula that EAS will certainly keep for its future meetings. To the organisers of this successful event, and especially to the members of the local organising committee, we express again our warm thanks.

Sadly, we shall remember this JENAM also because it is there, in Munich, that we learned the terrible attacks against New York and Washington. We immediately sent a message to Annela Sargent, President of the American Astronomical Society, to convey our sympathy to all colleagues from the United States. In her reply, she told us how deeply she appreciated our concern, and that our expression of friendship was a light in a very dark time. We don't know yet how the world will overcome this crisis. But it is our hope that international cooperation, to which our two societies are dedicated, will help people over the world to better understand and respect each other.

Erwin Sedlmayr and Jean-Paul Zahn

X-ray Astronomy from the Local Bubble to AGN

The meeting was very well attended (over 50 participants) and subdivided into 4 sessions, covering X-ray emission from a wide range of astrophysical objects in 24 talks and about the same number of posters: novae, supernova remnants, Local Bubble, superbubbles, Galactic Ridge and jets, galactic halos, external galaxies (e.g. LMC, SMC), starburst galaxies, ULIRGs, AGN and clusters of galaxies. The recent results from XMM-Newton and Chandra as well as their interpretations by new models were clearly among the highlights of the minisymposium.

In Tycho's remnant XMM EPIC pn observations showed the passage of the reverse shock heating the ejecta and revealing emission lines from highly ionized species. Shadowing experiments of nearby clouds allows to disentangle Local Bubble emission from galactic background. Recently analyzed XMM EPIC pn data have yielded a clear signal of foreground oxygen line complexes between 0.5-0.7 keV, in clear disagreement with standard Local Bubble fit models. A multi-supernova origin of the Local Bubble has been convincingly argued for by detection of a moving group of massive stars crossing it about 15 million years ago. A new analysis of Galactic Ridge data have shed considerable doubt on a pure thermal origin of the emission. The nature of X-ray sources in the LMC has also been

reviewed and the big effort of identifying their nature has been stressed; most of them remain still unknown. However, considerable progress was reported owing to deep XMM observations, which enabled to determine X-ray properties down to flux levels of $1E - 14 \text{ erg/cm}^2/\text{s}$.

Galactic halos were investigated in several theoretical papers, emphasizing dynamical aspects of cosmic rays, the hot outflowing gas (in a fountain type), and the signature of non-equilibrium ionization in X-ray spectra. Interesting new results of AGN came from XMM line spectroscopy, in particular from Fe-K lines in emission and absorption. A new discovery was the sudden drop of the power law continuum at the energy of the neutral Fe-K absorption edge in three objects. A possible interpretation is the partial covering of the central emission region by ultra-dense clouds. There was also a lively discussion about the previous claim of relativistically broadened Fe-K emission lines. Finally, recent XMM observations have cast serious doubts on the canonical cooling flow picture, since the expected cooler X-ray emitting gas phases have not been detected.

Dieter Breitschwerdt (MPE Garching)

Massive Stars, the ISM, and Chemical Evolution

This minisymposium featured discussions of the properties of massive stars, their interactions with their surroundings (individually and as groups), and large-scale characteristics determined by the actions of massive stars. Among the 17 talks and 8 posters were presentations of fundamental physics aspects, specific issues of stellar evolution, and observational findings with their interpretation.

It was evident that our physical model of the interactions of massive stars with the interstellar medium still is very sketchy and far from the complex reality. Details were reported from Eta Carina, where the comparison of X-ray with optical emission hints for Fe enrichments in FMKs. Dust extinction measurements showed that on large scales the Galaxy is warped also in its dusty component. On intermediate scales, the discussions showed that proper treatments of interstellar turbulence remains a challenge. IR studies on SN1987A confirm that supernovae produce primary interstellar dust.

Improvements of stellar models were discussed in various aspects: For late evolutionary stages with blue loops were discussed, and the accuracy of stellar at-

mosphere models with recent updates from rotational mixing and model atom data when compared to observations of massive stars. It seems difficult to find appropriate reference stars for such comparisons, but indications are that within such observational biases and model uncertainties the agreement is still satisfactory, quantitative spectroscopy is feasible. As a special application, the distance determination based on a WD spectral model was presented.

The discovery of Uranium in an old halo star pioneers the study of first chemical-enrichment events in the early Galaxy. Later on chemical evolution becomes more complex, e.g. the disagreements in Nitrogen abundances from HII regions and Be stars in the LMC are puzzling. For cosmic chemical evolution, new UV measurements of deuterium present an interesting perspective.

Roland Diehl (MPE Garching)

Particle and Gamma-ray Astronomy

The program of this mini-symposium was aimed at highlighting the scientific achievements and potentials of up-coming projects in the high-energy domain. This involves not only projects in gamma ray astronomy, but also in related fields using neutrinos with AMANDA (growing to the square-kilometer sized ICECUBE at the South Pole) and ANTARES in the mediterranean sea, as well as ultra-high energy particles with AUGER. Traveling in straight lines, these particles carry valuable astronomical information. A growing cross-disciplinary community of astronomers, nuclear physicists, and elementary particle physicists enhance the merits of these detectors to include research in fundamental physics, and develop new detectors at a rapid pace. Contributions from Russia, Armenia, and eastern Europe play an important role in this field of research.

The main emphasis of the mini-symposium was on the INTEGRAL mission of ESA, soon to be launched and with an observational program tightly connected with the astronomical research in other wavelength regimes. INTEGRAL measures photons of MeV (electron rest mass and nuclear binding energy) energies which play a fundamental role in the astrophysics of nucleosynthesis, accretion, anti-matter annihilation, gamma ray bursts, and pulsars. A diversity of objects, both Galactic and extragalactic, show a peak in their spectra at these energies revealing details about physics in the most extreme places in the Universe.

