Hipparchos

The Hellenic Astronomical Society Newsletter

Volume 1, Issue 4, Year 2 **January 1998**

Message from the President

The main event for our Society during 1997 was JENAM 97 (Joint European and National Astronomical Meeting 1997). This Meeting on "New Trends in Astronomy and Astrophysics", took place in Chalkidiki, close to Thessaloniki, from 2 to 5 June 1997. There were about 350 participants from 28 countries, mainly from Europe, and a total of 363 papers were presented on the following topics: Dynamical Astronomy, Solar Physics, Space and Planetary Physics, Stellar and Interstellar Astrophysics, Galaxies, Observational Astronomy-Instrumentation, High Energy Astrophysics, Cosmology and Relativity, and History of Astronomy.

The highlights of the Meeting were: (1) The Report on the flyby of the asteroid Mathilde by the NEAR Satellite (S. Krimigis), (2) Seven General reviews on the topics: Cosmology (M. Rowan-Robinson and F. Occhionero). High-Energy Astrophysics (J. Trümper), Nuclei of Galaxies (R. Genzel), Neutron Stars (R.A. Sunyaev and J. van Paradijs), and Solar Physics and Astrophysical Plasmas (A. Gabriel) and (3) A round table discussion on the future European Astronomy from the Ground and Space (P. Murdin, L. Woltjer, R. Giacconi, J. Trümper, J.P. Swings, R. Davies, R. Fosbury, F. Sanchez, P. Shaver, J. Lequeux, M. Denefeld and B. Shustov).

Besides the formal sessions there were many opportunities for informal meetings and discussions, and the General Assemblies of the European Astronomical Society and the Hellenic Astronomical Society. There were also various cultural events and excursions to Thessaloniki, that was at that time the Cultural Capital of Europe, to Mt. Athos, and to Mt. Olympos.

A book of Abstracts, containing most of the papers, was issued, with the financial support of the European Space Agency.

We are grateful to our Sponsors, that include the Ministry of Education, the Ministry of Culture, the Ministry of Development, the Ministry of Macedonia and Thrace, the University of Thessaloniki, the Hellenic Physics Society, the National Committee of Astronomy, the Physics Department of the University of Athens, the Egnatia Odos Organization, the Bank of Macedonia and Thrace and the Ziti Editions. Their support made possible to subsidize several students and participants from eastern countries, that had a unique opportunity to participate in our Meeting and meet their western colleagues. A characteristic example of the interest provided by our Meeting is the fact that a bus full of participants came all the way from Ukraine to Chalkidiki.

I am also grateful that almost all the invited lecturers provided their own support.

I want to thank heartily the members of the Scientific Organizing Committee and of the Local Organizing Committee, in particular its Chairman (J. Seiradakis), Secretary (M. Contadakis) and Treasurer (H. Varvoglis), and also the students of the University of Thessaloniki that helped considerably in the Organization of the Meeting.

This Meeting has shown that European Astronomy is extremely active and its prospects are bright. In particular this meeting has contributed to a more complete integration of East and West, which is quite beneficial for Astronomy.

I want also to mention that Greek Astronomy progresses quite well. During that meeting, with the acceptance of the new members, the number of professional Astronomers, members of Hel. A.S. went above 200!

The President of Hel. A.S.,
G. Contopoulos

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JENAM-97
The Joint European and Hellenic Astronomical Society Meeting
July 2-5, 1997
Thessaloniki, Greece

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 the city of Thessaloniki ($\lambda = +23^o$, $\varphi = +40^o$). This was the third time the E.A.S. met jointly with one of its Affiliated Societies.

The Conference was held under the aegis of the Aristotle University of Thessaloniki, the University of Athens, the Greek National Committee for Astronomy and the National Observatory of Athens. It was sponsored by several public and private sources listed in Table I.

Table I: List of Sponsors

Ministry of Education
Ministry of Macedonia and Thrace
Ministry of Culture
General Secretariat of Research and Technology
Aristotle University of Thessaloniki, Research Committee
Aristotle University of Thessaloniki, School of Engineering
Greek National Committee for Astronomy
Hellenic Physics Society, Branch of Central Macedonia
Egnatia Odos, A.E.
European Space Agency
Bank of Macedonia and Thrace
P. Ziti Editions

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Obituary

Andy G. Michalitsianos

Andrew (Andy) G. Michalitsianos, Chief of the Laboratory for Astronomy and Solar Physics of NASA's Goddard Space Flight Center, passed away on October 29, 1997 following the complications of brain surgery to remove a recurring brain tumor, which was first detected and operated on successfully last March.

Andy was born in Alexandria Egypt 50 years ago. His father was captain of the Greek Merchant Marine, member of a family from Cephallonia with long seafaring tradition, while his mother's family belonged to the thriving Greek community of Alexandria.

His family moved to Canada in the early fifties and then to New York; shortly afterwards his father died in an accident following a wreck of the ship he commanded, leaving him an orphan at the age of five. He grew up with his mother and sister Loukia in New York City.

Growing up during the Space Race years, he developed a strong interest in Astronomy and all relevant subjects. He joined the local Junior Astronomy Club and was selected as its representative to participate in the observations of a total solar eclipse in Peru in 1964. One can still find his report on this trip in the pages of a 1965 issue of ``Sky and Telescope". Astronomy was clearly his prime intellectual interest and it reflected on the subjects he chose for his High School Science projects: While a junior he constructed a Planetarium and in his senior year in High School a Spectrograph, which won him the first prize in the local competition; This gave him the opportunity to participate in national final competition of that year in Baltimore MD as well as valuable ``hands-on" experience on instrumentation and in particular spectrographs which would be of great value to him in the future.

He attended the University of Arizona at Tucson, mainly because he had managed to find a part time job at the Kitt Peak National Observatory. For his graduate studies Andy attended Cambridge University in England with a thesis on theoretical solar physics. This was followed by a postdoctoral position at Caltech and then a National Academy of Sciences fellowship at Goddard Space Flight Center. In 1977 he joined the the personnel of the Laboratory of Astronomy and Solar Physics as a permanent member.

The International Ultraviolet Explorer was launched the following year, and with the Lab heavily involved in this project Andy got the opportunity of shifting from Solar Physics to UV astronomy and in particular spectroscopy which was indeed his favorite subject. His work concentrated on the spectra of symbiotic stars and their outflows (jets) as well as on quasars and gravitational lenses. Due to his extensive experience with both the operations and the science of IUE he became Deputy Project Scientist of this project and saw it till its final days following 18 years of space observations.

