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Editorial

The 14th issue of the Newsletter did take longer than usual to appear and we all apologize about this. We will do our best that this will not happen again and we will be producing at least two newsletters per year in order to reestablish our regular contact.

The new president Jean-Paul Zahn gives you the latest news of the Society and his comments on the JENAM-97. The 1st announcement of the JENAM-98 is ready and you will find attached the appropriate forms for it.

A major part of this issue is dedicated to the two major events of last summer, the JENAM-97 and the IAU General Assembly in Japan. Having participated to

both, I believe that both have been very successful and particularly interesting. Our Japanese colleagues have organized one of the best GAS in IAU history.

(continued)

Message from the President

Pursuing what is now a well established tradition, the sixth meeting of our society was held jointly with the meeting of one of our affiliated national societies, and this year it was the turn of the Hellenic Astronomical Society. This JENAM97 took place near Thessaloniki, in a very pleasant sea resort located at the Cassandra peninsula. It was a successful meeting, judging by all criteria: the large attendance (more than 300 participants), the high level of the scientific contributions, the excellent quality of the invited talks. In great part we owe this success to our hosts from the Aristotle University of Thessaloniki, and to the members of the Scientific Organising Committee who drafted the programme. To name only a few, we are particularly grateful to John Seiradakis and Nicoalos Spyrou, respectively chairman and vice-chairman of the Local Organising Committee, and to George Contopoulos and Alvio Renzini, who co-chaired the SOC.

These joint meetings are unquestionably the most visible sign of the existence and the vitality of our society. In the meanwhile, the Newsletter plays a key role to ensure the necessary continuity, but for that it should maintain a reasonable rythm of publication, which was not the case in the recent past. The present issue inaugurates the editorship of Mary Kontizas, who kindly agreed to take over this demanding task. We encourage all of you to submit to her any article or information that may be of interest to our community. The EAS will also make a broader use of the Web; our site has been moved to the Institut d'Astrophysique in Paris, where Michel Dennefeld is completing its construction (www.iap.fr/eas). Among others, it will host a "young

people forum”, about which you will learn more from Mary Kontizas.

These matters were of course discussed by our council in Thessaloniki, whose business meetings were attended also by the representatives of several affiliated societies. Four colleagues were leaving office then: Paul Murdin (president), Catherine Cesarski (vice-president), Jesus G’omez-Gonz’alez and Per Olof Lindblad. They deserve our thanks for the time and efforts they spent in steering our society, which now totals nearly 1500 members. They have been replaced by an equal number of newly elected councillors: Mary Kontizas (Greece), Malcolm Longair (United Kingdom), Francisco Sanchez (Spain; vice president) and myself (France; president).

One important topic discussed during the Council meetings was the role that the EAS could - and should - play in shaping the future of European astronomy. The least we can do is to organise discussion forums or round tables, such as the one which took place in Thessaloniki, of which Paul Murdin gives an extensive account in this issue. But we all agreed that we should move a step further, and contribute more actively to set priorities and make the necessary choices between competing initiatives, while fostering the cooperation between teams of different countries. The way to proceed is still debatable among us, and we are consulting a number of colleagues to reach the most appropriate solution. Our goal is to serve as well as possible the advancement of astronomy in Europe, as the founding members as it was spelled it out in the constitution of our society.

J-P. Zahn

Editorial (cont)

However it was evident that young people had negligible participation, much smaller than normal in both meetings. It is expensive for young people to travel to many conferences and they only go to those which have the major impact for their research. On the other hand, they will be the natural continuity of our discipline and we must help them to follow most of what is going on in astronomy. This problem was discussed in the last EAS council meeting and we decided to open a discussion between the senior astronomers and the young astronomers in Europe in order to: Trace them, write down their worries and questions and finally see how we can face these problems in the near future.

You can see at the last page the announcement of an

activity we decided to organise and we wish you will also help to pass it to as many colleagues as possible. Actually we are organizing an e-mail forum for young people next December which we believe will facilitate the links all astronomers and give ideas for facing some of the present difficulties.

A feature we wish to add is a new section in the Newsletter which can be a constant part and be expanded accordingly: News and Articles on astronomical technology such as news on methodology and software useful to be implemented in astronomy, artificial intelligence, automatic techniques etc. All these areas are fast developing and may facilitate astronomers to exchange ideas, experience and news on these topics.

Finally I would like to thank N. Matsopoulos, R. Komentakou and D. Gouliermis for their valuable help for the publication of this issue.

M. Kontizas

Future of European Astronomy

JENAM97 round-table discussion The European Astronomical Society was founded in the belief that there is such a thing as European astronomy. It is obviously true that there are French astronomy, Italian astronomy, Russian astronomy... - the existence of language and national funding agencies guarantees these. And astronomy is an international subject, which makes the International Astronomical Union necessary and a force in science with a mandate. But European astronomy?

The main role that the EAS has found so far on a European scale is to organise its general meetings, often in conjunction with national societies, boosting them by a European context, and receiving in turn the richness of participation in the culturally distinct aspects of 'national' astronomy.

Is there more to 'European astronomy' than convenience of rail or air journeys to a meeting? The European Space Agency and the European Southern Observatory are two obviously European astronomical organisations, although a minority of European states belong to them. There is obviously more astronomy in Europe than in those two organisations. What is European astronomy and if it exists what is its future? What would be the elements of a European policy on astronomy? These were the subjects of a 'Round Table Discussion'

held at the Joint European and National Astronomy Meeting (JENAM-97) in Thessaloniki, Greece, on July 4 1997. The speakers in the session were:

L. Woltjer The European space programme
J. Truemper High energy astrophysics
R. Giacconi Towards a European policy for astronomy
R Fosbury The synergy between ground and space astronomy
J-P Swings NGST
F Sanchez Large Telescopes and the European Northern Observatory
R. Davies The Gemini project and its lessons for European astronomy
P. Shaver The Large Southern Array
James Lequeux The Large Southern Array
M. Denefeld Instrumentation in European Telescopes
B Shustov Specialisation in observatory sites; the Russian Space Agency's space programme
P. Murdin Astronomy in Europe - a strategic plan

the following personal account is not intended as a comprehensive report.

