European Astronomical Society

NEWSLETTER

Issue 9. November 1994

Contents

Message from the President

The EAS's membership is approaching 1500 members and it has become clear that the task of maintaining the records of such a membership is too large a task for individual astronomers to carry out in their spare time. In any case, astronomers should do what they are best at, namely astronomy. Furthermore, we have experienced some problems in coordinating our administrative activities when files and records are held in different places.

As a result, the EAS Council has been seeking to make better arrangements for the administrative tasks of the Society. I am pleased to be able to announce that we have reached an agreement with the European Physical Society to operate our administrative affairs from the EPS office in Geneva. The EPS executive has been very welcoming to the EAS, in a friendly spirit of cooperation among European scientists, and I would like publicly to thank specifically the EPS Eecutive Committee led by the EPS President Prof. N Kroo, and the EPS Executive Secretary, Mr G Thomas, for helping the EAS in this way.

As a result of the change, routine communications on membership affairs, such as subscriptions, changes of address, should now be addressed to: The European Astronomical Society, PO Box 82, CH-1213 Petit-Lancy 2, Switzerland. I am confident that this new arrangement will bring a long term benefit to the Society.

I would like to pay tribute especially to our hard-working Secretary, Jan Palous, and the two responsible and careful Treasurers in our history, Martin Huber and Jean-Pierre Swings, who, with the members of their offices, have so nobly carried the burden of these detailed tasks hitherto. Of course, the EAS will continue to require the services of a Treasurer and a Secretary from amongst its members, and the responsibility of the tasks will remain; however, the burden of labour will be smaller.

I am pleased to communicate to EAS members the formation of the Hellenic Astronomical Society, and its affiliation to the EAS.This brings to 13 the number of professional astronomical societies affiliated to the EAS, and I am confident of a further expansion in this regard in the near future.

Paul Murdin

Editorial

We are sending together with this issue of the Newsletter the first issue of the membership directory. This directory contains the addresses of all the members including phone, fax and e-mail as well as the postal address. We are well aware of numerous omissions in this first issue. This is due to the fact that we often do not have all the data we wish to make available. Several people worked to improve earlier versions of this document but the only efficient way of achieving a correct directory is to ask you, the EAS members, to carefully check your address and to use the form enclosed in the directory to send us any correction. We will then produce a second issue.

We hope that this service will be useful to European astronomers, but also to help our colleagues overseas to know us better.

This issue includes an article by F. Sanchez that describes how the European Union funds an astronomical project. It is my hope that this will be the beginning of a fruitful collaboration between the Union and European Astronomy. We have presented some information on the programmes of the Union of relevance to astronomers and will attempt to continue in the future. Information on successful (and less successful) such projects that might be helpful to those in the process of trying could be shared in the pages of this Newsletter. Do not hesitate to contact the Editor if there is an experience you might want to share.

Thierry Courvoisier

EAS General Assembly 1995 in Catania

The next general assembly of the EAS will take place in Catania (Italy) from September 25 to 29 1995. It will be a joint meeting with the "Società Astronomica Italiana" (SAIt). The scientific Organising committee is co-chaired by Franco Pacini (Arcetri) and Marcello Rodonò (Catania).

The scientific programme is centered on the present and planned European instrumentation and its prospective impact on modern Astrophysics, with more emphasis on science than on techniques. Of course, the status of innovative ground-based and space projects, both European and National, will be reviewed. A detailed programme will be presented in the next issue of this Newsletter.

Special emphasis will be given to the participation of young astronomers.

Ground Based Astronomy News

The summer seems to have been rather lazy, since I do not have many news to report this time.

The French authorities, in the frame of the restructuring of the ground-based astronomical equipment in France, have decided to create a federation of astronomical institutes in the South-East of France. This federation will include: the Observatoire de Marseille, the Laboratoire d'Astronomie Spatiale in Marseille and the Observatoire de Haute-Provence. These institutions are supposed to set-up a coordinated frame of work, both for scientific programs and for use of the technical facilities. Four positions of director have been advertised to this purpose (for the 3 institutes, plus the director of the federation), and are being filled.

The first observational results have appeared on the reflection properties of meteor trains obtained by a forward scatter bistatic radar over the baseline from Bologna (Italy) to Modra (Slovakia) in the 1992-93 period.