He took the position of the Chief of the Laboratory for Astronomy a year and a half ago. He continued to work on gravitational lenses till the very end, despite the heavy managerial load and the effects of a concurring chemotherapy treatment. His last paper was published in the October 1, 1997 issue of the Astrophysical Journal Letters. He kept his sense of humor, one of his trade-marks, to the very end, not failing to joke just before he was admitted for his final operation and even following that, a few days prior to his death, while in grave condition.

He was survived by his wife Kate, his daughters Elpiniki (12) and Lydia (11), his son Gerasimos (9) and his sister Loukia. He was a great ambassador of the Greek causes abroad and a great individual. We are all devastated at his loss.

Demosthenes Kazanas

JENAM-97

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The Local Organizing Committee (Table II), assisted by the Executive Secretary and a dozen of undergraduate students from the Department of Physics, took care of ... everything. The aftermath of the Conference found them exhausted but happy that their task had been successfully fulfilled.

Table II: The Local Organizing Committee

J.H. Seiradakis (Chairman)
N.K. Spyrou (Vice-chairman)
M.E. Contadakis (Secretary)
H. Varvoglis (Treasurer)
J.D. Hadjidemetriou
K.D. Kokkotas
L. Vlahos

Kelly Tsirou (Executive Secretary)

The Scientific Organizing Committee (Table III), in particular its Chairmen, worked hard in order to fulfill the requirements of JENAM 97. They were deeply involved with the preparation of the programme of the Conference, the invitation of the main speakers and the overall scientific activities.

Table III: The Scientific Organizing Committee

G. Contopoulos (Greece, Co-chairman)
A. Renzini (ESO, Co-chairman)
J.P. Zahn (France)
J. Krautter (Germany)
R.L. Davies (United Kingdom)
A. Tutukov (Russia)
J.H. Seiradakis (Greece,)
Em. Sarris (Greece)
J. Ventura (Greece)
M.C.E. Huber (ESA/ESTEC)

Representatives of Affiliated Societies

C. La Dous (Astron. Gesellschaft)
J. Palous (Chech Astron. Soc.)
A.E. Sapar (Estonian Astron. Soc.)
V.N. Obridko (Euroasian Astron. Soc.)
M. Capaccioli (Italian Astron. Soc.)
Yu. Frantsman (Latvian Astron. Soc.)
A. Woszczyk (Polish Astron. Soc.)
M. Stavinschi (Romanian Astron. Soc.)
V. Rusin (Slovak Astron. Soc.)
J. Marcaide (Soc. Espanola de Astron.)
V. Tel'nyuk-Adamchuk (Ukrainian Astron. Soc.)

The main task of the Convenors (Table IV) was the preparation of the scientific sessions and the distribution of the limited financial assistance that was offered to some colleagues (mainly young researchers or colleagues from the East). They worked hard throughout the Conference. Without their help and dedication JENAM 97 wouldn't have reached such high scientific goals.

JENAM-97:
Kallithea, Chalkidiki, Greece, 2-5 July 1997

The Conference 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 was held in a particular international and collegial atmosphere. It attracted about 330 partici-

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Table IV: Convenors: (R) indicates the persons responsible for handling the papers

Dynamical Astronomy
J.D. Hadjidemetriou (chair), J. Palous, H. Varvoglis (R)
Solar Physics
E. Antonucci (chair), K. Tsinganos, L. Vlahos (R)
Space and Planetary Physics and Astronomy
M.C.E. Huber (chair), D.N. Baker, X. Moussas (R), E. Sarris
Stellar and Interstellar Astrophysics
J. Krautter (chair), N. Kylafis, P. Laskarides (R)
Galaxies
A. Renzini (chair), R.L. Davies, N. Voglis (R)
Observational Astronomy -- Instrumentation
J. Van Paradijs (chair), P. Niarchos (R), J.H. Seiradakis
High Energy Astrophysics
J. Ventura (chair, R), G. Kanbach, A. Mastichiadis
Cosmology and Relativity
M. Rowan-Robinson (chair), K.D. Kokkotas (R), D. Papadopoulos, N.K. Spyrou
History of Astronomy
M. Papathanasiou, E. Theodossiou (R)

JENAM-97

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pants from 28 Countries (see Table V), 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.

Table V: Distribution of participants by country

Belgium	4	The Netherlands	6
Bulgaria	6	Poland	1
Chile	1	Portugal	4
Czech-Republic	2	Romania	1
Denmark	1	Russia	24
Estonia	2	Slovakia	5
Finland	1	Spain	6
France	19	Sweden	3
Germany	22	Switzerland	3
Greece	92	U.K.	15
Ireland	1	U.S.A.	15
Israel	1	Ukraine	25
Italy	9	Venezuela	4
Latvia	2	Yugoslavia	4
Mexico	1		

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). The Invited Speakers captured the attention of the audience with their attractive and careful presentation.

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 - President, European Astronomical Society) and manned by a very able panel of scientists including Drs. J. Trümper (MPE, Garching, Germany), R. Giacconi (Director General - ESO, Germany), R. Fosbury (ESO, Germany), J.-P. Swings (Liege, Belgium), F. Sanchez (IAC, Spain), R.L. Davies (Durham, United Kingdom), P. Shaver (ESO, Germany), J. Lequeux (Observatoire de Paris, France), M. Denefeld (Inst. d' Astrophysique, France), B. Shustov (Moscow, Russia). 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 IV). During exciting debates the participants often warmed the air-conditioned lecture rooms with vivid discussions and constructive exchanges.

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.

John.H. Seiradakis

Table VI: Distribution of papers by subject

	Poster	Oral	Invited	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
	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, canceling or including new presentations. It is therefore possible that the above Table may contain a few minor inaccuracies.

THE BARBANIS PRIZE

Kosmas Gazeas was awarded the *1997 Barbanis-Prize* during a solemn ceremony that took place at the Department of Physics at the University of Thessaloniki in November 1997. Kosmas will be graduating soon. His aim is to continue with post-graduate studies in Astronomy. The Council of HEL.A.S. wishes him a successful career in Astronomy

JENAM 97

ROUND TABLE DISCUSSION:

THE FUTURE OF EUROPEAN ASTRONOMY

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 are listed in the accompanying Table.