European Space Astronomy

As Lo Woltjer described, the main programme of space astronomy in Europe is that of the European Space Agency. A mandatory programme of ESA, its budget is set to be about constant for the immediate future. It is supported by its member states, firstly as a condition of entry to ESA, and secondly for a variety of reasons - industrial development, internationalism, idealism and practical. From a scientific perspective, the science programme which ESA executes is chosen after a large and impressive consultation exercise with the space scientists of Europe, and goes under the name Horizons 2000. H2000 consists of different sorts of elements. In some cases, H2000 identifies specific science areas which must be investigated. Thus, a Far InfraRed Space Telescope (FIRST) was identified as a quite specific mission on the basis of a belief that this spectral window contained important science, and that the time was ripe for major advances to be made by an InfraRed/submillimetre telescope: hence the design-studies now being made for the mission. Mission to Mercury is another specific investigation being developed. In other cases, Horizons 2000 identifies areas of scientific technology which have potential - an interferometry mission, for precision astrometry or infrared high resolution imaging, for example. In yet other cases, Horizons 2000 identifies science areas like Mars exploration, gravitational wave astronomy or X-ray astronomy where a major technological development programme is necessary.

Although the programme is decided by the scientists, there is a political dimension to the choice of missions, including the satisfaction, it is argued, of existing space communities. This argument has surfaced in discussing the balance between solar system and astronomy missions in Horizons 2000, and there is some counter argument that there should be a re-assessment of the balance on present and future scientific prospects, not on past strengths. It is difficult for this argument could be resolved within the ESA review processes, which are structured according to space science community support. EAS could well provide a forum for this discussion, in the privacy of a debate within the wider community.

Our current implementation plan for H2000 is not the same as it was a few years ago. It has been necessary to transform it to react to the collapse of over-optimism in the early 1990s in planning Horizon 2000, the cost of the recovery from the loss of Cluster in the Ariane 5 disaster, and the increasing financial stringency in the ESA member states. This has been determinedly carried out under tough management at a time of outstanding success in the current missions.

So, the Space Science Programme is attracting fresh interest from space scientists in Europe, both in the 14 member states and in those whose astronomers would like their country to be one. At the same time, there is considerable interest in individual states by European space scientists who want to develop space science experiments on a national or bilateral scale.

ESA has recently expressed concern at this trend: it is worrying to the European agency that resources are being, as it sees it, diverted from the European collaboration to national programmes. However, the national space programmes provide an opportunity, as Professor Truemper argued in Thessaloniki, to fill in the gaps in the ESA programme, maintaining continuity of discipline. X-ray, ultra-violet and solar astronomy were mentioned as having gaps of coverage in the foreseen programmes. Co-ordination across Europe to fill the gaps would be difficult, but if any organisation can be successful it will have to be European in character, like the EAS. The European Science Foundation's Space Committee's role in these matters seems to have lapsed, although recent changes of leadership may give it a new impetus.

The distinctive character of Europe being that of a mosaic of nation states, the question is also of the balance between the national and international programmes. Perspectives on the right balance will be different in

different states, since some states have no national programmes at all and would wish the whole space science programme to be international.

European ground based astronomy

Much the same issues affect the European Southern Observatory. ESO is successfully implementing an outstanding project in the VLT, having reorganised its financial profile away from support of numerous smaller activities of lower impact. As a side effect, this has revealed the strong desire of astronomers in some member states nevertheless to continue in these smaller activities, perhaps at reduced cost, and to maintain the national interests by individual participation in studies which can be described as useful rather than outstanding. This is wholly defensible not only as having validity in its own right (all scientists know that not all science can be outstanding) but also as maintaining the skill base in the communities, which supports and feeds the outstanding international facilities.

ESO has, moreover, not only reorganised within its membership, but also through an ESO Council decision expressed willingness to consider collaborations with non-member states on a project by project basis. Astronomers in any state can take advantage of a mutually favourable situation in respect of a given project to develop closer ties with what is undoubtedly a potent European astronomical organisation and their fellow astronomers. This can only develop European cooperation in astronomy, not only for states which have developed a European astronomical interest recently, or those like my own that consciously chose to proceed on a case by case basis for collaboration in large astronomical projects, but also for institutes within an ESO member state which have a special desire to participate in individual projects above the pro-rata share.

Even in the member states of ESA and ESO about as much is spent outside these European organisations as within them: considering the existence of non-member states of both organisations it is clear that European astronomy is more than ESA and ESO. Indeed, a significant part of European astronomy lies at the interface of ESA and ESO, as vividly brought out by Bob Fosbury at Thessaloniki. The Hubble Space Telescope has been run extremely and increasingly efficiently, with an effective archive and important observatory programmes. The international proposal and evaluation process has been intellectually rewarding in its own right. Having seen groundbased astronomy feed into space astronomy, such as the opening up of space missions to community participation, processes like the ones mentioned in

space astronomy are now feeding through to ground-based astronomy, for example in the case of the Gemini Telescopes (as Roger Davies showed) and the VLT (as Riccardo Giacconi has said). Indeed the two areas of science should be scientifically co-ordinated, looking at the same areas of sky, feeding each other with observational support, taking from each other observational imperatives. There is a perception that this co-ordination process is not happening between space and ground based astronomy in Europe to the degree that it should, and the EAS has a role to play here.

Regional differences

The above discussion has brought out commonalities of scientific purpose even in circumstances where there are both coinciding and differing interests in approaches to astronomy in the states of Europe. To some extent these differences are regional, so I will label them with geographic terms, which however are not meant to be taken literally and exclusively.

In several European states - let me call them 'western' - the funding situation, arising from macro-economic constraints such as the EU's Maastricht Treaty and the Re-Unification of Germany, has become at best constant, switched from the growth era of the last decades. At the same time, the interest in astronomy and (it is believed) the number of astronomers has grown. Certainly, equipment, and its operating environment, has become more sophisticated (telescopes are bigger, detectors deliver more data, computers are more powerful, and observatories operate on more remote mountains or in space). These conflicting trends are producing strain in the western countries, and, as interest focuses on the plight of the national communities, these are the states which show evidence of increasing interest in national programmes and call for the reigning back of expenditure in ESA and ESO.

By contrast, other states - let me call them 'southern' - show evidence of changes brought about by developing political systems, the successful effects of the European Union on regional development, and the alteration of economic base away from agricultural towards industrial economies. In these countries, there is a period of rapid growth of astronomy, towards the international facilities, in which these states play an increasingly influential role, as shown by Francisco Sanchez' presentation on the Canary Island Observatories on La Palma and Tenerife, outlining prospects for the Gran Telescopio de Canarias in the context of what he described as the European Northern Observatory. For the "southern" states, the problems are to develop at an appropri-

ate pace the intellectual capability of the communities and to support communities with infrastructure to fully exploit the new opportunities.

We all know the situation in what can be fairly accurately described as the “eastern” states: after a momentous political change, and a period of intense misery as a general lack of economic competitiveness was ruthlessly exposed, the recovery of astronomy from its temporary dire state is beginning, as can be concluded from Boris Shustov’s discussion. The recovery of astronomy is not of course immune from the pain of change brought about by the general competitive process.

It seems clear that these significant differences will require regional objectives and strategies in the development of a policy of astronomy in Europe, in a society like the EAS which has representation from all these regions.