Major ground-based gamma ray detectors, such as

H.E.S.S. in Namibia and MAGIC on the Canarian Islands for gamma rays above a few tens of GeV, satellite-borne telescopes, such as AGILE and GLAST in the GeV domain, and MEGA connecting the MeV and the GeV energy ranges will provide a wealth of new astronomical information in the next five years, and a strong community has grown to use this information for their pioneering research. The sensitivity improves by orders of magnitude with these new detectors, and very likely this will bring up new and interesting sources to be studied. It will be a time of discovery.

Karl Mannheim

(Universitäts-Sternwarte Gottingen)

Formation of Extrasolar Planets

This Mini-Symposium was organized with the intention to bring together people from observational astronomy and computational and laboratory astrophysics in order to review the status of the field, to evaluate promising future research directions, and to foster new collaborations across the fields.

The general review talk by Michel Mayor on “The search for extraterrestrial planets” formed an excellent basis for the presentations and discussions during the mini-symposium. The three sessions were introduced by review talks delivered by W. Benz on theoretical aspects of planet formation, T. Mazeh on observational results, and G. Wurm on experiments dealing with the first stages of planet formation from micron-sized grains to planetesimals. Planet-disc and planet-planet interactions were in the focus of theoretical talks. New search methods such as transits, direct AO imaging, and interferometric methods were discussed.

The many participants of the symposium had a lot of interesting discussions and we all realized how large the momentum in the field of extrasolar planet research presently is. The more than 20 posters presented results of impressive quality. Altogether, the mini-symposium was a great success. It should also be noted that we held a press conference during the JENAM meeting with the topic of extrasolar planets.

Thomas Henning

(Astrophys. Inst. und Univ.-Stern. Jena)

Evolution of Galaxies

The MS5 continued the successful history of parallel sessions on that or closely related topics which started at the JENAM-1998 in Prague. Meetings on Galac-

tic and Stellar Dynamics also took place at the JENAM's in Toulouse (1999) and Moscow (2000). This time the scope of the entire JENAM was so broad, that we also included observations and spectrophotometric modelling into the scope of the mini-symposium, while its predecessors had been mainly dominated by stellar dynamics.

So the agenda of MS5 related to galaxies as the building blocks of the luminous universe, which provide one of the most important links between the early universe, its epoch of structure formation, and the present day universe, via their enormously rich and various morphological, chemical, and dynamical properties. As subtopics were explicitly highlighted stellar and galactic dynamics, faint and low-surface brightness galaxies and galaxy evolution (in particular spectrophotometric modelling and population synthesis).

Being one of the few clearly extragalactic sessions MS5 had an enormous pressure of contributors. Measuring in the number of poster and talk abstracts submitted MS5 accounted for about 30% of the entire JENAM-2001, but it was only one out of ten MS and five JD's. So there was a great difficulty that even highly qualified authors and very interesting subjects could not be given time for a talk, and the poster sessions were too short and clearly need a better structuring next time. In such a situation the impartial and highly experienced advice of our Scientific Organising Committee (Advisory Committee would better describe its function) is very much appreciated.

A complete abstract booklet including also those abstracts, which arrived too late for an inclusion into Astron. Gesellschaft Abstract Series Vol. 18, will appear soon on <http://www.ari.uni-heidelberg.de/interessantes/jenam2001/abstract.ps.gz>
Rainer Spurzem, (ARI Heidelberg)

Magnetic Activity in Stellar Evolution

The most recent results in the field of stellar magnetic activity such as observations from the optical to the X-ray regime were reported probing activity on stars throughout the Hertzsprung-Russell diagram.

An introduction to the topic was given by E. Guenther who summarized our current observational and theoretical knowledge of magnetic fields on pre-main sequence (PMS) stars.

The first afternoon was dedicated to studies in the optical. The importance of photometric observations that

can provide the rotation period of spotted stars was demonstrated for both young pre-main sequence stars and post-T Tauri Stars, i.e. PMS stars in their latest phase of contraction (talks by Grankin, Huélamo). Spectroscopic studies were used to obtain insight into very different aspects of activity, e.g. searching for young stars with help of lithium absorption (König), studying Ca II H+K emission in giants (Konstantinova), and applying absorption lines to infer the differential rotation of stars (Reiners).

The transition to stellar activity in the outer atmospheres was made by EUVE observations of AD Leo (Sanz-Forcada). A number of talks on new results from both large X-ray observatories, *XMM-Newton* and *Chandra*, formed the second part of the symposium. The presentations ranged from individual case studies to a discussion of the collective properties of X-ray activity (with talks on the X-ray properties of stars in open clusters by Preibisch, Pillitteri, Briggs). The cross-section of presented X-ray emitters included such different objects as brown dwarfs (Martín), intermediate mass PMS stars of HAeBe type (Hamaguchi), and giants (Hünsch).

Several posters completed the picture that stellar activity is ubiquitous throughout the stellar lifetime.

Beate Stelzer (MPE Garching)

Accretion Turbulence and MHD

As part of the JENAM 2001 in Munich, Germany, a minisymposium on "Accretion, Turbulence and MHD Stability and Instability in Astrophysical Flows" was organized by Jean-Paul Zahn, Paris, France, Hans Ritter, Garching, Germany, and the author of this short report. The minisymposium was structured as two 90-minute sessions on September 10 and 11, with 5 talks each. Both sessions were attended by about 35 participants. In addition to the talks, 19 posters were submitted of which 12 were actually presented in the poster sessions. The talks as well as the posters concentrated on three major topics:

The theoretical understanding and modeling of accretion processes, in particular in the form of disks: In this context various aspects of the treatment of (turbulent) viscosity both hydrodynamically and magnetohydrodynamically and the influence of self-gravity were addressed, as well as the importance of self-regulation. In quite some detail,

The role of dust and molecules in accretion and turbulence was discussed. Finally,

Applications to different classes of objects were pre-

sented in talks and posters. The applications discussed ranged from close binaries, neutron stars, and star forming regions, all the way to galactic disks and outflows and jets from the galactic nuclei.