The following personal account, which is based on notes and viewgraphs of the sessions, is not intended as a comprehensive report and, for various reasons, omits an account of some of the interesting presentations.

Paul Murdin
ex-President of the EAS

European Space Astronomy
(Presented by Prof. L. Woltjer)

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 was chosen after a large consultation exercise with the space scientists of Europe, and goes under the name Horizons 2000 (H2000).

H2000 consists of different sorts of elements. In some cases, H2000 identifies specific science areas which must be investigated. Thus, a Far Infra-Red 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 Infra-Red/ 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. Finally, Horizons 2000 leaves room for smaller missions to be decided later in response to developing science imperatives; these are the so-called Flexible missions, which may well be carried out on a co-operative basis (e.g. - with NASA).

The national programmes play a key role in the progression of Horizon 2000 in that they provide the instrumental payloads. Roughly one third of the money spent in European space astronomy and planetary exploration is through the national programmes to prepare the payloads, and two thirds through ESA to procure the missions.

The programme is decided by the scientists, and is thus responsive to the various sub-communities. There is thus a balance between solar system and astronomy missions in Horizons 2000, with roughly equal numbers of missions in progress and planned for the two areas of space science. They are SOHO, Ulysses, Huygens, Cluster, Rosetta, Mars Express and Mission to Mercury in the solar system area, and, in the astronomy area, ISO, XMM, Integral, FIRST/Planck, the participation in the Hubble Space Telescope, and Interferometry missions on the Infrared, astrometry and/or gravitational waves.

In discussion of Prof. Woltjer's paper there was some suggestion that there should be a re-assessment of the balance on present and future scientific prospects, as well as current strengths. Another comment was that we have never had so much equipment in progress and it might be time to reconsider the balance between hardware and the investment in people to get the maximum scientific return. Prof. Woltjer pointed out that we are investing now for a return a decade from now.

The current implementation plan for H2000 is not the same as it was a few years ago. It has been restructured for financial reasons and to accommodate the cost of the recovery from the loss of Cluster in the Ariane 5 disaster. This has

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Round Table Discussion: The Panel

L. Woltjer	European Space Astronomy
J. Trümper	High energy astrophysics
R. Giacconi	Towards a European policy for astronomy
R Fosbury	The synergy between space and ground-based astronomy
J.-P. Swings	The Next Generation Space Telescope (NGST) project
F Sanchez	Large Telescopes and the European Northern Observatory
R. Davies	The Gemini project and its lessons for European astronomy
P. Shaver	A next generation millimeter telescope (LSA)
J. Lequeux	A next generation millimeter telescope (LSA)
M. Denefeld	Instrumentation in European Telescopes Specialisation in observatory sites
B Shustov	The Russian Space Agency's space programme
P Murdin	The future of European Astronomy - need for a strategic plan

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been determinedly carried out at a time of outstanding success in the current missions. In discussion the point was made that, while a shake up for any organisation is good from time to time, it would be serious if cuts continued, and the funding should stay stable in real terms for the health of the programme.

High energy astrophysics
(Presented by J. Trümper)

However, the national space programmes of the European countries provide an opportunity, as Prof. Trümper argued, to fill in the gaps in the ESA programme, maintaining continuity of discipline. The ESA programme is too thin in any one area to have this function. In X-ray astronomy we expect the launch of the ESA mission XMM in 1999 with the surrounding missions as tabled. In the period around 2000, with the cluster of X-ray astronomy missions, we will be brain limited.

X-ray Astronomy in Europe

The Present			
ROSAT, ASCA, RXTE, BeppoSAX			
The near future			
1998	AXAF	NASA	`HST in X-rays', 0.5" resolution
1999	Spectrum-X	Russia	Large collecting area, broad band, Bragg spectrometer Polarimeter
1999	XMM	ESA	`VLT in X-rays', 10" resolution, Large throughput, optical monitor
1999	Abrixas	Germany	All sky survey
2001	ASTRO-E	Japan	High energy spectral resolution of order 10 eV
The more distant future			
	Constellation	NASA	Fleet of 6--7 large area telescopes
	XEUS	ESA	10 sq. metre telescope
	ASTRO-F	Japan	
plus small dedicated missions			

The synergy between space and ground-based astronomy
(Presented by R.A.E. Fosbury)

What have we learned from the experience of operating the Hubble Space Telescope? asked Dr Fosbury. The first lesson was an existence proof from HST that it is possible to run an Observatory as complex as the Hubble Space Telescope extremely and increasingly efficiently, with an archive which has become a hugely valuable scientific resource. The important observatory programmes can produce data of unique quality (e.g. the Hubble Deep Field). The international proposal evaluation and time allocation process has been intellectually rewarding in its own right, for the participants themselves, and the community to whom this process fed back. It was a vital lesson that the HST responded to the ingenuity of users, avoiding '*we know best*' dogma, e.g. in the design of observation programmes.

These lessons were successfully learned, so what could we have done better? The prizes in astronomy go to big mirrors with spectrographs attached (Dr. Fosbury attributed this quotation to Prof. Woltjer, who did not demur), and we need to learn better how to follow through the HST results to the big discoveries that lie behind them, not just be satisfied with the HST results themselves. We could also learn how to operate more cheaply, putting the effort where it is really needed. This means sharing experience in various facilities, whether in space or ground-based. We must penetrate the walls which are barriers to this shared experience. Of course, doing the science is more important than possessing the science and we must understand the processes better, concentrating on devolving resources to the execution of processes, not simply giving resources to institutes.

In co-ordinating between space and ground-based facilities, said Fosbury, it is necessary to make sure both look at the same areas of the sky. The rapid follow-through of the discoveries from one facility to another can pay off in important discoveries which beat the competition (e.g. the Compton-BeppoSAX-ground-based telescope-HST identification of gamma ray bursters).

For the future, said Fosbury, we must train more observers with instrument science experience. Strategic planning should cover both space and ground-based facilities, feeding the funding to the best programmes and standing back to let the best science get done.

In discussion from the floor on ground-space co-ordination, the example was cited of ROSAT fields in which after 7 years the optical identification process was still under way. In the case of IRAS, the follow-up process depended on the (slow) reaction of a committee. What was needed was the imagination to perceive the opportunities presented by a given space project and the time to follow the allocation processes and talk about them to inform others. It seemed a common theme in discussion that ground-based and space astronomy could benefit from more co-ordination, looking at the same areas of sky, feeding each other with observational support, taking from each other observational imperatives, and that this co-ordination process is not happening between space and ground-based astronomy in Europe to the degree that it should.