Scale of the community

I referred just now to the size of the astronomy community in Europe. In fact we do not know the size of the astronomical community in Europe, let alone its distribution and any secular trends. There was a survey made by the European Science Foundation in 1975, desperately out of date. The OECD MegaScience Forum made a valuable survey in 1990, which is now also out of date and was somewhat limited in scope. It seems necessary, if European astronomy exists and we want to influence its direction, to know what it consists of, and EAS has decided to make a survey.

European astronomy in a global and regional context

Europe and the USA each account for about 40% of the projects, then, Europe can aspire to compete with the USA; this will mean some apparent duplication as we let evolution take its course. In the largest projects, however, of a scale such that the world can afford only one (perhaps a millimetric interferometer array, advocated in Thessaloniki by Peter Shaver, or the Next Generation Space Telescope, advocated by Jean-Pierre Swings), Europe could co-operate with the USA as an equal partner in such projects - provided European countries act as a single negotiating partner. In some areas, there are European strengths and European weaknesses; these niches provide opportunities to capitalise on the strengths, or for the development - or curtailment - of the weaknesses.

The identification of the areas of complementarity, cooperation, competitiveness, weakness or strength com-

pared to the rest of the world is essential to show us the possible scientific directions for European astronomy. From this, as well as a scientific discussion, both organised by the EAS, could come a list of possible future projects: global projects where Europe is at about 50% of the projects where Europe forms about 100%

On a smaller scale will come national projects. I think I see a tendency in national projects for all nations to do everything, which can result in all nations doing the same. As Michel Dennefeld argued for the European telescopes, there is a need to co-ordinate the different instruments and telescope programmes, because not everything can be provided for each telescope: cooperation and co-ordination is essential. A European policy would suggest areas where greater diversity and co-ordination would be beneficial to European astronomy, better satisfying European needs as a whole.

Structure of astronomy in Europe

The future of astronomy in Europe is partly a matter of future scientific directions and future projects. It is also a matter, not only of hardware but also of brains. The theory to inspire and interpret observations is an essential ingredient for the generation of science, as contrasted with data.

The role of postgraduate students in the thinking process itself and the future of astronomy is also an essential element of a European policy, which should include a coherent policy towards students. Are they apprentices who sit at the feet of the master and then take on his or her mantle? If this concept is built on the hypothesis of steady state, it implies that we all train one PhD student each in our lifetimes. Or if we train a greater number, that there is a proportionate demand to increase the number of astronomers. I fear that neither of these is true, so any promise that a PhD is a training to be an astronomer amounts to pyramid selling. On the other hand, students are not and must not be disposable slave labour. A policy should recognise what the role of students is and act accordingly, rather than act as we would like the situation to be or in disregard of the situation.

An area where I observe differences of attitude and success among the various European states is in the roles of universities, national research institutes and international organisations. Whatever the reasons for the present differences I find it hard to believe that they are all equally effective. Where do the strengths and weaknesses of the current arrangements lie? Are there policy issues at stake which will make a difference for

astronomy in Europe?

Towards a future European policy in astronomy

In Thessaloniki, Riccardo Giacconi eloquently argued that European astronomy must develop a policy. We must take stock of where we are, provide a forum for a dialogue and convince our communities to make decisions on grounds of science not national values. In times when resources are limited (when are they not?) there will be problems of priorities, but if we do not set priorities others will do it for us. There will be losers in the process, but there will anyway be losers. It is a contentious process, but scientists are used to discussion and to make rational decisions. It must be better to plan than not to, and the EAS is ideally situated to contribute to the European plan for astronomy.

P. Murdin

JENAM-97

The 6th Conference of the European Astronomical Society E.A.S. was organised this year jointly with the 3rd Conference of the Hellenic Astronomical Society Hel.A.S. in Greece. The Meeting was held close to the village of Kallithea in the picturesque peninsula of Chalkidiki, an outstanding resort site, about 90 km from Thessaloniki ($\lambda = +23^\circ$, $\phi = +40^\circ$).

The Conference with the active support and participation of the Greek National Committee for Astronomy, covered the basic fields of Astronomy and Astrophysics and was open to all astronomers who wished to interact and exchange their scientific expertise with their European colleagues.

During the Conference, both the fundamental astronomical knowledge and the exciting new results in experimental and theoretical astrophysics were presented by experts in the field. The Conference attracted about 330 participants from 28 Countries, becoming, therefore, one of the largest conferences held in recent years in Europe. It provided new prospects for current research and a first class opportunity to European astronomers to strengthen their bonds. It is very encouraging that 25% of the participants were female, a percentage which is well above the average professional positions held by women in Science.

During the Opening Ceremony Dr. S. Krimigis (The Johns Hopkins University, USA), in an unexpected lecture, presented the newest results of the very recent

(27 June 1997) flyby of asteroid Mathilde by the NASA *NEAR satellite*. A very exciting opening for the 4-day conference.

Seven meticulously prepared *Invited Reviews* were delivered by Drs. M. Rowan-Robinson (Imperial College, U.K.), J. Trümper (MPE, Garching, Germany), R. Genzel (MPE, Garching, Germany), R.A. Sunyaev (Moscow, Russia and MPE, Garching, Germany), A. Gabriel (Paris, France), F. Occhionero (Rome, Italy) and J. van Paradijs (Amsterdam, The Netherlands).

One of the most exciting sessions of the Conference was the *Round Table on European Astronomy from the Ground and Space* organised by Dr. P. Murdin (PPARC, England) and manned by a very able panel of scientists. A summary of the present and forthcoming activities concerning the European Ground and Space Astronomy, discussed during the *Round Table*, will appear in a special publication of the Hellenic Astronomical Society.

Finally 284 papers were presented in parallel sessions in 9 wide areas of Astronomy. (Table 1)

The beach and the hotel facilities were fully exploited by the participants and the accompanying persons. The City of Thessaloniki, the Chalkidiki peninsula and the surrounding region offered a wide variety of sights and activities, ranging from world-class culture (archaeological sites, museums and exhibitions) to a variety of entertainment, cuisine and natural wonders. Several participants visited *Mt. Olympus*, the mountain of gods. Others took the opportunity to take a boat ride around *Mt. Athos*, well known for its monasteries and Byzantine treasures. Furthermore, Thessaloniki has been nominated the *Cultural Capital of Europe for 1997*, a fact that gave the opportunity to many participants to attend a variety of cultural events including the exhibition of the *Treasures of Mt. Athos*, a unique exhibition of byzantine treasures.