Wolfgang J. Duschl (ITA Univ. Heidelberg)

Hot Subdwarfs, White Dwarfs, and Low-Mass Star Evolution

This symposium was organized in four sections to highlight several new and exciting results. Four sessions were devoted to four "hot" topics in the field. Each session began with a review talk followed by four or five shorter oral contributions presenting brand new results. In addition 28 posters were on display.

1) The pulsations of subdwarf B stars (EC14026 stars) were summarized by Stephane Charpinet who pointed out that the theory for pulsations of EC14026 stars has been remarkably consistent with the observations, so far. He reported first exciting results of sdB asteroseismology.

2) Binary evolution calculations for the origin of low-mass helium white dwarfs were presented by Marek Sarna. The presence of low-mass helium white dwarf secondaries in millisecond pulsar binaries allows to determine the age of the systems independently of the rotational history of the pulsars.

3) Pierre Maxted reviewed the observations of sdB stars and white dwarfs in binaries and highlighted the measurements of orbital periods of close double degenerates, possible SNIa progenitors, the evidence for the very high binary fraction among sdB stars, and the identification of new Sirius-type binaries.

4) Matthew Burleigh reviewed the impact of FUSE on the spectroscopy of white dwarfs and discussed results from FUSE and HST programmes investigating the composition and structures of hot DA white dwarfs.

50 participants attended the sessions on average. Lively discussion and fruitful exchange of ideas made this mini-symposium a successful one.

Stefan Dreizler (Univ. Tübingen)

Large Telescopes for Solar Physics

The Mini-Symposium was dedicated to the discussion of plans for new large telescopes for solar research. Special

emphasis was given to problems of new technologies, of the design of telescopes and post-focus instrumentation in particular, but scientific goals, data treatment and interpretation have been discussed as well.

MS10 comprised eight talks and seven posters. About 40 persons attended the meeting. The talks in the first session ‘New Solar Telescopes: Ground-based and Space-borne Projects’ presented the design of ‘GRE-GOR’ (1.5 m telescope, Germany) and of the ‘Advanced Technology Solar Telescope’ (4 m, USA) as well as of ‘SUNRISE’ (balloon-borne instrument for spectropolarimetry) and of ‘Solar Orbiter’ (High-resolution ESA mission). The talks of the second part were focused on the ‘Experiences With Existing Telescopes - Conclusions for New Instrumentation, Data Treatment, and Interpretation’.

Most of the papers of MS10 and of the Joint Discussion 1 (Astronomy with Robotic Telescopes: Present and Future Projects Convenor: Klaus G. Strassmeier, AIP), will be published, after being accepted by the referee, in AN 323 (2002) 1, the first issue of the journal ‘Astron. Nachr. / Astron. Notices’ in 2002.

Jürgen Staude, Astrophys. Inst. Potsdam (AIP)

Astronomy with Robotic Telescopes: Present and Future Projects

JD1 comprised ten speaker and six posters subdivided into two sessions with five talks each. Session-1 concentrated on robotic facilities in Europe that are currently either under design or under construction while in Session-2 emphasis was put on science and experience reports with robotic telescopes under routine operation.

An average of 50 persons from various countries attended the talks.

K. G. Strassmeier (AIP Potsdam)

Virtual Observatory

The Joint Discussion JD-2 on the Virtual Observatory (VO) held during the JENAM-2001 meeting on September 13, 2001 in Munich was well attended by almost 100 scientists demonstrating both the world-wide interest in VO activities and the strong desire to take part in the development and the usage of this enterprise. The meeting was opened by Wolfgang Voges (MPE-Garching), the convenor of this session. Peter Quinn (ESO-Garching) started with general remarks

about the concept of a Virtual Observatory and presented the ESO-led Astrophysical VO project.

Andy Lawrence (ROE-Edinburgh) continued with an overview on AstroGrid, a project confronting the technical challenges related to the efficient utilisation of distributed archives and computer resources. Gerry Gilmore (IoA-Cambridge) discussed OPTICON, the EU Optical Infrared Coordination Network for Astronomy. Francoise Genova (CDS-Strasbourg) introduced the concept of “Interoperability” as the central issue to enable connections to archived data. Simon Garrington (JBO-Macclesfield) explained plans to make archived Radio data available.

Piero Benvenuti (ESA/ESO-Garching) gave details on the first experiences with the EU-funded Astrovirtel program, in which scientists receive technical, scientific and financial support for an approved proposal to use archival data. Naoki Yasuda (NAO-Tokyo) gave an overview of VO activities being undertaken in Japan. Wolfgang Voges (MPE-Garching) introduced the German-VO proposal (GAVO) as a platform to support astronomical research in Germany and as the German contribution to international activities in the creation of a Global Virtual Observatory.

Simon White (MPA-Garching) discussed simulations within the VIRGO project which could be used to compare observations and theoretical models. Finally, the Devil’s Advocate point of view was expressed by Bob Fosbury (ESO-Garching), giving an excellent basis for a long discussion session concerning the necessity of the VO, and its relative merits and disadvantages compared to traditional astronomical research. The meeting was closed by a few poster presentations.