The Next Generation Space Telescope (NGST) project
(Presented by J.P. Swings)

The NGST is a NASA project flowing from the success of the HST, and the project is being defined. Because of the interest of astronomers in Europe, ESA set up a Task Force, under the chairmanship of Prof. Swings, in April 1997, to develop a plan for European participation in the NGST; a plan is being identified to the scale of 150 Mecu. The starting point for discussion was the recommendation from the Dressler report for a telescope of greater than 4m diameter, wavelength range in the region 1-5 microns, and an orbital station near L2. These outline specifications could well be updated as the science discussion progresses, e.g. in assimilating the results from the Hubble Deep Field and the use of the Keck 12m telescopes, and the Task Force has indeed identified areas for discussion (e.g. in orbital station). The Task Force contains members who are telescope and instru-

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ment specialists, as well as representatives from HST, ESA and ESTEC. he Task Force is making an inventory of what Europe could provide, including European avenues of competence interests. The assumption was that Europe should participate at a visible if limited level, contributing an instrument (integral field spectrograph?), detector system (STJs?) and/or launcher (Ariane 5?)

Large Telescopes and the European Northern Observatory
(Presented by Francisco Sanchez)

It is clear, said Prof. Sanchez, that astronomers are insatiable for large telescopes, of a size which is limited only by financial and engineering limits. The ingredients to make large telescopes are capability, funds, a site, and determination, especially the latter.

In the south, European astronomers have the ESO and Gemini telescopes. In the north there are national European participations (UK, Italy, Germany) in large telescopes like Gemini and the LBT, but the largest array of telescopes in Europe is in the Canary Islands, which form the natural European Northern Observatory. Apart from proximity to (and political membership of) Europe, the sites have good seeing, clear sky, infra-red quality and the guarantee of protection by law to IAU standards. The "*club*" type of organisation is flexible to several models of participation, and there is good infrastructure (astronomical and social).

The future capability of the ENO will include the GTC (Gran Telescopio de Canarias) with a 10 m. collecting area, 0.4" images, adaptive optics and high reliability of a suite of instruments simultaneously available. 50% of the money is available now and a site is reserved on La Palma. The project has started and completion is estimated in 2002.

A next generation millimetre telescope (LSA)
(by Peter Shaver and James Lequeux)

The LSA is the Large Southern Array, a major step forward in astronomy, bringing millimetre astronomy to the level achieved by the VLT, HST and VLA, said Dr. Shaver. It will be capable of seeing star-forming galaxies across the universe and star-forming nebulae across the Galaxy. The dust-penetrating power of millimetre radiation makes it possible e.g. to view high red-shift QSOs hidden in the abundant dust of star-forming galaxies, and thus relieve the possible bias against high red-shift galaxies in the optical. The performance objectives of the LSA include an angular resolution matching the HST and VLT of about 0.1", a collecting area of 10,000 square metres dispersed over an array of antennas on a high, dry, large, flat site, probably in the Andes.

Access to the same southern sky is essential to exploit the areas of synergy with the VLT. In the area of cosmology, synergy was established by Prof. Lequeux in the following normative examples:
a) Optical surveys and follow up, with the VLT detecting and classifying distant galaxies, measuring redshifts, luminosities, abundances etc. The LSA would measure dust content, molecular gas content and kinematics.
b) Millimetre surveys and follow-up, with the LSA making surveys in the continuum, CO, CI and CII lines, and the VLT providing redshifts and measurements of intrinsic content.
c) Gravitational lensing, with the VLT searching for lensing around strong high red-shift sources found with the LSA, and the LSA studying known gravitational lenses found and mapped with the VLT.

Europe has a strong involvement in millimetre astronomy, with access to the Bure array, IRAM, SEST, JCMT, Onsala and the HHT. There is an LSA Board, which has expanded to be representative of a range of institutes, and which has set up working groups for each major area of study. It is intended to move to a feasibility study to define the LSA project technically and organisationally. The cost of an LSA project would be considerable (say 300 Mecu). The LSA could be seen as the European ground-based project to follow VLT; at this cost it is likely to need partnership, perhaps in the USA, perhaps in Japan.

Towards a European policy for astronomy
(Presented by Riccardo Giacconi)

What are the most important problems in astronomy? What is the best route to the discoveries? It is always difficult to make choices about the way forward, said Prof. Giacconi in answer to his own questions, but since most programmes require funding at a national or international level, we have to face up to the fact that priorities must be set. Moreover, advances in astronomy require co-ordination at all wavelengths, and thus between space and ground-based techniques. A strategic plan is required to achieve the greatest scientific return. To the extent that this plan needs broad community consensus, it has to be carried out with broad community participation. 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 institutional, national or international values. Thus Prof. Giacconi advocated a strategic plan for astronomy in Europe.

It is fair to ask if there is such a thing as European astronomy. There is clearly astronomy in European nations. There are the signs of an emerging European astronomy. There is a European Astronomical Society. There is a European journal of astronomy, Astronomy and Astrophysics, although it competes with several national journals. ESA and ESO both represent European astronomy organisations balanced by national endeavours, and in the case of ESO restricted to activity in the southern hemisphere. There is an increasing intervention by the EU into astronomical matters. These various European initiatives suffer from a lack of an articulated and publicly discussed overall policy.

Prof. Giacconi said that such a policy should address:
a) scientific goals
b) technology developments
c) the organisational structures
d) balance between small and large programmes (or national and international)
e) the development of astronomy as a profession through fellowships, grants, jobs, public education etc.
f) prioritisation between and within subdisciplines.

Prof. Giacconi advocated that the EAS should do this. Of course, 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

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discussion and to make rational decisions. It must be better to plan than not to, and Prof. Giacconi said that he personally preferred a clear, rational process occurring in the open, rather than deliberations in small committees which can so easily be manipulated. The EAS is ideally situated to contribute to the European plan for astronomy.

The future of European Astronomy - need for a strategic plan
(Presented by Paul Murdin)

Summarising the round table discussion, Dr Murdin claimed that it had 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 he labeled them with geographic terms, which however are not meant to be taken literally and exclusively.