J. H. Seiradakis

JENAM-98 First Announcement

**7th European and Annual Czech
Astronomical Society Conference**

9 – 12 September 1998, Prague, Czech Republic

PROSPECTS

OF ASTRONOMY AND ASTROPHYSICS

Table 1: Distribution of papers by subject

	Poster	Oral	(Inv)	Total
Dynamical Astronomy	7	14	(1)	21
Solar Physics	21	12	(3)	33
Space and Planetary Physics	9	20	(4)	29
Stellar and Interstellar Astrophysics	41	25	(3)	66
Galaxies	13	21	(3)	34
Observational Astronomy - Instrumentation	10	13	(1)	23
High Energy Astrophysics	12	23	(9)	35
Cosmology and Relativity	3	20	-	23
History of Astronomy	7	13	-	20
Total	123	161	(24)	284

Note 1: Invited papers are those assigned as such by the Convenors. They are included already in the Orals count.

Note 2: The Convenors and the Chairmen of sessions had the authority to change their schedules by shifting, cancelling or including new presentations. It is therefore possible that the above Table may contain a few minor inaccuracies. They are included already in the Orals count.

FOR THE NEW MILLENNIUM

The 7th meeting of the European Astronomical Society (EAS) will be held in Prague, Czech Republic, jointly with the annual conference of the Czech Astronomical Society (CAS). This will be the fourth time the EAS meets jointly with one of its affiliated societies. The Conference will cover selected fields of astronomy and astrophysics and is open to all astronomers who would like to interact and exchange their scientific expertise with their European colleagues.

Rapid progress in astronomy and the active role European astronomers played in the process guarantee that important results will be presented in Prague, a city with a rich astronomical history going back to the middle of XIVth century, when the oldest central European university was established there. Incidentally, Charles University of Prague is celebrating its 650th anniversary in 1998. At the beginning of 1998 Czech astronomers will remember the centenary of their prime astronomical facility, Ondřejov Observatory (located 40 km south-east of Prague). Thus, the forthcoming JENAM 98 is perfectly timed to commemorate these events.

1. Main Scientific Objectives

Solar Physics
 Small Bodies in the Solar System
 Extra Solar-System Planets
 Astrophysics of Interacting Binaries
 Star Clusters and Galaxies

High-Energy Astrophysics
 Relativistic Astrophysics and Cosmology

These are the main topics that will be addressed in plenary invited reviews and discussed in parallel sessions. Co-chairmen of each parallel topic will be named soon and their contact addresses will be announced in due time. Potential invited speakers will be approached by the Scientific Organising Committee (SOC) in the near future, too. As usual, poster presentations will become an important part of the Conference and instructions will be given to all participants in the second announcement.

The SOC also deliberates on the inclusion of joint (panel) discussions covering selected subjects: **Instrumentation, History of Astronomy (including a half-day excursion "Praga Astronomica" on Saturday afternoon, Sept. 12), Teaching in Astronomy, Young Astronomers & Jobs, Very Large Projects.**

Two associated meetings are also planned for the days preceding and following the main Conference dates: On Tuesday, September 8, 1998 the all-day workshop entitled

SOLAR ECLIPSE 1999 WORKSHOP

will be held in Prague at the same place as the JENAM 98 Conference (see the attached separate announcement of the Workshop Organising Committee).

On Sunday, September 13, 1998 a plenary meeting of the Czech Astronomical Society (CAS), founded in 1917, will be organised in the Planetarium of Praha where the summary of the JENAM-98 proceedings will be given by the Czech participants in the SOC to members of the Society. In the course of this plenary meeting the Z. Kvz Award of the CAS will be handed over to the awardee who will then deliver his/her address. The award is given every second year to a person selected by a jury for his/her outstanding results in the fields covered by the late Dr. Zdeněk Kvíz (1932-1993): interplanetary matter, variable star research, popularisation of astronomy.

2. Scientific Organising Committee – SOC

J. Bičák (Czech Republic),
S. Beckwith (Germany)*,
A. M. Cherepashchuk (Russia),
M. Fulchignoni (Italy),
J. Grygar (Czech Republic),
P. Heinzel (Czech Republic),
M. Huber (ESA-ESTEC),
M. Longair (United Kingdom)*,
J. Palouš (Czech Republic, Co-chairman),
J. P. Zahn (France, Co-chairman).

* To be confirmed

3. Local Organising Committee – LOC

J. Borovička, L. Červinka (IKARIS Ltd), J. Grygar(Chairman), P. Hadrava, P. Heinzel, J. Palouš (Co-chairman), R. Plaček, M. Šolc, J. Vondrák, M. Wolf.

Secretary: Z. Dienstbierová

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<http://sunkl.asu.cas.cz/jenam98>

4. Agenda

The scientific parallel sessions will be spread over approximately 10 morning or afternoon intervals, each lasting about two hours. Each subject will be organised and chaired by two-to-three convenors. They will referee and accept the contributed papers and might

also negotiate the separate publication of the full proceedings of their sessions. The SOC of JENAM-98 will prepare the special booklet with the abstracts of the contributed and review papers, prior to the Conference. However, the SOC does not intend to publish any proceedings of the Conference afterwards.

5. Conference Location

The Conference will be held in the building of the Faculty of Construction of the Czech Technical University (ČVUT) in Praha 6-Dejvice, in a walking distance from the terminal Dejvická (Victory Circle) of the subway line A. The area of the Conference can be reached easily from the Prague international airport (in about 20 minutes by rather cheap and reliable public transport and in about 15 minutes by rather expensive taxi-cabs), from all Prague main railway stations (adjacent to subway lines) and also by car. Everybody knows where the circular passage on Victoria Circle (Vítězné náměstí in Czech) in Dejvice is and from that place you will easily spot the campus of the Technical University with several big parking lots. It is not very useful to use a car in downtown congested traffic but with subway line A you can easily reach the very center of the town from the station Dejvická in 10 minutes. The weather in the first half of September in Prague is mostly stable with plenty of sunshine, light winds and very little rain. You may expect maximum afternoon temperatures around 25° C while at night they occasionally drop to 15° C. Unfortunately, the conference halls are not air-conditioned.

6. Arrival and Departure

Prague international airport has daily connections with almost all European capitals and many other major cities. There are also direct flights from some overseas destinations. Prague is connected by Intercity and Eurocity trains with Germany, Poland, Russia, Ukraine, Slovakia, Hungary, Austria, Switzerland, France, Benelux and Scandinavian countries. There are also many direct international bus lines to all neighbour and many more distant European countries with rather cheap reservation return tickets. These lines operate, however, only in certain days of week, mostly around weekends. However, you can reach Prague in about 16 to 20 hours even from such distances as London, Madrid and Rome. The LOC will help you in identifying these possibilities upon request. Prague has a very good, dense and reliable system of public transportation (buses, tramways, subway) and the time-tables are observed with astonishing accuracy. You can purchase rather inexpensive personal tickets for unlimited use in one, two or even seven days in major terminals of the

Table 2: Registration Fees

	Early Registration (until May 15, 1998) (US\$)	Late Registration (after May 15, 1998) (US\$)
General registration	120.-	140.-
E.A.S. Ordinary Member	100.-	110.-
E.A.S. Junior Member	50.-	60.-
PhD Students (no E.A.S. Members)	80.-	100.-
Accompanying Person	40.-	50.-

subway and many other places. Thus, with minor exception (excursion to the Ondřejov Observatory of the Astronomical Institute, social programme) no special transport for the JENAM-98 participants is envisaged.