W. Voges (MPE Garching)

European Astronomy with Small Telescopes

JENAM 2001 was devoted to large telescopes, but, in Europe, many small telescopes are still working. A special Joint Discussion offered the possibility to participants to present their programs and, especially, to comment the new ones. The success of the Hipparcos, and the perspective of future astrometric space missions offer endeavors to many observatories and Universities that possess small instruments. In its last General Assembly, the IAU has set up a Working Group on “The Future Development of Ground-based Astrometry” (<http://www.astro.ro/wg.html>) to suggest scientific programs that can still be successfully performed with such instruments. The present JD is the first occa-

sion to exchange experience and reflect on the best use of existing instruments. During the formal presentation, various domains in which small instruments are used to obtain important scientific data were highlighted. The speakers insisted on the importance of continuous observations of large and small satellites or for minor planets in the Solar system. Some modified astrolabes are used for solar diameter observations. Small telescopes equipped with good photometers make a very valuable contribution to the monitoring of variable stars. In absence of many large facilities, astronomers from former Soviet Union and Eastern countries have a great experience of the use of small telescopes (1 meter). A large number of applications in astrometry and astrophysics could still bring important results, which are not in the programs of larger telescopes. The oral presentation was followed by a round table. Jean Kovalevsky led the discussion aiming at selecting the fields of research that are the most fit to be undertaken using small telescopes. Such programs should lead to useful observations and important scientific results. This concerns particularly University observatories, which must train their students in such projects and produce papers for international journals.

A common characteristic of many programs is the necessity of co-ordinating them in some network. This is the case of observations of occultations of stars by minor planets, Earth gazing asteroids, mutual events of Galilean satellites, light curves of variable stars or rotating minor planets, etc. Another characteristic of programs is their long duration, even if intermediate results must generally be released as one goes along. This concerns long period variable stars, minor planet monitoring, double with star formation regions. Observations should be coupled with a reduction of old plates. The subgroups of the IAU Working Group are requested, within their competence to complete it and give rationales for undertaking any proposed program.
Magda Stavinschi, Jean Kovalevsky

World Space Observatory

The participants in the Joint Discussion 4 on the World Space Observatory shared the scientific discussions on why a new Ultraviolet Observatory is important for the future of Astrophysics. During 4 sessions spread over Friday afternoon and Saturday morning the questions to be addressed by the World Space Observatory (WSO/UV) were discussed. Some of the innovations in project definition were presented in the oral sessions. Most of the technical and instrumental details for this

1.7 m UV (115 nm to 310 nm) telescope (launch into L2 in 2007) with a spectroscopic resolution extending from 1,000 to 55,000 and UV imaging at 0.07 arsec were presented in the posters, so that the discussion could concentrate on the science with the WSO/UV mission.

It is impossible to address here all the exciting astrophysics which was presented but we will indicate the global astrophysics which can only be done with a mission like WSO/UV, as a consequence of its instrumental, orbital and operations philosophy. Of course a very important part of the WSO concept is the very open nature of the project which will make it possible for scientists in all countries to participate independent of the industrial or other development level.

The study of variable phenomena is one of the most powerful tools for astrophysics. In this context the WSO/UV project supplies the capabilities to study accretion and mass exchange phenomena on time scales extending from milliseconds to years (i.e. over a time resolution range of 10¹⁰). These same capabilities will allow to study stellar and galactic scale systems. The stars and AGN's supply observational access to an equally dynamic range of gravitational physics of 10¹⁰ solar masses. This can be combined with the environmental information obtained by the spectroscopy from different ionization stages which allows to cover effects of violent processes on their near and far environment. Together these will supply the scientists with a range of tools for the study of evolutionary behavior of all known components of the Universe, which is unique for WSO/UV. Combining its wavelength range with the major telescopes currently available for other wavelength domains, we can be assured that future generations of scientists will be able to make the observations, which are essential to interpret, in terms of the physical reality in the Universe, the major statistical data sets which are now being collected.

URL: <http://wso.vilspa.esa.es>

W. Wamsteker (ESA/VILSPA, Madrid)

Gravitational Physics

The Section *Gravitational Physics* of the Joint Astrophysics Division between the European Astronomical Society and European Physical Society, founded in the year 2001, had its first meeting at JENAM 2001 in form of a Joint Discussion. The Joint Discussion comprised 10 talks, nine invited ones, and one contributed. Two of the talks nicely complemented the plenary talk of K. Danzmann on gravitational wave astronomy with GEO and LISA.

D. Enard (VIRGO collaboration) gave an overview of gravity waves detectors in Europe and in the world, and G. Prodi (Trento Univ.) reported on a recent gravitational wave search by the observatory of resonant detectors. The third talk in experimental physics was delivered by T. Sumner (Imperial College). He thoroughly summarized the proposed space missions to test the equivalence principle.

The invited talks in theoretical physics comprised several topics: the structure of radiative spacetimes (J. Bičák, Prague), the motion of compact binaries (G. Schäfer, Jena), decoherence through gravitational wave background radiation (S. Reynaud, Paris), instabilities of rotating and pulsating relativistic stars (K. Kokkotas and N. Stergioulas, Thessaloniki) including a detailed discussion of the role of differential rotation in the r-mode instability (L. Rezzolla, Trieste). Although running quite late in the week, up to about 30 scientists were attending JD5, asking many questions or contributing interesting remarks. To keep within the schedule of the program was not an easy task.

G. Schaefer (Jena)

Special Colloquium:

European Astronomy in the 20th Century

A Special Colloquium on the History of Astronomy was held on Friday, September 14 (afternoon session) and on Saturday, September 15 (morning session), 2001. It gave the opportunity to review the development of astronomy in Europe during the last century. The colloquium was organized by the Working Group for the History of Astronomy in the Astronomische Gesellschaft with support by other European astronomers. 15 oral papers and 7 posters were presented to an audience of about 60 participants. The oral papers covered the following subjects:

- 1) Development of special fields: X-ray astronomy (J. Trümper), gamma-ray astronomy (V. Schönfelder), radio astronomy (W. Reich), extragalactic research (H.W. Duerbeck), compact objects (A.F. Zakharov), the impact of new media (A. Heck)
- 2) History of observatories: Astronomical Observatory of Bucharest (M. Stavinschi), Strasbourg Astronomical Observatory (A. Heck), Early German plans for a southern observatory (G. Wolfschmidt), ESO (2 papers by C. Sterken)
- 3) The work of individual astronomers: Vitold Karlovich Ceraski and Vladimir Borisovich Nikonov (I. Pustynnik, A. Mironov), Eugen Goldstein (M. Hedenus), Ernst Öpik (I. Pustynnik), Milutin Milankovic (M.S. Dimitrijevic).