In several European states -he called 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 -he called 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. For the '*southern*' states, the problems are to develop at an appropriate 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 (not reported in this summary). 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.

Dr Murdin referred 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.

Europe and the USA each account for about 40% of the world's output. In some 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, as advocated by Dr. Shaver, or the Next Generation Space Telescope, advocated by Prof. 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, co-operation, competitiveness, weakness or strength compared 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%, and European projects where Europe forms about 100% of the project.

On a smaller scale will come national projects. Dr. Murdin discerned 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 (presentation not reported here), there is a need to co-ordinate the different instruments and telescope programmes, because not everything can be provided for each telescope: co-operation 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.

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 a 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. Dr. Murdin feared that neither of these is true, so any promise that a PhD is a training to be an astronomer amounted, he said, 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

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The Hellenic Astronomical Society on the Web.

As many of the members of Hel.A.S. are already aware, the 10th of December 1997 marks the one year anniversary of the "virtual presence" of our Society on the wold wide web.

The web pages of the society can be found on the server of the Section of Astronomy, Astrophysics & Mechanics of the University of Thessaloniki in the address:

http://www.astro.auth.gr/elaset

A mirror server

http://www.hri.org/elaset

located at the Hellenic Resources Institute in the U.S. has been also created. The latter should provide a faster access for members who live and work on the other side of the Atlantic.

Several useful information about the society, including the constitution, past Hipparchos newsletters, the formation of the current governing council, and a brief presentation on the history of the formation of the Hel.A.S. are available on line.

One can also find announcements of upcoming events, meetings and job openings in Greece as well as an online version of the membership directory.

We would like to invite all members of Hel.A.S. to visit those web pages and we would be happy to receive your comments and suggestions for further improvements.

The webmanager
Vassilis Charmandaris

European Astronomical Society forum

Dear Young Colleague,

I hope you will be interested to participate to a forum by e-mail organised by the EAS in order to reach all young people in Europe who are studying or just started for a carrier in astronomy. We intend to spent one week in December (15-19) 1997 and January (12-16) 1998 when all of you interested, can contact senior astronomers all over the world to discuss about your worries and concerns on various issues

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UNIVERSITY OF THESSALONIKI
DEPARTMENT OF PHYSICS
SECTION OF ASTROPHYSICS, ASTRONOMY AND MECHANICS

LECTURER
in Relativity Theory

The Department of Physics invites applications for a new position as Lecturer in Relativity Theory expected to become available in 1998.

The applicants are expected to speak Greek and comply with the requirements of the position as described in the official announcement and the Greek Law for Higher Education. The salary will be that of a Lecturer according to the Ministry of Finance.

The application must include the following: 1) Curriculum vitae. 2) Certificates of academic degrees and positions held. 3) List of publications, indicating which are most relevant to the position. 4) Copies of all relevant publications. All enclosures must be numbered, state the applicants name and be assembled in sets.

Applications will be assessed by a committee, whose entire evaluation will be sent to all applicants. The committee may request additional material for evaluation. If so, it is the responsibility of the applicant to provide the necessary material. The successful candidate will be selected, by the appropriate electorate, during a full session of the General Assembly of the Department of Physics.

Deadline for applications is 2 February 1998.

For further information, please contact the "University of Thessaloniki, Department of Physics, GR-54006 Thessaloniki, Greece, Tel. +30 31 998120". For informal information, please contact, Professor N.K. Spyrou, University of Thessaloniki, Department of Physics, Section of Astrophysics, Astronomy and Mechanics, GR-54006, Thessaloniki, Greece. Fax: +30 31 995384, E-mail: spyrou@astro.auth.gr. The Departments Web site is **http://www.physics.auth.gr**. The Laboratory of Astronomy Web site is **http://www.astro.auth.gr**.

JENAM-97 Round Table

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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 Dr Murdin found 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?

Summing up, Dr Murdin said that the EAS needed urgently to address the future fundamental structure of astronomy in Europe. What was the right balance of the components of astronomy? - the hardware, the theory, the brains. What was the role of students? How could we attract people to astronomy? How could we attract resources to astronomy? These questions pointed to the need for a manifesto, a credo, a vision for astronomy in Europe.

THE ESTABLISHMENT OF A NEW AMATEUR ASTRONOMY CLUB IN THESSALONIKI

A new amateur Astronomy club was officially established in December 1997, in Thessaloniki, under the name "**Friends of Astronomy**" (Όμιλος Φίλων Αστρονομίας). The Club, has already been joined by 67 members, which are also founding members.

Among its basic goals, are the promotion of the interests of Astronomy and the astronomical knowledge among its members, observations of astronomical objects and the cooperation with other similar organizations.

The activities of the Club include the organization of systematic observations of the sky, "*Astroparties*", lectures and excursions of astronomical interest, the creation of a library, the publication of a newsletter and many others.

Although still young, the Club has already organized successfully, two "*Astroparties*" in the greater area of Thessaloniki (Polyzova and Thermi) and two public lectures. Further activities are planned for the near future. For more information (including registration) please contact the temporary address: *Mr. P. Moraiti, Vas. Olgas 197 B, 546 46 Thessaloniki*, or e-mail: *manolaku@astro.auth.gr*.

Konstantina Manolakou

JENAM-97
Convenors' Reports

Dynamical astronomy

Convenors:
J.D. Hadjidemetriou
J. Palous
H. Varvoglis

The papers presented at this Session cover several aspects of Dynamical Astronomy, and also more general subjects on non linear dynamics, which can be applied to the study of problems in Dynamical Astronomy.

There was an invited paper by Athanassoula, on *Galactic dynamics and N-Body simulations* . After discussing the potentiality of N-Body simulations, the Marseille GRAPE systems are presented, by which N-Body simulations can be done very efficiently, and their possibilities and limitations are discussed.

Another paper on galaxies was by Grosbol and Patsis, *On density waves in spiral galaxies*, where the spiral structure of five ordinary spiral galaxies was studied, using deep BVIK surface photometry maps obtained at the 2.2m ESO/MPI telescope.

Two papers dealt with the motion of small bodies in the Solar System. E.W. Elst presented the paper *Some practical remarks on the accuracy of preliminary orbits from newly discovered asteroid*, where he compares the preliminary orbits of asteroids/comets that have been calculated by different methods. S.I. Ipatov presented the paper .

Migration of objects to the Earth from the Edgeworth-Kuiper belt, where he studies the evolution of trans-Neptunian objects.