The construction of the building for the Italian Galileo National Telescope (TNG) is progressing rapidly on the Roque de los Muchachos on the Canary Island of La Palma, while the telescope is almost ready to be shipped from Italy. The group of astronomers and technicians operating the TNG will be based at the Instituto de Astrofisica de Canarias in La Laguna, Tenerife.

Sperello di Serego Alighieri
Florence

Space Borne Astronomy

HORIZON 2000 PLUS

Over the last year, the framework and content of the follow-on to the present Horizon 2000 programme, Horizon 2000 Plus, has been under study, involving a large number of scientists from the community on the Topical Teams and on the Survey Committee in addition to those involved in the formal ESA advisory structure. The programme drawn up by the Survey Committee at its recent Rome meeting includes recommendations for Astronomy, Solar System Science and Fundamental Physics.

In astronomy, the Survey Committee recommends that ESA initiate a cornerstone level programme in interferometry, the first aim being to perform astrometric observations. An interferometric global astrometry mission to 10 micro-arcsec accuracy will enable searches to be carried out for Jupiter like planets and brown dwarf companions around stars in our galaxy and detailed information to be acquired about them. It will ascertain the distances, motions and luminosities of tens of millions of stars in the Milky Way and will allow the mass distribution in nearby galaxies to be studied. The mission will also be able to test general relativity against alternative theories. In addition, the Survey Committee recommends studies using infrared interferometry, with the aim of detecting Earth-like planets around other stars.

To build on the great advances achieved by Europe in X-ray, gamma-ray and infrared astronomy, and given that the currently planned missions in these areas may extend until about 2010, the Survey Committee recommends that development of cornerstone-level missions be undertaken soon after completion of Horizon 2000 Plus.

In the meantime, the case for developing a major high-energy astrophysics facility under the space station utilisation programme should be analysed, and access to small and medium-class missions should also be fully exploited.

In solar system science, the Survey Committee recommends a major (cornerstone) mission to Mercury, the planet nearest the Sun, which is still largely unexplored. Both planetary and magnetospheric aspects should be addressed by this mission.

In view of the great international interest in the study of Mars, the Survey Committee recommends that ESA participate at the level of a medium-class mission in opportunities that may arise in the framework of the Mars exploration projects currently under discussion.

Given the exceptional research opportunities in solar physics offered by several ongoing and future missions, together with the keen interest expressed by the solar physics community, the Survey Committee recommends that ESA take advantage of openings as they arise and participate in future international solar missions. It should also draw on opportunities provided by the space station and by the small and medium -class missions of Horizon 2000 Plus, taking full advantage of the very high resolution instruments that will be available, of the technique of stereoscopic and of future in situ probes.

A final recommendation from the Survey Committee is for ESA to engage in technological and system studies in preparation for a cornerstone programme devoted to the observation of gravitational waves, in particular at low frequencies. Such a mission would make it possible to explore the very early phases of the Universe and to observe massive black holes and their coalescence, furthering our understanding of the nature of gravity and of general relativity.

The Horizon 2000 Plus programme, being the future ESA Space Science Programme, will be incorporated into the Director General's proposal for the ESA long term Plan to be presented to the Ministerial Council at the end of 1995.

Five missions selected for phase A studies

The COBRAS/SAMBA (microwave background) and STARS (stellar seismology) missions have been selected, together with INTERMARSNET (Mars studies), MORO (lunar orbiter) and STEP (satellite test of the equivalence principle), for Phase A study as candidates for the medium mission number 3 (M3) in the Horizon 2000 ESA science programme. Final selection of M3 will take place in 1996 with launch in 2003.

Infrared Space Observatory

The twin deadlines for electronic and paper submission of ISO proposals (19 and 23 August) passed. The total number of valid proposals is very close to 1000 with an over subscription factor in time available of 3-4. This number of proposals compares with some 2400 indicated in the response to the call for "letters of intent" received in June.

The distribution in science area is very much as expected i.e. about 30% stellar/circumstellar, 30% extragalactic, 25% interstellar medium, with the remaining 15% roughly evenly divided between solar system and cosmology.