The poster papers covered a wide range of subjects from astronomy in Serbia (M.S. Dimitrijevic), the Eros

opposition of 1900 and solar parallax measurement (L. Pigatto, V. Zanini), Karl Knorre (G. Petrov, G. Pini-gin), and philosophical aspects (J.F. Quintano), to archaeoastronomy (B. Steinrücken), Mithraic astronomy (E. Bon, M. Cirkovic, I. Milosavljevic), and the last descendant of Tycho Brahe in Romania (M. Stavinschi). A come-together on Friday evening gave the opportunity for further discussions.

Wolfgang R. Dick (Germany)

Sceptic's Corner

The Astrophysical Virtual Observatory

The Devil's Advocate view

(Based on an invited presentation at the JENAM/AVO meeting in Munich in September 2001)

The Oxford English Dictionary defines Devil's Advocate (L. *advocatus diaboli*) as: one who urges the devils plea against the canonization of a saint, or in opposition to the honouring of any one; hence, one who advocates the contrary or wrong side, or injures a cause by his advocacy. Much though I respect my colleagues, I feel it is unnecessary to argue the first of these definitions, nor do I wish to advocate the wrong side who would? So I am left with the option of injuring their cause by advocacy. Here goes...

From what I gather, listening to the AVO spin-doctors, AVO promises the following:

1. To take the data collected by teams for specific projects and manage/massage it in such a way as to be of general use.
2. To develop tools to allow the extraction of data products which are easy to use and even to do the processing in advance. "...high-level tools and procedures required for translating science ideas into queries to be fanned out to the various sites..."
3. To make the archives look similar and able to talk to one another interoperability.
4. To create a hardware/software/network infrastructure to enable large projects. "...pre-processing of the data at the archive site before shipment to the user..."
5. To facilitate mining the ensemble of data from many

sources in order to make new discoveries.

Let us examine each of these points in turn.

1) If the data in an archive are neither well-calibrated nor well-described, they are of little value for the AVO. If the data ARE in good order, the AVO is of little extra value.

The point here is the BASIC requirement to get the individual archives into good shape; if they are not, no amount of AVO icing will make the cake. If the archives are as excellent as they should be, an individual scientist or collaboration will be able to navigate them with relative ease.

2) If the development of a tool is not driven directly and specifically by the science project, it will probably not do the right thing. At least, you will not KNOW whether it has done the right thing. My worry here is the great cost and inefficiency of developing general-purpose high-level tools. I do not argue against the development of basic data reduction/analysis systems - although their gestation has usually been a long and painful process with some expensive still-births. Rather, I worry about the application of sophisticated algorithms which may have been tuned to archive goals different from the one the user is seeking. Would you use a catalogue of faint galaxies produced by a photometric extraction code to measure Cosmic Shear?

3) Interoperable archives. Well, I'm not exactly sure what it means but it sounds like a splendid idea. Go for it! Do we need something called AVO for that?

4) As observational projects become larger in scale, we shall undoubtedly need an improved hardware/software/network infrastructure. This has been happening for as long as I can remember but the only use of the word "virtual" that I recall was in the expansion of the acronym VMS (apologies to young readers who were conceived in the unix era). My question is simply: "Should astronomy pay for and implement this?" There are much bigger players out there in the world.

5) To facilitate making new discoveries using data mining tools. Well, OK... But can you anticipate what scientists will want to do? Do we really need more than well constructed and populated archives? I would advocate ONLY making mining tools to perform tasks required by highly-rated projects. (To give credit where due, I believe that this is what the ASTROVIRTEL project is attempting). But will the AVO peer review demand standards as high as those imposed in the ob-

servatory peer review?

I have heard the occasional self-congratulatory boast by some of my European colleagues that they felt themselves "well ahead of the Americans in the AVO development". One might reflect on why this is so. One interpretation is the differences in funding mechanism on either side of the Atlantic. In the US, it is easier to channel research funds directly into successfully peer-reviewed science projects: look at the NASA funding of HST science as an example. In Europe, big organisations like to channel funds into grand-sounding global initiatives and expect that the science will fund itself institutionally. The danger here is that if European AVO is funded and the observing projects are not, Europe ends up supporting the "derivative" proposals while others do the "cutting edge" science.

My final plea and conclusion is the following: Focus on the quality of the basic resource the content and description of the archives. Dont try to anticipate the next layer, let the developments flow from demonstrably successful scientific initiatives. If the AVO is needed, it wont work. If AVO will work, it is not needed.

Remember. Our subject has a limited intellectual resource. Any effort spent on derivative science means effort taken from the cutting edge. Observing programmes designed to fill archives are unlikely to win prizes.

Bob Fosbury,
Space Telescope - European Coordinating Facility,
Garching.

MESSAGE FROM THE PRESIDENT

Prior to my election during the Munich JENAM as your new President, I approached a cross-section of our community on their views of what kind of Society would best serve their needs. It will surprise no one to learn that there was a great diversity of responses, many of which at present are too costly to implement.

However, one commonly heard view, expressed in a variety of different ways, was that the added value of the EAS (beyond what the various national societies provide) is most likely to be found in improving the flow of information across the continent. The most glaring example of this need must surely be one person's observation, that many of us know more about the priorities and plans of our colleagues in the USA than those of our European neighbours.