7. Cultural Events

Cultural life in Prague is very diverse and almost everybody has his own list of preferences what to see or attend before or after the official conference programme (we hope that people will not prefer to attend cultural events instead of the conference programme!). It is without saying that the LOC together with ICARIS *Conference Management* will be helping you in finding your way through the rich spectrum of attractive offers.

8. Accommodation and Board

Accommodation in all price and comfort categories is not a problem as long as you send your HOTEL RESERVATION FORM early enough. This form will be distributed with the Second announcement in February 1998. Please, mark your preliminary interest in hotel category in the Pre-registration form. The most economic accommodation in student hostels will be provided in the Technical University campus. Bear in mind that Prague has become a tourist center of attraction and September is still a high tourist season. This might cause a problem when finding places in restaurants for private dinners etc. (reservations are recommended). However, during JENAM-98 lunches in student cafeteria very near the Faculty of Construction can be bought by conference participants.

9. Financial Assistance

At the moment we are seeking for local support for the Conference that most probably will help us subsidise hostel accommodation for student participants. Regrettably, we shall have no means to reimburse travel expenses, hotel accommodation or registration fees. The

Czech Astronomical Society will partly support its active members and we hope that other European Societies will follow a similar approach.

The current rate of exchange is **1 US \$ ~ 34 Czech crowns.**

10. Pre-registration

We strongly encourage completing and sending back to ICARIS *Conference Management* the Pre-registration form included in this announcement before 31st December 1997. This will help us in proper organization of the meeting. Information about the registration fees is given below. Method of payment will be described in the Second Announcement, which will be distributed before February 28 1998.

SOLAR ECLIPSE 1999 WORKSHOP ASSOCIATED WITH JENAM - 98

Prague, The Czech Republic
September 8, 1998

A one-day workshop dealing with the solar eclipse of 1999 will be organized during the JENAM-98 conference. The main topics of the Workshop will be theoretical and observational problems in solar corona research, especially during the August 11, 1999 eclipse. Observers and theorists will come together to examine what has been learned from earlier observations, to prepare common and/or coordinated observations in the forthcoming eclipse to solve problems in solar corona research.

Invited reviews and oral/poster papers will be presented during the Workshop, which will be held at the same facility (Prague Technical University Campus) as the JENAM-98 conference. JENAM-98 conference fee covers also expenses associated to this workshop. Scientists interested in attending the workshop are encouraged to contact one of the responsible persons (as follows) as

soon as possible and simultaneously mark your interest in the preliminary registration form.

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The XXIIIrd IAU General Assembly

The 23-rd GA (General Assembly) was successfully held in Kyoto during August 18-30, 1997. Despite long distances from Western countries, it was attended by 1936 IAU members and Invited Participants accompanying by 172 Registered Guests from 59 countries. It was the fifth biggest GA in the history of the IAU.

As described in IAU Information Bulletin (IB), 6 big Symposia, 23 Joint Discussions, 3 Special Sessions, and 3 Invited Discourses were held. About 780 oral papers and 1070 poster papers were presented. In addition to them, 75 business and scientific meetings of different sizes were held, such as Division, Commission and Working Group meetings, and committee meetings to steer organizations of the IAU.

I was often asked by reporters of the press what was the main topic of the GA. It was a difficult question to answer, since a great variety of subjects from almost all sub-disciplines of astronomy was covered in the GA. You may find some hints in the "Sidereal Times", the newspaper published every working day during the GA which may be brought back to your country with the participants, and you will also find in the forthcoming Transactions of this GA.

In the afternoon of Wednesday the 20-th, an inaugural ceremony has taken place just before the opening session of GA. Their Majesties the Emperor and Empress of Japan were present at the ceremony and His Majesty the Emperor gave Okotoba (the words of welcome) to illustrate the importance of international flow of knowledge.

This GA was the second experiment of the so-called "new format" in which all the IAU symposia of the year were concentrated during the GA. I think the experiment was successful. Though it made the duration of the GA as long as two weeks and burdened the LOC not only in labors but also in budget, the participants were able to enjoy navigating and browsing different symposia and joint discussions, and also communicate with astronomers of different sub-disciplines.

Chosen among the outstanding topics of astronomy

from both observational (Hubble Deep Field) and theoretical ones (the idea of new physics in the interior of the black holes) and from single star physics (cataclysmic variables) to the large and most distant cosmological physics (Hubble Deep Field), the three invited discourses attracted a large audience. All of them revealed the up-to-date achievements of astrophysics and its links to the progress of fundamental physics.

Social events should play a role of promoting communication among the participants. We avoided to collect additional charges for them so that all participants were equally able to join them. As a result, almost all participants of the GA enjoyed the Nara tour on Sunday and the banquet in the evening after the closing session of GA. Because of the great number of participants, we faced some problems. Nevertheless, the way we handled the social events was appreciated thereafter. Another novelty of this GA was the access to electronic communications by www and email before the GA. Some appreciable advances were also made to this respect.

During the session of GA, addresses of invitation for the future GA's were given by the National Committees of UK for 2000 in Manchester and of Australia for 2003 in Sydney. All of us hope to meet there again carrying new results of astronomical research with us.

D. Sugimoto

Inside the Sun and the Stars

Stellar seismology was born in the early seventies, when it was recognized that the solar "five minute oscillations" - quasi periodic vertical motions in the solar atmosphere with mean amplitudes ranging from 200 to 2000 m/s - are the evanescent wakes of millions of highly non-radial modes of vibrations that penetrate the interior of the sun coherently. Measurements of the wavelength, amplitude, and phases of these vibrations probe the interior of a star the same way the structure of the earth's crust, or its mineral deposits are sounded with seismic methods.

Within the twenty odd years since the discovery of the seismological relevance of the "five minute oscillation" stupendous progress has been made in experiment and theory, both qualitatively and quantitatively. IAU Symposium 185, held from Aug. 17 to 21 in conjunction with the IAU General Assembly, in Kyoto, was a comprehensive presentation of the most recent achievements of "Helioseismology" to a broader astronomical commu-

nity. The organizers had made considerable efforts to invite the leading experts in the field, to present and discuss the large array of results obtained by the GONG people - the Global Oscillations Network Group - , and from other Earth based facilities worldwide, as well as the beautiful data and the astounding inferences made possible with the unique SOHO - Solar Oscillations and Heliospheric Observatory.