In view of the number of proposals, the time available for the review process and the consequent workload on the members of the ISO Observing Time Allocation Committee (OTAC), it has been decided to expand and slightly re-structure the committee. Two of the original panels have now been split into two parts and the total membership has been increased to around 40. The panels cover the following fields; solar system; stellar; circumstellar; interstellar medium; AGNs and QSOs; normal and starburst galaxies; and cosmology.

The recommendations from review will be available in early December.

Status of FIRST

The Far Infra-Red and Submillimetre Space Telescope (FIRST) mission was selected by the Science Programme Committee (SPC) in November 1993 for implementation as the fourth Cornerstone mission in the Horizon 2000 science plan. It is an observatory type mission dedicated to opening up the virtually unexplored region of the electromagnetic spectrum between 0.1 and 1 mm. This implies performing imaging spectroscopy and photometry in the band longward of space infrared observatories (IRAS, ISO) and shortward of what can be done from groundbased and airborne telescopes.

The present mission design features a 3–m diameter Cassegrain telescope, and offers its payload a 4 K environment created by mechanical cryo- coolers.

The model payload consists of the Multi-Frequency Heterodyne receiver (MFH), a nine-channel heterodyne instrument covering selected bands in the range 500–1200 Ghz (250–600 μm) for very high resolution spectroscopy, and the Far Infra-Red instrument (FIR), a three-channel direct detection instrument employing one photo-conductor and two bolometer arrays, dual Fabry-Perots and filters for spectroscopy and

photometry in the range 85–900 μm (330–3400 Ghz). It has an internal He-3/He-4 dilution, refrigerator which cools the photoconductor and bolometer arrays to 1.5 K and 0.15 K, respectively. With this payload FIRST will be able to address all of the scientific objectives defined for the submillimetre cornerstone observatory.

At the present time, pre phase-B technical development is getting underway. The main areas of development are in connection with the telescope and the cryo-coolers. The plans include having a complete telescope fully space qualified by 1998. At the same time, all coolers should be qualified, not only as units, but in a representative model of the complete payload cooling subsystem. As a backup solution, it will also be investigated what the scientific, technical, and financial implications of using ISO technology for the construction of a cryostat mission would be.

On the payload side a special effort is underway regarding large bulk two-dimensional Ge arrays, while work on the heterodyne mixers, local oscillators and spectrometers is underway in the ESA Technology Research Programme.

The engineering solution for the spacecraft and mission design of FIRST should be finalised in 1996. It is also planned to issue an Announcement of Opportunity for the instruments in 1996, with the selection taking place the following year. Having proven the critical technology and selected the instruments, phase B of FIRSTs development would then start in the year 2000, leading up to a launch in the 2005/2006 time frame.

This mission is described in detail in the report SCI(93)6 which can be obtained from G. Pilbratt at ESTEC.

ULYSSES over the South pole of the Sun

This summer the ULYSSES spaceprobe reached its maximum heliographic latitude of 80.2^0 in its pass over the south pole of the Sun. The polar pass started on 26 June 1994 to 5 November 1994, and during this period ULYSSES will be at heliographic latitudes above 70^0 South.

This southern journey, which started in February 1992 when ULYSSES left the elliptic, has provided two particularly interesting results. In mid-1992 ULYSSES began to record, once per solar rotation a fast-moving stream of plasma at a speed twice that of the average solar wind. This pattern persisted for about one year. Since September 1993, ULYSSES has been measuring a constant high speed solar wind that originates from the southern coronal hole.

Typically interplanetary probes observe a cyclical reversal of the interplanetary magnetic field linked to the Sun's rotation with the field alternating between negative and positive polarity. However, in May 1993, while crossing 30^0 South, ULYSSES record the disappearance of this regular reversal. Since then it has been in a uniform polarity environment.

Brian McBreen
Dublin

European Union Funding Stimulates Cooperation among European Astronomers

The IAC (Instituto de Astrofisica de Canarias) consists of the Institute of Astrophysics in La Laguna and the Teide Observatory, on the island of Tenerife, and the Roque de los Muchachos Observatory, on the island of La Palma. The Canarian Observatories were internationalized in 1979 through a series of Agreements on Cooperation in Astrophysics. More than thirty scientific institutions belonging to twelve European countries: Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Spain, Sweden and the United Kingdom have signed these agreements. As a result, they have now installed their telescopes and other astronomical instrumentation at these Observatories. Their participation in the IAC Observatories is articulated through an International Scientific Committee (CCI). Several other groups from countries outside Europe have also entered into bilateral agreements with the IAC. A national "Law of the Sky" protects the Observatories' astronomical quality (for example by controlling outdoor lighting), thereby making the IAC's Observatories an "astronomical reserve".