Several papers on non-linear dynamics were presented. C. Efthimiopoulos, G. Contopoulos, N. Voglis and R. Dvorak presented the paper *Stickiness, cantori and lobe dynamics*, where they study the phase space structure of the sticky region around an island of stability. E. Grousouzakou, G. Contopoulos and C. Polymilis presented the paper *Distribution of periodic orbits in 2-D Hamiltonian systems*, where they study the distribution of stable and unstable periodic orbits of two Hamiltonian systems, as the perturbation increases.

In a third paper by C. Skokos and G. Contopoulos, *Formal integrals of one-dimensional time dependent Hamiltonians*, formal integrals of motion are found for a time periodic perturbation of a harmonic oscillator. K. Tsiganis, A. Anastasiadis and H. Varvoglis presented the paper *Lyapounov numbers and stochastic layer widths in a perturbed pendulum*. They examine the relation between the macroscopically measured diffusion rate and the value of the Lyapounov characteristic number.

Finally, two papers were presented on the motion of bodies moving under their mutual gravitational attraction. T.J. Kalvouridis presented the paper *Parametric variation of the equilibrium configurations in Whipple's problem*, where he studies the location of the equilibrium points of a binary asteroid. E.M. Pittich and N.A. Solovaya presented the paper *Long-period perturbations of third and fourth orders in the non restricted three-body problem*, where they study the motion of three bodies forming a hierarchical system.

John D. Hadjidemetriou

Solar physics

Convenors:
E. Antonucci
K. Tsiganos
L. Vlahos

The talks presented in this session cover a variety of topics starting with the invited talk by Alan Gabriel on the latest SOHO results. The magnificent pictures highlighting the dynamics of the upper atmosphere and the evolution of active regions were among the main topics presented. The two other sessions were devoted on theoretical and observational results from all aspects of solar activity. Plunket gave a detail description on the multiwavelength observations of coronal mass ejection from SOHO. The onset and evolution of Coronal Mass ejection remains on of the outstanding problems. The SOHO includes in its payroll two instruments which allow us to begin tackle these problems.

The main theoretical talk was presented by Poedts outlined the success of the MHD wave Heating of coronal Loops and Campos studied the heating of the solar chromosphere by Alfven waves.

The work of Pustil'nik presented a much more complicated picture on the evolution of currents above active regions. Non linear phenomena like percolation on turbulent current sheets are present and play significant role on the formation of flares. Georgoulis emphasized the statistical properties of Magnetic activity in the solar corona. Using a two-dimensional simulation on a section of a coronal loop. The coronal loop was driven by random spatio-temporal magnetic forcing. Anastasiadis studied the acceleration of particles in a complex active region being in the stage of Self Organized Criticality. The evolution of high energy particles resembles the observed properties.

Krivodbskij discussed the period of the solar dynamo and Kaghashvili the excitation of rossby waves by the triple polarity reversal of the magnetic field.

Loukas Vlahos

Space and planetary physics and astronomy

Convenors:
D. N. Baker
M. C. E. Huber
X. Moussas
Em. Sarris

In the parallel sessions on space and planetary physics and astronomy several interesting papers have been presented. The first session started with an invited review on Relativistic Particle Acceleration in the Earth's Magnetosphere by Baker who showed that the magnetosphere is a remarkable and efficient particle accelerator which accelerates electrons up to tens of MeV in a few hours or days or even minutes in very strong events when strong, high-speed interplanetary shock waves strike the magnetosphere. Nonlinear processes in the Earth's Magnetosphere have been presented by G.P. Pavlos et al.

The dynamical variations of the Earth's magnetopause, based on the actual measurements of the solar wind parameters and a semi-analytical dynamical model have been presented by G.A. Drillia and X. Moussas.

S.M. Krimigis presented a review on the the jovian magnetosphere based on Ulysses and

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Galileo. He highlighted the presence of hot (kT 30keV) multi-species ion plasmas mostly of volcanic origin from Io, the large plasma torus co-orbiting with Io, the auroral emissions associated with both magnetospheric particle precipitation and the Io-Jupiter interaction and the field-aligned electron beams linking Io to Jupiter's upper atmosphere. He also presented the new results concerning the existence of the magnetosphere of Ganymede, the first ever observed magnetosphere of a planetary moon, and he discussed the evidence concerning the possibility of the existence of an iron core in Io. He also reviewed the large scale motions of the Jovian magnetosphere which exhibits significant dynamical activity, large (more than 100km/s) azimuthal flows and occasional outflows of plasma into the nearby interplanetary medium. In fact G. A. Drillia and X. Moussas presented a realistic model of the dynamical variations of the dayside jovian magnetopause, which explains the observations, using the Ulysses interplanetary data just before the Jupiter encounter, with a dynamic model which predicts the observed fast flows of the plasma in the magnetosphere.

Yu. V. Pisanko presented a novel theoretical (MHD) view on the plasma electrodynamics at high latitudes of the magnetosphere of the Earth and of the heliosphere. He stressed the electrodynamical properties of field-aligned electric currents and double electric layers for both magnetospheric and heliospheric plasmas. Based on this he presented an additional acceleration of the solar wind at high heliolatitudes.

M. Moncuquet and N. Meyer-Vernet presented a detailed model of the Io plasma torus based on Ulysses radio measurements. They propose a Kappa-like, non-thermal velocity distributions of the ions (S and O), which shape the latitudinal extension of the torus. G. Gloeckler presented a review on the Local Interstellar Cloud and the Global Heliosphere based on data from Ulysses and Wind spacecrafts and he stressed all the aspects of the important role of the neutral hydrogen, which constitutes a very important component in the heliosphere, unsuspected up to now.

W.C. Feldman in an interesting review he discussed several fundamental scientific issues that require future *in situ* exploration of the extended solar corona in order to improve our knowledge of the mechanisms that heat the solar atmosphere and accelerate the solar wind.

Several papers concerning the solar wind and stellar winds have also been presented. A study of the tri-dimensional structure solar wind based on Ulysses pole-to-pole radio measurements, by Issautier et al, shows that at a low latitude band spanning 22^{o} S to 21^{o} N where Ulysses encountered the warped heliospheric current sheet, there are three main classes of populations for both density and temperature described by three Gaussians. At higher latitudes there is only a single class of flow, coming from coronal holes, which is well described by a normal distribution. A time dependent north-south asymmetry is also found.