More than a full day's worth of oral and poster presentations, fully embedded in the seven sessions program, has been devoted to "Astroseismology"; a large body of results have been obtained indeed in an effort to extend the experience and techniques of Helioseismology to individual stars across vast areas of the Hertzsprung-Russell-Diagram.

This rapidly growing field within the realm of stellar photometry, spectrometry, and polarimetry was introduced by Don Kurtz (University of Cape Town, South Africa), who highlighted the most recent developments. After an overview on the theoretical aspects of Astroseismology, *White Dwarfs* and their progenitors, *rapidly oscillating Ap stars*, and the tantalizing question of whether *Solar like oscillations* have really been detected, were discussed. In each session, theoretical and observational aspects were treated in a balanced fashion.

In the afternoon, the discussion first turned to δ *Scuti stars*, and the discovery of *g-mode pulsation in γ Doradus* type stars, followed by reports on the observational evidence of *B star pulsation*, the theoretical aspect of this phenomenon, and its seismological prospects. A new class of variables, pulsating hot subdwarfs called by the romantic name of EC14026 stars, made its appearance.

Whereas the multitude of stellar types now amenable to seismological analysis heralds a new era of physics of the single stars, it is the wealth of detailed knowledge about the whole body of our Sun, and the processes and variations therein, that makes "Helioseismology" an exciting and prospering science. Who would have expected 25 years ago to measure one day the sound speed and the velocity of rotation as function of latitude in the deep interior of the sun; to directly confirm the actual temperature distribution near its energy generating core previously inferred from stellar structure calculations (thereby rejecting astrophysical excuses for the neutrino deficit); or to determine the three dimensional distribution of magnetic fields in the subphotosphere with astro-tomography? The five sessions on Helioseismology have illustrated the success on the way to the

transparent sun.

The first two of these sessions were devoted to the Global Structure and Evolution of the Solar and Stellar Interior. Among the many exciting topics discussed were the *Lithium Abundance* and its dependence on *Internal Rotation* and *Mixing*; the short term (days to years) *Variability of Solar Irradiance*; and the role of sub-arcsec magnetic field structure for the heat storage capacity of the convective envelope.

The next two items on the programme dealt with the Large Scale, and the Small Scale Structure of the Sun. A discussion of Inversion Methods was followed by presentations of the exciting new observational results on Internal Rotation and Large Scale Flows obtained from the MDI/VIRGO/GOLF experiments onboard SOHO, and from GONG. Solar research is getting better and better grips on the *Tachocline*, on *Torsional Oscillations* and *Meridional Flows*, essential ingredients of any working model of the Solar cycle.

The other morning, attention turned to aspects of the response of the Solar envelope to small scale seismic events, "sunquakes" like flares, and turbulent instabilities of the intergranular downdrafts. It is here (comparable to studies of earthquakes), that the new technique of *Time - Distance Helioseismology* (or 3-D Solar Tomography) unfolds its full potential. Theoretical discussion of the excitation and damping of p-mode oscillations - the Sun's multivoiced chorus -, and numerical simulations thereof, followed.

The last session of the Symposium moved the focus of interest up into the Solar Atmosphere, which has been open before our eyes all the time. Yet, its 3-D structure and dynamics, being so intimately connected to the understanding of the "where and how" the outer layers of the Solar atmosphere are heated, seem far from fully transparent to the mind. Recent success was demonstrated in extending the methods of seismic tomography and 3-D wave field analysis to the agitated surface layers of the Sun. A clear point was made of the importance of a dynamic picture of our understanding of the chromosphere and the spectral features formed there.

Numerous short oral contributions added pepper to this rich program, and, jointly with an impressive array of posters with fresh results, emphasized the productivity of the competing ground based and space borne instruments. The organizers of this meeting were extremely happy to have K. Chitre (Tata Institute of Fundamental Research, India) recalling the highlights of these five days, and distilling the essence of recent progress in

Helio- and Asteroseismology in the context of modern Astrophysics.

The Abstracts of the oral contributions and posters of this Symposium can be looked up in the Symposium homepage: <http://www.astro.uni-wuerzburg.de/IAU.html>

F.-L. Deubner

Galaxy Interactions

at Low and High Redshift

Interacting galaxies are currently a ‘hot’ topic, of considerable general interest to studies of galaxy formation, active galactic nuclei, formation of star clusters, formation of tidal dwarfs, metal enrichment of the intergalactic medium, and galaxy evolution in both clusters and in the field. In just the past few years, HST has revealed unprecedented details of nearby interacting systems, clarified the nature of blue cluster galaxies at intermediate redshifts, provided tantalizing hints of interactions in some high-redshift QSOs, and just recently, has provided the clearest look yet at the formation/evolution of field galaxies out to $z \sim 3$ in the Hubble Deep Field (HDF). On the ground, radio and millimeterwave arrays are providing unprecedented detail on the spatial and kinematic distribution of the gas and dust in interacting galaxies. Theorists have responded to these new observations by developing sophisticated models treating the kinematics and dynamics of both the gas and stars, and have pushed beyond interactions of pairs and small groups to explore the effects of interactions in cluster environments.

It has been nearly 8 years since the Heidelberg conference on Dynamics and Interactions of Galaxies, a watershed event that brought together new groundbased observations (e.g. optical images of ripples and shells, and the first millimeterwave interferometer data on molecular gas in merging galaxies), and new spacecraft data (e.g. luminous infrared galaxies studied by IRAS), for comparison with results from new, more realistic computer simulations of galaxy interactions. Eight years later, we seem to be poised for a similar rapid advance in our understanding of the effects of interactions as a unifying theme for understanding a wide range of galaxy activity at low and high redshift.

All these were discussed during the IAU Symposium 186 in Kyoto. Overview talks setting the stage for the conference by outlining the major questions that

have been raised by current observations and theory; Francois Schweizer covered observations at low- z , while Roberto Abraham the high- z observations, and Carlos Frenk discussed theoretical models.

The second session stayed close to home by discussing the wealth of new data that implicates current and past interactions and mergers in the formation and evolution of our Local Group of galaxies. Ken Freeman reviewed various models for the formation of the Local Group, while Luis Aguilar discussed evidence for moving groups in the Galactic Halo. Ricardo Ibata reviewed the nature and fate of the Sagittarius dwarf, Mitsuaki Fujimoto the dynamics of the Magellanic Stream, and Igor Karachentsev presented an overview of interactions throughout the Local Complex of Galaxies.