The IAC as an entity constitutes therefore a Spanish research organization which is in practice the European Northern Observatory.

Each of the telescopes is the property of an institute or a research council, and some of them are the result of a collaboration between two or more countries. Therefore access to observe with each telescope is basically restricted to the astronomical community which operates it. In order to promote collaboration between all European astronomers, the designers of the Agreement on Cooperation in Astrophysics and its Protocol (first signed in La Palma on 26 May, 1979) included an innovative clause under Article 4b of the Protocol, "Allocation of observing time and scientific and technical cooperation": "Provision shall be made for the allocation of at least an additional 5% of the observing time of each of the telescope installations to collaborative programmes between User Institutions including the IAC. Each User Institution, and, with the agreement of the IAC, any Spanish institution, shall have the right to join in each such programme if it so wishes".

The European Union has offered to fund this International Time (IT) Programme through the Human Capital and Mobility Programme ("Access to Large Installations").

There are at present 9 telescopes which participate in the IT Programme. The operation of some instruments does not allow the division of the observing time; telescopes under construction will join the programme after their first year of operation. The 3 solar telescopes participate in the "international day- time" programme and the rest in the "international night-time" programme. This 5% makes available about 14 days or 18 nights with each of the solar telescopes and the rest, respectively. Therefore, the "international day-time" programme offers more than 40 days. The "international night-time" programme offers more than 100 nights.

To exploit the unique scientific features of the IT Programme the inclusion of simultaneous observations on two or more telescopes, which complement each other, is favoured. The International Agreements confer on the CCI the responsibility to allocate the "International Time" and it has been used to design programmes to promote collaborations which have opened up the Canarian telescopes to all European astronomers. The EU provides funds to cover the accommodation and living expenses of the astronomers at the observatories as well as contributing towards the costs of meetings related to the project.

The International Time programmes

International Time has been used so far in the following projects: **"Abundance Measurements as tests of Big Bang Nucleosynthesis"**. This project was aimed at establishing restrictions to the universal barionic density from an improvement in the estimations of the primitive Deuterium, Lithium and Beryllium abundances.

A satisfactory search of the presence of Lithium and Beryllium in the most ancient stellar populations of the Galaxy was made, resulting in the detection of the first of those elements in more than 80 different objects and of the second one in more than 20. Some of these have the lowest known concentrations of metals and thus, their matter constitutes one of the best approximations to primitive matter which our Galaxy may produce. It is confirmed that Lithium is present in the lowest metallicity stars of our Galaxy, with an average abundance close to a Lithium nucleus for each 10^{10} Hydrogen nuclei, and that this abundance depends very little on where the formation of these stars took place.

In regard to Beryllium, the results indicate a steady increase in the abundance of this element during the collapse of Galaxy's halo. The dependence with metallicity of this increase has been established, resulting consistent with what is expected if the spallation reactions by cosmic rays in the Interstellar Matter were the main source of Beryllium. No evidence has been found which could support a pregalactic origin for this element. On the other hand, it seems that the Lithium present in our Galaxy when it was forming, has probably a pregalactic origin, very likely to be primordial. The abundance of Lithium found enables the restriction of the Universe's barionic density to a value smaller than 10% of the critical density.

This project has resulted in a close collaboration between Queen's University of Belfast and the IAC in the construction of the IACUB echelle spectrograph specially for this IT Programme. This instrument was built in one year and installed at the NOT telescope where no high resolution spectroscopic facility existed before. The NOT International Time was devoted to the satisfactory commissioning of the instrument and observations with it in the programme. The spectrograph has been subsequently used by several very different research projects, both of the IAC and other institutes.

"Active Galactic Nuclei". This project resulted in a particularly large number of publications and new collaborations.