The solar wind plasma deformation and kinetic vorticity are estimated with a new method by Polygiannakis and Moussas based on the assumption of weak magnetic field ergodicity. Applications, made to solar wind data showed that the direction of the plasma deformation rate was aligned to the local field. The constant existence of shear-generated vortices has also been shown from Ulysses and other interplanetary data.

The radius of the heliospheric termination shock (115 AU at the equator upwind to 200 AU at the poles or downwind), the shape of the heliosphere and the Alfven radius of the Sun, which varied between 16 and 12 solar radii at the equator and the poles respectively, have been presented by Exarhos and Moussas using Ulysses data. Time dependent-north south asymmetries were found which might explain previously observed cosmic ray north-south asymmetries.

A useful catalogue of 320 high-speed solar wind fast streams detected during the last solar cycle has been presented by Mavromichalaki et al. Meyer-Vernet et al reviewed the *in situ* measurements of solar wind thermal electron density and temperature obtained with the method of thermal noise spectroscopy on Ulysses during its recent fast latitudinal and radial exploration, for the polar regions, where the solar wind is at an almost steady state not affected by compressions and rarefactions induced by stream-stream interactions and hence this uniformity of flow allows to derive accurate temperature gradients and polytrope laws.

Sapar and Sapar studied theoretically the formation of resonance spectral lines in stellar winds and compared their results with success with observations from stars.

Several papers concerning the planets and satellites have also been presented. Mennesson et al proposed "DARWIN", a space infrared interferometer suitable to detect and characterize Earth-like extrasolar planets, using a novel technique of an interferometer working as a coronograph in the infrared, capable to detect CO_2, H_2O and O_3 in the atmosphere of the planet .

The Titan's atmosphere and surface from near-IR spectra and images has been presented by Coustenis et al. with imagery and spectroscopy from the Canadian French Hawaiian Telescope (ESO). The surface of Titan shows several features and asymmetries. Several temperature and composition variations have been detected which allow to search for new minor stratospheric components and more realistic models for the atmosphere.

The Neptune stratosphere has been probed by stellar occultations by Roques, Temperature profiles between 200 and 10^{-2} μbars have been obtained from the lightcurves which indicate an atmosphere transparent at these pressure levels. Relatively dense haze layers are detected, which imply a very short falling time scale.

Xenophon Moussas

Stellar and interstellar astronomy

Convenors:
J. Krautter
N. Kylafis
P. Laskarides

The Parallel Session (PS) on Stellar and Interstellar Astronomy was the most sought of session of JENAM-97. Eighty six (86) papers or summary of papers were submitted by any available way to the convenors (J. Krautter, P. Laskarides and N. Kylafis) for evaluation. Only twenty six (26) of those could be accommodated in the five (5) sessions allotted in the general program of JENAM-97 (more sessions than any other PS). The rest of them were presented as Papers Posted during

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the whole duration of JENAM-97 in the aisle of the comfortable Large Lecture Room A of Athos Palace Hotel, where all oral papers were presented.

With the Scientific Organizing Committee's (S.O.C.) approval, the convenors of this PS invited three official speakers: Vittorio Castellani (Stellar Structure and Evolution), Bent Gustafsson (Stellar Atmospheres) and Martin Harwit (Stellar and Interstellar Results of ISO). All three had initially accepted. Bent Gustafsson, unfortunately, canceled his participation, and, at the time, was too late to replace him.

The first session of this PS (chaired by P.G. Laskarides) started in the morning of July 2nd with the invited talk of Vittorio Castellani, who gave an excellent account of the current problems in the work of stellar structure and evolution. The session was completed with the oral presentation by Sauty, Tsinganos and Trussoni on the criteria for the collimation of winds into jets.

The second session's highlight (chaired by J. Krautter) in the same afternoon was the invited talk by Martin Harwit on the "ISO Observations of Stars and Interstellar Medium". Four oral presentations (two observational and two theoretical) concluded this second session.

The third session (in the afternoon of July 3rd, chaired by N. Kylafis) included seven oral presentations of mainly theoretical work (since the observational papers were presented in another PS). The fourth session (in the morning of July 4th) included four oral presentations of mainly theoretical work, while the fifth and final session (in the afternoon of the same day, chaired by V. Gerogiannis) included seven oral presentations. For the complete list of the papers presented in the five sessions one is instructed to see the official program of JENAM-97 and for the summaries of all papers oral or posted the handsome volume of Abstracts of the conference.

The SOC of JENAM-97 attempted a new presentation of the latest developments in Astronomy and Astrophysics, focusing mainly on Cosmology and Relativity, Dynamical Astronomy and High Energy Astronomy. Later, Solar Physics, Stellar and Interstellar Astronomy and Observational Astronomy were added. The number of papers submitted in the last two PS (total 103) was the one third of the total number of papers submitted to JENAM-97 (293). This shows that, no matter how one defines Astronomy and Astrophysics, Stellar and Interstellar Astronomy remains the main research field for the larger number of scientists working in related subjects.

P. Laskarides

Galaxies

Convenors:
N. Voglis
A. Renzini
R.L. Davies

The session “Galaxies" of the JENAM Conference was held on Thursday, July 3 afternoon, Friday July 4 morning and Friday July 4 afternoon. The session comprised 4 invited lectures, 14 oral presentations and 10 posters.

THURSDAY, JULY 3, 17:00 - 19:00

Chairman was Professor Roger Davies. The session discussed recent advances in the understanding of the structure and evolution of disk galaxies.

The first invited speaker, Prof. Alexei Fridman, presented evidence for the existence of giant anticyclones in the galaxies Mrk 1040, NGC 157, NGC 6181, and NGC 1365 observed with the 6m telescope. The discovery of the anticyclones was made possible thanks to a new method of restoration of the internal velocity field on the disk of galaxies. The centers of the anticyclones are located in the corrotation region, but they are shifted with respect to the stable lagrangian points due to dissipation effects.

The second invited speaker, Dr. A. Bosma, presented evidence that the observations of stellar velocity dispersions in disk galaxies impose restrictions on the choice of mass models assuming a balance between the luminous matter concentrated in the disk and the dark matter forming a halo around the disk. He gave particular examples for galaxies for which both the velocity dispersion curve and the rotation curve have been observed.