First and foremost, therefore, a prime goal for the near

future should be to ensure that the plans and priorities in our individual countries are made known. Indeed, many of our national communities have prepared documents setting out their priorities for new investments and planned research initiatives in the coming 5 - 10 years. Gathering, summarizing and distributing this information will be a first step. My predecessors have organised the Newsletter, Website and the JENAMs, so we already have the tools in place to do this. We have only to commit to making a concerted effort. I propose we try to do this during the coming year and to present the result before the Porto JENAM next September.

Also, of increasing importance as Europe expands is news and background information about what is happening at the European Commission. In addition to fellowships and workshops, we now have two infrastructure networks supported by the Commission - OPTICON and RADIONET - in which many of the main players, including our international organizations - ESA, ESO and JIVE, participate. These networks provide a forum to meet and plan for the future as well as to obtain modest funding for specific research projects. The promise, however, is that they will ultimately evolve into the channels by which major funding for new large telescopes can be secured. That is, the Commission clearly has ambitions to play a central role in financing future large scientific projects in Europe and these networks are providing valuable input that will guide policy and priorities.

What could be the role of our Society here? We can at least ensure that our members across Europe are aware of developments and of what they might mean for their research. It is not trivial to interact successfully with the European Commission and we want as many of its resources as possible to go to astronomy. Making our members aware of relevant information sources and of colleagues looking for partners can help. Again, the intention will be to provide such information in future Newsletters, on the Web and at our JENAMs.

Several other matters arose during my conversations, which I would like to pursue during my tenure as your President.

We arguably have three communities, whose activities and priorities develop to some extent independently of each other. I am speaking of the ground-based optical-IR community, the space research community and the radio astronomy community. Coordination between and integration of the first two communities have increased noticeably in recent years, even though their finances and decision-making remain quite separate. The radio

community is somewhat less well integrated, despite the general enrichment this would bring to all three communities. As President, I would like to use our Society as a forum to promote better coordination and integration of the three communities. If successful, you will start to see a wider cross-section of our science being profiled at our JENAMs and other forums.

Second, scientific discovery is not predictable but governments require long term planning. Our community would therefore be wise to lobby for a balanced suite of research facilities, effectively phased in time to make them affordable. Where are the gaps in our future plans? Are organizational dynamics distorting the priorities of research? Such questions are important and should be widely discussed. Might our Society become a forum for such discussion, perhaps even a kind of community conscience where independent comment on priorities and policy can be made? I have raised this possibility in Council with a view to identifying an appropriate role in this area. A first concrete step will be a column premiering in this issue of the Newsletter, "Sceptic's Corner", in which constructive criticism of developments of general interest will be solicited. We have an excellent first contribution, one that sets the standard for future efforts. If you have the urge to comment on a specific matter, let Mary Kontizas or me know.

Finally, I think most of us will agree that astronomy has become Big Science and that our forefront infrastructures will increasingly become not only international but even global in scope. We have only to look to ALMA now and the Square Kilometre Array later in the decade to see the unavoidable direction in which things are headed. There arises the question, Should we in Europe let this globalisation occur when it appears unavoidable to obtain financing, or should we take the initiative and build on our experience of successful collaborations between different cultures to accelerate and guide the process to our own benefit? Collaborations usually work best when forged at the start of projects, so my feeling here is that our community could have an important catalyst role to play in the process of the globalisation of astronomy. I will be searching for activities our Society might undertake to help lay the foundations for making future global projects possible. I will be most interested to hear more of our members' ideas on this matter.

I hope I have given a flavour of possible agenda items for our Society in the coming years as I currently see them. Let me close by saying, I look forward to working with Council and with our administrative support team

to addressing these and other issues that may arise, as well as to continuing our JENAM, Newsletter and other activities.

Harvey Butcher

WHO IS WHO IN THE EAS COUNCIL

HARVEY BUTCHER



Prof. Dr. Harvey Butcher graduated in 1969 from the California Institute of Technology, and he received his Ph.D. in 1974 from the Australian National University, where his dissertation was titled "Observational Aspects of Nucleosynthesis". Since 1983 he has resided in the Netherlands, where he is currently Director of the Netherlands Foundation for Research in Astronomy (ASTRON) and Professor of Observational Astronomy at the Kapteyn Institute of the University of Groningen. His research interests include galaxy evolution and advanced instrumental techniques in both optical-IR and radio wavelength regions.

LAUNCH OF THE EAS PUBLICATIONS SERIES

We have the pleasure to announce that EAS is starting a series of volumes entitled "EAS Publications Series". These are primarily destined to publish the proceedings of selected scientific colloquia which take place during our JENAMs (parallel sessions or mini-symposia), but other colloquia occurring in Europe (and elsewhere), and workshops or summer schools will be considered as well. Of course they will have to meet high scientific standards, in order to reach a readership beyond the partic-

ipants themselves.

Our partner in this venture has been chosen at the last Council meeting in Munich, after consulting several publishers. It is EDP Sciences, which is currently publishing Astronomy and Astrophysics.

The public price per volume (in hard cover) is set at 50 euros (plus postage), for 350 pages. The members of EAS will benefit of a 20% rebate. This rebate will amount to 30% for the participants of the meeting (its organisers will have to purchase a minimum of 60 volumes, the cost being included in the registration fees).

The scientific editor of the series is Jean-Paul Zahn. Please contact him if you wish further information, or if you plan to publish proceedings in the near future.