The collaboration fixed two principal objectives: the study of the variability in the large emission lines profiles and the study of the excitation of the extra- nuclear emission regions. To test unification schemes for AGN by studying the effect of the nuclear radiation field on the circum-nuclear environment, long- slit spectroscopy of extra-nuclear regions in active galaxies and spectrophotometric monitoring of the broad emission lines in a small sample of AGN were used. Faint diagnostic features and small amplitude changes in the line intensities and profiles were measured. Using ionization models and accurate measurements of several important line intensity ratios, it proved possible to distinguish between local ionization mechanisms and photoionization by the AGN radiation field. The polar diagram of the radiation field can then be mapped from spatial variations in the emission lines. The ENLR in NGC4151, experiences an ionizing flux 10 times stronger than would be inferred from the directly observed continuum. This suggests that the ionizing continuum in NGC4151 is strongly anisotropic. Multi-colour images combined with published polarimetry showed that the nucleus and ENLR of NGC4151 are enclosed by an elliptical dust ring which may be related to gas flows in the galactic bar "fuelling" the AGN. In the radio galaxies there is a clear kinematic evidence for interactions between the radio-jet and the ENLR.

Although the broad emission line region (BLR) is too small to be resolved by direct imaging, its structure and kinematics can be mapped by analysing changes in the intensities and profile shapes of the broad emission lines as they respond to variations in the ionizing continuum. Observations of numerous quasars and Seyfert galaxies have produced a unique

data-set with which to study emission line variability over a wide range in continuum luminosity.

"Accretion Disc Evolution in Cataclysmic Variables". This project devoted to the physics of accretion on collapsed objects, produced a series of observations which resulted in the confirmation of the object near the variable star V404 Cyg as the best candidate for a "black hole".

"The Physical Parameters that control Violent Stellar Bursts". This project made a detailed study of giant HII regions and HII galaxies, to discover the combination of physical parameters (density, metallicity, temperature, dynamics, etc.) which leads to the formation of stellar clusters. A sample of 25 giant HII regions and 15 HII galaxies were observed. For all of these sources spectroscopy of high and intermediate resolution were obtained, as well as imaging in broad and narrow bands. Among a considerable number of interesting results, some of the highlights are:

- High velocity gas (2000km/s) has been detected in several of the observed sources, occupying large volumes. This gas, in some cases detected for the first time, is linked to the large amount of energy generated by massive stars and which seems to have found the way to escape from the galactic disc.
- Two-dimensional excitation maps led to infer the existence of several star clusters in some regions which were supposed to be excited by a single cluster.
- The supersonic velocity dispersion in giant HII regions has been the key to understand and model the formation of star clusters. The model, developed at the IAC, explains the correlation between luminosity and size of the regions and their velocity dispersion.
- More recent calculations show that the process of cluster formation also causes the structure of the observed cloud, originating wakes, tunnels and filaments with the variety of shapes observable in these objects.
- The observations led to numerical calculations which explain in detail how galactic winds exit galactic discs.

"Motions in Chromospheric and Photospheric Solar Structures, in connection with Magnetic Fields". Simultaneous observations on the large solar telescopes of the Canarian Observatories were carried out. The imaging Spectrograph "Multi-channel Subtractive Double Pass" (MDSP) at the VTT provided line-of-sight velocities in fine structures of the chromosphere and the photosphere. At the SVST high resolution white light pictures were obtained; these led to measurements of transverse velocities in magnetic field lines (motions of tracers derived by Local Correlation Tracking). The main purpose was the MHD modelling of motions and this was achieved in regard to arch filament systems and fine motions around sunspots. The analysis of MSDP data concerning the arches shows that the flows are consistent with free-fall motions inside expanding loops. The SVST data provide the motions of the feet of the loops.

"Rosat International X-Ray Optical Survey". This project is at present being carried out with funding of the EU's Human Capital and Mobility programme. Its objective is the identification in the visible of a complete sample of X-ray emission sources discovered by the ROSAT satellite. Although the field of view studied is larger than in any previous study, the X-ray flux limit of this sample is comparable to the limits achieved in the deepest studies carried out. This has made it possible to study in detail different features of the X-ray emission sources, e.g.: distribution by different kinds of objects, contribution of each type of object to the emission background in X-rays, determination of the X-ray luminosity functions and cosmological evolution, detection of very distant galactic clusters, etc.