The third session of the meeting discusses tidal interactions, drawing heavily on detailed observations of nearby systems. Felix Mirabel discussed the formation of dwarf galaxies in tidal tails, while Renzo Sancisi, Min Yun, and Francoise Combes discussed the kinematics and dynamics of the gas. Phil Appleton reviewed the wealth of data on Ring Galaxies. The accretion of satellites was discussed by Denis Zaratsky, while Ann Zabludoff reviewed the nature of the ‘E+A’ galaxies.

The next two sessions discussed the role of interactions and outright mergers in the formation of ‘hot’ systems – elliptical galaxies and the spheroids of disk galaxies. Here the conference examined kinematic and chemical evidence for accretion events in the formation of the Galactic halo, and made comparisons with the halo kinematics of nearby galaxies as revealed by studies of planetary nebulae and globular clusters. Among the issues which may make or break the connection between merger remnants and spheroidal systems are analyses of the origin of globular clusters, the formation of cores, and the dynamical structure of hot systems. Josh Barnes reviewed the dynamics of merger remnants while Francisco Bertola discussed counterrotating gas and stars. Marian Franx will give a review of normal ellipticals while Dave Carter and Steve Zepf reviewed ‘shells, ripples, and plumes’ and globular clusters in ellipticals respectively.

Sessions 6 and 7 reviewed the triggering of Starbursts and Nuclear Activity by interactions and Mergers. Chris Mihos and Judy Young discussed theory and observations of gas in mergers while Chanda Jog reported on new theoretical models for triggering starbursts. Claus Leitherer and Brad Whitmore discussed the IMF in starbursts and the evolution of globular cluster systems respectively. Sterl Phinney reviewed the fu-

eling requirements for AGNs while Alan Stockton and Pat McCarthy reviewed observational evidence implicating interactions and mergers in Quasars and Radio Galaxies. Roland vanderMarel discussed the relics of nuclear activity.

The environments in which galactic interactions occur was examined in the eighth and ninth session. Here attention shifted to interactions seen at intermediate and high redshifts to begin building a cosmological perspective. Paul Hickson reviewed compact groups while Jacqueline vanGorkom and Barbara Williams discussed interactions and mergers in clusters and groups respectively. Long-standing questions concerning the nature of the blue galaxies seen in intermediate-redshift clusters may soon be settled with high-resolution observations, which also constrain the pace of galactic interactions back to $z \sim 1$. Observations of the Hubble Deep Field, reviewed by Roger Blandford has been singled out for discussion as the single most important new evidence for how the field population has evolved from $z \sim 2-3$ to the present, while David Koo discussed in general the high- z population of galaxies. Phil Solomon discussed molecular gas at high- z while Masafumi Noguchi presented new theoretical models for interactions of high- z galaxies.

The final sessions of this conference examined the entire observed redshift range, combining detailed studies of nearby objects with broad surveys of more distant sources. Gustavo Bruzual reviewed starburst populations and Guinevere Kauffmann discussed interactions and mergers in general as determinants of galaxy morphology. Simon White gave a summary of interactions, activity, and galactic evolution, while Peter Stockman presented the prospects for future new discoveries using the Next Generation Space Telescope.

D. B. Sanders

The Hot Universe

The present decade is opening new frontiers in high energy astrophysics. After the X-ray satellites in the 1980's including Einstein, Tenma, EXOSAT and Ginga, several satellites are or will soon be simultaneously in orbit offering spectacular advances in X-ray imaging at low energies (ROSAT; Yohkoh) as well as at high energies (GRANAT), in spectroscopy with increased bandwidth (ASCA; SAX), and in timing (XTE). While these satellites allow us to study atomic radiation from hot plasmas or energetic electrons, other satellites study nu-

clear radiation at gamma-ray energies (CGRO), associated with radioactivity or spallation reactions.

These experiments show that the whole universe is emitting high energy radiation, hence we call it the "hot universe". The hot universe, preferentially emitting X- and gamma-rays, provides us with many surprises and much information; Star formation, for example, has been viewed as a cold phenomenon for half a century. The temperature of molecular clouds are a few tens of Kelvin, circumstellar disks are perhaps a few hundred, and young star surfaces are a few thousand Kelvin. However, X-ray observations have revealed that these "cool objects" possess gases of a million to nearly a hundred million Kelvin.

X-rays from heavy elements have been found in every class of astronomical objects, even in the intracluster gas, indicating that the hot gas originating from stars is largely diffused out through the interstellar to intergalactic spaces. Since these heavy elements are in rather simple forms such as He-like or H-like, the abundance determination with X-rays may be reliable. This leads us to a more quantitative study of chemical evolution of the "hot universe". Owing to the advance of X-ray spectroscopy, questions arising from the abundance study now enters a new phase; e.g., to what degree do the apparent metallicity values depend on the plasma conditions such as ionization non-equilibrium or resonance scattering? Why do elliptical galaxies exhibit metallicity lower than solar? What determined the abundance variations in cluster gas? Is there any evolutionary effect in the chemical abundances in distant clusters?

On the other hand, the high-quality astrophysical plasma data are certainly demanding reevaluation of the currently existing laboratory atomic data. Gamma-rays directly provide new information on the nucleosynthesis of heavy elements.

All these subjects were reported in session 1, "Plasma and Fresh Nucleosynthesis Phenomena" After the synthetic view of "the hot universe", strategy for future missions were discussed in session 2, "Future Space Programs"

We, then, divide the "hot universe" into two major regimes; the first is the category of compact objects—white dwarfs, neutron stars and gravitationally collapsed objects: stellar mass black holes or active galactic nuclei. The compact objects, with the release of their huge gravitational energy through gas accretion, emit X- and gamma-rays accompanied by violent and rapid time variability.

A massive star, after exhaustion of its nuclear fuel, suddenly implodes and creates a neutron star or black hole. An isolated, rapidly spinning neutron star emits X- and gamma-rays as well as high energy particles. Such neutron stars evolve to radio pulsars and, after billions of years, some may be reborn as X-ray emitting low mass binaries, and then, may be recycled to be milli-second radio pulsars. This evolutionary scenario with observational results for and against it, is still debatable.

With the spatially resolved spectroscopy technique, synchrotron X-rays and inverse Compton TeV gamma rays have been found from shell-like SNRs. This may be a breakthrough in the long-standing problem: the origin and acceleration of the cosmic rays. Thus SNRs and related subjects are one of the important major issues to be addressed.

The study of stellar black hole binaries has been greatly advanced by recent gamma-ray and radio observations. They show relativistic jets analogous to those observed in some quasars, hence are called "micro quasars". Some of them possibly exhibit electron-positron annihilation lines and serves as excellent laboratories in which to study the relativistic plasma.