Jean-Paul Zahn (easp@edpsciences.org)

MESSAGE FROM THE TREASURY

Development Fund

The last 5-6 years has seen a progressively healthy and active development for the financial situation of EAS. The stabilized income has enabled increased activity and will make it possible to plan on more outgoing initiatives towards higher visibility of EAS on the European scene. As can be seen from the numbers below, we operate with a small budget and welcome any extra contribution and ideas of how to increase the income. Naturally, we are also looking into minimising the expenses and make the maximum use of the means available. One item of discussion is whether the Newsletter should be sent out on paper or if an electronic version can at least partially fill the need.

Membership Fee

More and more members feel their responsibility to not only pay their membership fee but also to give smaller or larger donations to the Development Fund of the EAS. With this Development Fund we are able to support a number of young people (less than 35 years) to travel and give presentations at the JENAM meetings. This is a very important development towards one of the goals for EAS - to increase interaction and collaboration within Europe. Presently the grants amount to 8.000 Swiss Francs (CHF) per year, 5.000 of which are reserved for young colleagues from Eastern Europe. We try to make sure that the grants are given to a variety

of nationalities, fields of astronomy and that a balance in gender distribution is respected.

Below you will find a summary of the financial result (in CHF) of the year 2000 as presented at the General Assembly in Munich in September 2001.

Income	
Membership fees	25.033
Donations, sales	1.737
Interest	982
Subtotal	28.752
Development Fund (transfer)	5.000
Total Income	32.752
Expenses	
Administration	10.245
Newsletter	12.652
Grants	8.000
Bank charges	968
Total expenses	31.865
Surplus of the year	887

Net assets as per 31 Dec 2000, amounted to 63.420 CHF.

For the year 2002 the EAS Council has decided to keep the membership fee at the present level thus lowering the net assets. However, with the higher activity level, we need to consider the size of membership fee and other sources of income for future years.

Birgitta Nordstrom

THE EAS AFFILIATED SOCIETIES

THE ARMENIAN SOCIETY

Armenia is one of the most ancient countries with developed astronomical knowledge. The modern astronomy in Armenia begins with the foundation of the **Byurakan Astrophysical Observatory (BAO)** in 1946 by the outstanding scientist of the XX century Victor Ambartsumian (1908-1996).

First studies at BAO related with the instability phenomena taking place in the Universe, and this trend became the main characteristic of the science activity in Byurakan. Discovery of stellar associations, hypothesis about activity of galactic nuclei, discovery and study of hundreds Seyfert galaxies and QSOs, flare stars, Supernovae, Herbig-Haro objects and cometary nebulae, valuable works in the field of radiative transfer theory, are the main scientific achievements of the Byurakan astronomers. The First and Second Byurakan surveys (FBS and SBS) conducted due to tireless efforts of an-

other famous Armenian astronomer, Benjamin Markarian (1913-1985) brought to the well-known Markarian galaxies and SBS objects. Surveys and search for new objects are the traditional field for the Armenian astronomers: Markarian, Arakelian and Kazarian galaxies, Shabbazian groups are known to all astronomers.

Main achievements of the Armenian astronomy are connected with V.A. Ambartsumian, our greatest scientist. Ambartsumian was the Director of BAO during 1946-1988. Those times the Byurakan Observatory was one of the main astronomical centres in the world. After the disintegration of the Soviet Union and beginning of the economic crisis, the Armenian astronomers appeared in an extremely hard situation. Many of them left Armenia for a long period, others went away from the science at all. However, most of them still work in astronomy. At present, BAO has 70 researchers, including 49 PhDs. There are 3 scientific divisions and 21 small research groups at BAO. The main scientific instruments is the 2.6m telescope (ByuFOSC and SCORPIO focal reducers, VAGR multi-pupil spectrograph). BAO has a big archive of photographic plates, including the Byurakan Surveys, 2650 plates (taken with 1m Schmidt telescope), containing information on some 20,000,000 low-dispersion spectra.

The Byurakan astronomers collaborate with scientists from France, Germany, Italy, UK, Spain, Russia, USA, Mexico, Japan, China, India. Though the funding of science in Armenia is at very low level (the mean salary is equivalent to USD 20), however the Byurakan astronomers work actively due to the international collaboration and grants, and a number of valuable contributions in science. BAO is known also for a number of important meetings held in Byurakan: IAU Symposia Nos. 29 (1966), 121 (1986), 137 (1989), and 194 (1998); IAU Colloquium No. 184 (AGN Surveys, 2001); the First International Symposium on CETI (1971); and many others. 28 Armenian astronomers are IAU members and 25 are EAS members. Some 80 Armenian astronomers work in other countries outside Armenia; many of them are well-known and have tight contacts with BAO: Yervant Terzian (Cornell Univ.), Vahé Petrosian (Stanford Univ.), Agop Terzan (Lyon Obs.), Zedig Mouradian and Georges Alecian (Paris-Meudon Obs.), Ralph (Ara) Krikorian (IAP), many others.

BAO is the main astronomical centre in Armenia and one of the most important observatories of the Former Soviet Union, however, it is not the only one. At present there are also 4 other institutions where astronomy is active: Yerevan State University (YSU), Garni Space Astronomy Institute, Yerevan Physics Institute (YerPhI)

and Institute of Radioastrophysical Measurements.

In June 1999, the **Armenian Astronomical Society (ArAS)** was founded. The main goals of the Society are the promotion of astronomy, collaboration between all astronomical institutions in Armenia, and between the Armenian and other astronomers all over the world, development of astronomical education and knowledge in Armenia. ArAS was officially registered as an NGO in August 2001. At present it has 43 members. During the JENAM-2001 last September in Munich, ArAS joined EAS as an Affiliated Society. The main activities of ArAS for the nearest future are: enlargement of its membership; establishment of branches in America, Europe, and the FSU; establishment of the Web Page; publication of the ArAS Newsletter; publication of a biographical dictionary *Armenian Astronomers*; and organization of the ArAS first Annual Meeting in 2002.