Conclusion

The IT Programme has resulted so far in 26 papers, including numerous discoveries which it would have been difficult, if not impossible, to make in any other way. A further success of the IT Programme is without doubt the collaboration of experts of different countries, working for the first time closely together and aiming at the same target. These collaborations have resulted in a large number of ideas and consequently, in several subprojects, as well as new collaborations independent from the original project. It has thus been the starting point for groups of young scientists, who will now be able to participate in may other projects, with a sound experience of working in a group.

The idea is to continue favouring the use of this international time by multinational groups who present important and timely observing programmes of crucial interest which require several telescopes at such an excellent site as the Canarian Astrophysical Observatories.

Applications

Applications should be international in the range of participants and involve astronomers from at least two CCI countries. The procedure to allocate the International Time has developed the following phases:

1. The announcement of Opportunity issued in March each year is published by each CCI member in the community they represent and announced by post to all of the European astronomical centres.

2. The dead line for each consortium of astronomers is 31 July each year. 10 copies of the proposals must be sent to the CCI Secretariat: Mr. Campbell Warden, Instituto de Astrofmsica de Canarias, E38200 LA LAGUNA, Tenerife, Canary Islands.
3. Technical reports by the scientist responsible for each telescope are sought, as well as a report by independent referees.
4. Decision by the CCI in the autumn each year.
5. Those consortia who receive time start their observations at the end of the following winter, as established by the operational programmes of each telescope. An international meeting is held in the Canary Islands during the following year to discuss the results and plan their publication.

F. Sanchez
IAC
La Laguna

News from the other side of the Atlantic

Science in the National Interest

In August, President Clinton and Vice President Gore issued a report on the new challenges and directions for U.S. science. Entitled, "Science in the National Interest," the report acknowledges that we are in a time of change and proceeds to outline how U.S. science policy must adapt to the post-cold-war era. The report establishes five goals for the country in its "...stewardship of science in the national interest:

- Maintain leadership across the frontiers of scientific knowledge.

- Enhance connections between fundamental research and national goals.

- Stimulate partnerships that promote investments in fundamental science and engineering and effective use of physical, human and financial resources.

- Produce the finest scientists and engineers for the twenty-first century.

- Raise scientific and technological literacy of all Americans."

Over the last year there has been considerable discussion within the U.S. on the need to relate basic research efforts to the solution of more practical problems. There has been concern within the science community that the swing to more emphasis on practical results had gone too far. The goals of the new report acknowledges the importance of basic research. It has been well received by the science community where it is generally perceived as a balanced document. You can get a copy of this report electronically over the Internet via FTP from stis.nsf.gov. The filename is "science.txt."

This is the first time in over two decades that the U.S. President has given such high visibility to science and technology policy. In the fight for resources, it seems that high visibility helps.

Both NASA and NSF receive adequate funding. The tortuous funding cycle for NSF and NASA is finally finished. Both agencies received more money than originally asked for – something which has not happened within the memory of most Washington insiders. What this means for astronomy is not completely clear; the detailed budgets are not fully worked out within the agencies. Congress specified that most of the additional money would go for areas other than astronomy – which, at best, has only a tenuous link to the practical needs of the country. The one clear astronomy winner is the Gemini Telescope Project, for which the U.S. share is funded by NSF. Congress added all the money necessary to complete the U.S. share – an additional $20 million – to the 1995 budget.

However, at both NSF and NASA the ongoing project and grant funding will probably be just sufficient to sustain the current levels of effort. We do not expect to see any major increases for the coming year. Nevertheless, this is a far better situation than was being predicted just a few months ago.

NASA Explorer Program Restructured

NASA's Office of Space Science announced in September that the explorer program would be restructured to emphasize faster and cheaper missions. The Explorer Program will now consist of three classes of mission. The largest of three, the so-called mid size (MIDEX) missions are envisioned to cost about $65 million. The Small Explorers (SMEX) represent a $25 million class mission, operated in the principle investigator mode. The group which builds the instrument will make all the observations. Although the data will be made public after a suitable time, this style contrasts with the broadly available guest investigator programs which have been the hallmark of the larger NASA missions. It is expected that one MIDEX and one SMEX can be flown every year, giving more frequent access to space than has been the case for many years. The smallest Explorer missions are

envisioned to be very small and simple, costing about $5 million and being flown at a rate of 2 per year.