Although the primary emission from the compact objects is not from thin hot plasma, the intense high energy photons make photo-ionized plasmas around the compact sources. Conversely, the surrounding gas modifies the incident X-ray spectra by either reflection, fluorescence, recombination or absorption. These are found in galactic compact sources and active galactic nuclei (AGN) including our own galactic center. Indeed, the spectacular ASCA image of the fluorescent iron lines near the galactic center provides a possible scenario that our galactic center exhibited AGN activities in the past.

One promising discovery related to this subject is the gravitationally red-shifted iron K-lines from some AGNs. These are key observations for determining the accretion disk structure and, hopefully, the metric around a black hole: whether Schwarzschild or Kerr metric, for example.

AGNs are the objects for which multi-wavelength studies are extremely important. Gamma-ray data, already suggestive, provide a clue to the high energy emission from the central jet engines. To all these issues, session 3, "Diagnostics of High Gravity Objects", was devoted.

The second regime is thin hot diffuse plasmas. It shows a hierarchy structure: from coroneae and flares of the sun and stars, the hot interstellar medium including supernova remnants, to hot gas prevailing in galaxies, clus-

ters of galaxies and perhaps even in inter-cluster spaces. Climbing the hierarchy scheme upward to a larger scale, the role of the hot gas becomes more dominant. Finally in the rich clusters, the mass of the hot gas exceeds the optically visible mass, hence the hot gas may carry most of the baryonic mass in the universe. The hot plasma, through its temperature and spatial distribution, traces the dark matter distribution. How large is the total mass of the galaxies and clusters? Is dark matter distributed hierarchically like the visible matter? How can we measure the dark matter distribution? Observations of cosmic hot plasma give us clues to these questions. The X-ray data are cross-checked by the optical data for the gravitational lensing clusters. Determination of the Hubble constant using the Sunyaev-Zel'dovich effect is a rapidly developing area in X-ray and radio observations. New results for these subjects were brought together in the last session, "Large Scale Hot Plasmas and their Relation with Dark Matter"

K. Koyama

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A. Heck

International Conference on Supercomputing

The conference was held in the National Science Museum in Tokyo to celebrate 60-year birthday of Professor Daiichiro Sugimoto, who has been leading theoretical and numerical astrophysics for 30 years.

The conference covered exceptionally wide range of subjects, to follow Sugimoto's accomplishments in many fields. In the first day we had three talks on stellar dynamics and seven talks on stellar dynamics. In the second day, six talks on special-purpose computing and four talks on large-scale computing in Molecular Dynamics were given. In the third and last day, three talks on dedicated computers on Lattice QCD calculations and six talks on present and future of general-purpose HPC systems were given. In addition, some 30 posters are presented on various subjects within computational science. The proceedings will be published from Kluwer.

In stellar dynamics session, Piet Hut gave an excellent review on the long-term evolution of star clusters. I described briefly the results obtained on our GRAPE-4 special-purpose computer and the followup project, GRAPE-6, which is approved as of June 1997. GRAPE-6 will be completed by year 2000 with the peak speed around 200 Tflops. R. Spurzem proposed a new approach to improve the performance of GRAPE for wide variety of problems. D. C. Heggie talked on his recent collaborative experiment, which revealed a rather large and unexpected discrepancy between Fokker-Planck calculation and direct N-body simulation. E. Athanassoula described the work done using their GRAPE-3 systems. S. Ida described the result of the simulation of the formation of Moon.

In the session for the special-purpose computers, the first talk was given by Feng-Hsiung Hsu of the IBM T. J. Watson Research center, on "Deep Blue". It was certainly one of the highlights of the conference. He started with the brief history of the chess machines and described the new Deep Blue, which, for the first time in the history, won the match with the best human player, Mr. Gary Kasparov. Then A. Bakker of Delft Institute of Technology looked back his 20 years of developing special-purpose computers for molecular dynamics and simulation of spin systems. Jeff Arnold gave an overview of the emerging new field of reconfigurable computing, which falls in between traditional general-purpose computers and special-purpose computers. Sachiko Okumura described the history of ultra-high-performance digital signal processors for radio astronomy. They have built a machine with 20 GOPS performance in early 80s, and keep improving the speed. Makoto Taiji talked on general aspects of GRAPE-type

systems, and Tetsu Narumi talked on the 100-Tflops GRAPE-type machine for MD calculations, which will be finished by 1999.

J. Makino

E-MAIL YOUNG PEOPLE FORUM

Organised by the EAS

I hope you will be interested in participating to an e-mail forum organised by the EAS. This forum concerns all young people in Europe who are studying or have just started for a career in astronomy. We intend to spend one week in December, when all of you interested, can contact senior astronomers all over the world to discuss about their worries and concerns on various issues like, education, grants, databases, large facilities, scientific matters.

The motive of this activity is to contact all young people if possible, to prepare a report on the problems and to estimate the number of people who are research students and/or have just got their PhDs in Europe. Doing so, we hope to be the link among young people, facilitate their communication and find ways to help them.

Knowing that young people may know where to trace your friends in other institutes, I will appreciate if you can inform about this to as many people you know as possible. Suggestions and comments are most welcome. Please contact: mkonti@astro.noa.gr.

M. Kontizas

Sponsored Meetings by IAU in 1998

In August 28 the IAU Executive Committee decided on the IAU meeting program for 1998.

Symposium 190: New Views of the Magellanic Clouds, Victoria, Canada, July 13-19.

Symposium 191: Asymptotic Giant Branch Stars, Montpellier, France, August 28- September 1.

Symposium 193: Wolf-Rayet Phenomena in Massive Stars and Starburst, Galaxies, West Coast, Mexico, November 3-7.

Symposium 194: Activity in Galaxies and Related Phenomena, Byurakan, Armenia, August 17-21.

Colloquium 168: Cometary Nuclei in Space and Time, China, May 18-22

Colloquium 169: Variable and Non-Spherical Stellar Winds in Luminous Hot Stars, Heidelberg, Germany, June 15-19.

Colloquium 170: Precise Stellar Radial Velocities, Victoria, Canada, June 21-26.

Colloquium 171: The Low Surface Brightness Universe, Cardiff, U.K., July 6-10.

Colloquium 172: The Impact of Modern Dynamics in Astronomy, Namur, Belgium, July 6-11.

Colloquium 173: Evolution and Source Regions of Asteroids and Comets, Tatranska Lomnica, Slovak Republic, August 24-28.

IX Latin American Regional Astronomy Meeting, Tonantzintla, Mexico, November 9-13.

Co-Sponsorship of 32nd COSPAR Scientific Assembly, Nagoya, Japan, July 12- 19.

Note that in the cases of Symposium 194 and Colloquium 173, acceptance is provisional only, final approval being contingent on approval of a revised scientific program by the EC.

Hans Rickman

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