ArAS also welcomes all European and other astronomers to have a JENAM meeting in Armenia in one of the nearest years. The astronomical traditions, historical monuments of the ancient Armenia and the Armenian hospitality promise to make the meeting really great!

Areg M. Mickaelian,
President of the Armenian Astronomical Society.

OBITUARY

MILORAD B. PROTITCH (1911-2001)

On 29th October 2001 in Belgrade passed away in 91st year, astronomer Milorad B. Protitch. He discovered in Belgrade 33 asteroids between 1936 and 1956 as for example 1564 Serbia, 1517 Belgrade, 1554 Yugoslavia, 1605 Milankovic and 2244 Tesla. B. Protitch, the minor planet 1983 RT3 is named 22278 Protitch.

He was born in Belgrade 6th September 1911 and worked on Belgrade Astronomical Observatory from 1932 up to his retirement 1975. He started to work as technician 1932, graduated in astronomy 1951 and finished his active career as Director of Belgrade Astronomical observatory (1956-1960 and 1971-1975).

He was also the Editor in chief of "Bulletin de l'Observatoire Astronomique de Belgrade" and "Publications de l'Observatoire Astronomique de Belgrade".

Milan S. Dimitrijevic, Belgrad

ANNOUNCEMENTS

ANNOUNCEMENT OF OPPORTUNITY

LOFAR is radio telescope of radically new design, able to look independently in up to eight directions at once and be operated remotely by several groups simultaneously over Internet. It will operate in the 10 - 240 MHz range, and will permit for the first time at these frequencies deep imaging of the sky at arcsec resolution. Prime scientific drivers are the epoch of re-ionisation, evolution of galaxies in the early Universe, the origin of cosmic rays, solar physics and space weather. In addition, LOFAR will be specially designed for the study of transient sources of radio emission.

The project is currently in the design and development phase. It is being planned as a collaboration among the ASTRON Institute in Europe, and M.I.T./Haystack Observatory and the Naval Research Laboratory in the USA. The scientific program is being planned by means of a Science Consortium, which is open to anyone interested in helping define, design and ultimately do research with the LOFAR system.

Individuals and groups potentially interested in participating are invited to consult <http://www.lofar.org> for more information, and to contact the Project Scientist, Dr. Namir Kassim at lofar-scientist@rsd.nrl.navy.mil and the Science Consortium secretary, Dr. Michiel van Haarlem at haarlem@astron.nl.

A similar announcement of opportunity for individuals and groups in the United States will also be made shortly.

EUROPEAN VLBI NETWORK:

ACCESS WITH FULL FINANCIAL SUPPORT

Very Long Baseline Interferometry (VLBI) is a technique in which an array of physically independent radio telescopes observe simultaneously in order to yield high-resolution images of cosmic radio sources. The European VLBI Network (EVN) is an array of sensitive radio telescopes located across Europe and extending to China that carries out VLBI observations during four sessions per year, forming an interferometer with milliarcsecond resolution and high sensitivity. The network was established by a Consortium of radio observatories who operate the individual telescopes. Data from EVN VLBI observations are correlated in a central processor at the Joint Institute for VLBI in Europe (JIVE). The EVN often co-observes with the UK MERLIN array and the US Very Long Baseline Array (VLBA).

Access to the EVN is open to all professional as-

tronomers around the world, and observing proposals are judged on their scientific merit by the EVN Programme Committee. A Call for Proposals is announced three times per year (see www.mpifr-bonn.mpg.de/EVN/EVNcall.html). For further information about the EVN see www.jive.nl/jive/evn/evn.html.

The EVN strongly encourages use of the Network by astronomers not specialised in the VLBI technique, including non-radio astronomers. The EVN (via JIVE) has received an award from the European Commission's Access to Research Infrastructures Programme (ARI, an action of the EC's Improving Human Potential Programme). The award is designed to facilitate the use of the EVN by users who are not affiliated to the Consortium institutes. The current contract, which runs until January 31, 2003, supports access to the EVN for external research groups that are led by European Principal Investigators (PIs) who are not affiliated to an EVN institute.

In particular,

(a) the Principal Investigator (PI) shall be affiliated to an institute located in the European Union or one of the Associated States (Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Iceland, Liechtenstein, Norway, and Israel; Switzerland under negotiation);

(b) the PI shall NOT be affiliated to: Max-Planck-Institut für Radioastronomie (DE), ASTRON (NL), Jodrell Bank Observatory (UK), Onsala Space Observatory (SE), Istituto di Radioastronomia (IT), Observatorio Astronómico Nacional (ES), Metsahovi Radio Observatory (FI), Torun Centre for Astronomy (PL), Bundesamt für Kartographie und Geodäsie (DE), or the Joint Institute for VLBI in Europe (NL).

All EU co-investigators in research groups for which the PI satisfies points (a) and (b) are also eligible for support, provided that they are not affiliated with one of the EVN institutes listed in (b) above. Co-investigators affiliated to institutes outside of the EU and Associated

States can also benefit, provided most of the team members for the project are from EU countries or Associated States.

The support provided by this programme includes: (i) full financial support for eligible users who wish to visit JIVE or any other EVN institute in order to schedule or process EVN, EVN+MERLIN and EVN+VLBA data; (ii) assistance from EVN Support Scientists located at JIVE at all stages associated with a VLBI experiment, from proposal writing to scheduling, calibration, and analysis of the observations; (iii) absentee processing of the data at JIVE.

To apply for time on the EVN please refer to the EVN Call for Proposals; further information can also be obtained from the programme committee chairman, Simon Garrington (stg@jb.man.ac.uk). For more information on the EVN's EC ARI programme please contact Mike Garrett (garrett@jive.nl).

Mike Garrett (garrett@jive.nl)

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