As a result of the restructuring, the Far Ultraviolet Spectroscopic Explorer (FUSE) mission will be downsized to be accommodated within the new MIDEX class. Warren Moos, principle investigator on the FUSE mission is investigating how much of the FUSE science can be retained under the smaller dollar and weight budget envisioned for the MIDEX class missions. The results will be known sometime around the end of the year. The last large astrophysics explorer mission will be the XRay timing Explorer (XTE), scheduled for launch a year from now.

While going to smaller missions will probably increase the frequency of flights, there is worry within the astronomy community that the weight and dollar limitations may cut deeply into the scientific return from NASA's future missions. Nevertheless, the increased opportunities to build and fly missions will help keep the space science community active for the next few years.

Peter B. Boyce
American Astronomical Society
Washington

Positions available

Readers are reminded that the EAS is operating an electronic Job Notice board in collaboration with the Starlink project at RAL. The address of the STARJOBS account is star.rl.ac.uk. This service is free for members of the EAS. Details can be found in the EAS Newsletter issue 7.

Meetings

You are invited to bring to the attention of the editor the meetings you wish to see mentioned in this Newsletter.

- IAU Colloquium 152 "Astrophysics in the Extreme Ultraviolet"
  Berkeley California, USA. March 27-30, 1995
  S. Lilly, Center for EUV Astrophysics, 2150 Kittredge St., Berkeley Ca 94720
- Solar System Ices
  Toulouse, France. March 27-30 1995
  M. Festou, Observatoire Midi-Pyrenées, Toulouse (festou@obs-mip.fr)
- 29th ESLAB Symposium "Towards the Source of Gamma-Ray Bursts"
  ESTEC, Noordwijk, The Netherlands. 25-27 April 1995
  K. Bennett, ESTEC (eslab29@astro.estec.esa.nl).
- IAU Colloquium 153: Magnetohydrodynamic Phenomena in the Solar Atmospheres
  Hakone/Tokyo, Japan. May 22-26 1995
  Y. Uchida, Dept of Astronomy, University of Tokyo (yuchida@solar.stanford.edu)
- ESO/MPA Workshop: Spiral Galaxies in the Near-IR"
  Garching, Germany. June 7-9 1995
  D. Minniti ESO or H.W. Rix MPA (dante@eso.org)
- ASP Symposium: "Clusters, Lensing and the Future of the Universe"
  College Park, Maryland, USA. June 26-28 1995
  V. Trimble, Univ. of Maryland, College park (vtrimble@astro.umd.edu)
- Radio Emission from the Stars and the Sun
  Barcelona, Spain. July 3-7, 1995
  J.M. Paredes, Universitat de Barcelona (radio@mizar.am.ub.es)
- International Workshop on Observational Cosmology: from Galaxies to Galaxy Systems
  Sesto Pusteria (Bolzano), Italy. July 4-7 1995
  F. Mardirossian, SISSA, Trieste, Italy
- Vienna International Workshop on Model Atmospheres and Spectrum Synthesis for mi B through mid G stars at or close to the Main Sequence
  Vienna, Austria. July 6-8 1995
  F. Kupka, kupka@galileo.ast.univie.ac.at
- Chaos in Gravitational N-Body Systems
  La Plata, Argentina. July 31-August 3, 1995
  J.C. MuzzioObservatorio Astronomico, Paseo del Bosque, 1900 La Plata (chaos@fcaglp.edu.ar).
- IAU Colloquium 150: Physics, Chemistry and Dynamics of Interplanetary Dust
  Gainesville, Florida, USA. August 14-18, 1995.
  M.S. Hanner, JPL, California, USA (msh@iplsc8.dnet.nasa.gov)
- EAS General Meeting, jointly with the annual meeting of the Italian Astronomical Society: Progress in European Instrumentation and Prospective Impact on Modern Astrophysics
  Catania, Italy. September 25-28, 1995
  M. Rodonò, Catania.
- 9th Cambridge Workshop "Cool Stars, Stellar Systems and the Sun"
  Florence, Italy. October 3-6 1995
  R. Pallavicini, Osservatorio Astrofisico di Arcetri, Florence (pallavic@arcetri.astro.it).

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