Dr. P. Patsis, presented evidence that the best agreement between n-body and gas dynamical models and observations of the morphology of spiral galaxies is obtained if we place the end of spiral arms at the 4/1 resonance. With this hypothesis the models are able to reproduce not only the main but also many secondary morphological characteristics of the studied spirals (e.g. interarm features).

Dr. F. Mattewcci reviewed observational information and discussed the processes influencing the chemical evolution of the Milky way.

Dr. N. Voglis presented numerical simulations of galaxy formation in a environment creating a cosmological tidal field. Such simulations are able to produce counterrotating cores by single cosmological collapse (i.e. without mergers). It is also possible that some galaxies had an early phase of libration before their setting to the final equilibrium.

Finally, Dr. B.M. Shustov discussed possible evolutionary interelations between disk galaxies and the intergalactic medium. He pointed out the factors that influence the chemical composition, e.g. star formation, ionization of the interstellar gas, supernova explosions, accretion of material from the environment and mass loss by galactic wind. He presented an example of modeling of the chemical evolution of a disk galaxy that fits the data for the Milky Way.

FRIDAY, JULY 4 1997, 11:00 - 13:00

Chairman was Dr. J. Palous. This session focused on recent observational evidence related to the internal activity in galaxies (e.g. star formation, active galactic nuclei etc.).

Prof. J. Lequeux, invited speaker, presented ISOCAM observations from galaxies in nearby clusters and he compared them with observations in other spectral bands indicating the stellar masses and star formation rates. The main result is that the mid infrared emission of the interstellar medium is well correlated to the star formation rate in this medium when SFR is small, but it is almost constant in the regions of high SFR.

The following two speakers, Dr. J.M. Rodriguez Espinosa and Dr. V. Charmandaris presented also ISO observations. Dr. Espinosa presented evidence for the existence of two discrete components creating the IR energy distribution in Seyfert galaxies. A warm component corresponds to temperature 160K and a colder component corresponds to temperature 35K. Both components are caused by emission by dust but with

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different mechanisms. Dr. Charmandaris presented images of the Cartwheel galaxy in the mid-IR taken with the ISOCAM. We believe that the rings of the Cartwheel galaxy were formed when a companion galaxy crossed the center of the main disk galaxy. In the obtained ISOCAM images we can spectacularly see the star forming regions in the outer ring of the galaxy and in its two northeast companions.

The next speaker, Dr. O. Khoruzhii, demonstrated that the solution of hydrodynamical equations in an astrophysical disk of non-zero thickness implies the existence of vertical loop motions creating a non radial laminated flow.

Dr. P. Flin discussed the techniques and cautions that must be taken in order to correctly locate subclustering in clusters of galaxies. He presented some very preliminary results according to which it is possible to observe structures formed by subclustering in about one third of clusters of galaxies.

Dr. L. Popovic analysed the spectra of three galaxies having AGNs taken over several different periods. Asymmetries are observed in the profiles of various spectral lines. These asymmetries can be interpreted as results of extra local rotational velocity due to the existence of a strong gravitational field.

Dr. V. Lyakhovich explained in detail the method used to restore the velocity field on the disk of spiral galaxies previously mentioned by Prof. A. Fridman. The method is based on Fourier analysing the line-of-sight velocity profiles taken in a two-dimensional grid on the plane of the sky. Through a mathematical analysis he argued that the corrotation region can be placed in a radius where there is sudden change of predominance of the and 3 terms of the Fourier spectrum.

FRIDAY, JULY 4 (17:00 - 19:00)

Chairman was Dr. N. Voglis. This session presented different observations and models related to morphological, kinematical and photometrical properties of galaxies.

The invited speaker, Dr. R. Davies reviewed recent observational advances that challenge our picture of the formation of early-type galaxies. A wide range of colour and metallicity observations support the scenario according to which the ellipticals are formed by the collapse and relaxation of bound objects made mainly by stars produced in a single and fast star burst. However, more recent observations of large samples of ellipticals reveal that their morphology is closely related to their internal properties. Thus it is possible that some early type galaxies, in particular S0, have a different formation history and are more recent than other ellipticals with old star populations.

Dr. P.O. Lindbland discussed various observations of the nucleus and the circumnuclear region of the Seyfert galaxy NGC 1365 with the VLA and the HST. These observations reveal structures such as hot spots of intense star formation. Some of the structures are unresolved and several assumptions are made on their nature. The largest of them are assumed to be young globular clusters. The smallest must be the first observed radio supernovae.

Dr. J. Palous presented preliminary results from an N-body model simulating the kinematics of the Gould's belt system. Initial conditions are constructed using kinematical data and the galactic rotation parameters. The models are able to explain the large amounts of angular momentum as well as the proportion of young and old stars in the belt in terms of their kinematic properties.

Dr. J. Vilchez reported the results from a study on the star formation rates for a sample of galaxies in nearby compact groups. He has demonstrated that from such studies we can draw conclusions on the dynamical evolution of such systems. For example, he provided evidence that some of the studied galaxies are destined to merge and form a massive object and that their strong interaction leads to enhanced star formation rates compared to those of non interacting galaxies.

Dr. A.E. Sansom discussed the implications of different star formation histories on the chemical evolution of early-type galaxies. She presented models in which the star formation the resulting chemical evolution are controlled by the assumption of merger events. She was able to show that the evolved composite spectra obtained by the model reproduce satisfactorily various line strengths observed in nearby early type galaxies.

Finally, Dr. A. Polatidis presented VLBI observations of the quasar 3C380. The most spectacular feature of this object is a superluminal radio jet which extends to about 0.1 Kpc from the core. The internal substructure as well as the rapid variations of the local jet brightness may be caused by the interaction between multiple oblique shocks.

CONCLUSIONS

All the presentations were of very high quality and we believe that the JENAM galaxy session made a significant contribution to the subject of galactic dynamics and evolution. The most important conclusions are the following:

1. Combined kinematical data of disk galaxies allow us to pose restrictions on their mass distribution and dynamical properties. It is now possible to have combined rotation and velocity dispersion curves as well as a restoration of the internal velocity field of spiral galaxies.
2. Recent observations of very high quality in various spectral bands, as well as improved reduction techniques allow to obtain for the first time reliable information on different chemical and dynamical processes that affect the current evolution of galaxies and to identify the major evolutionary factors.
3. Various challenges are posed to our longstanding views of galaxy formation. It is possible that some early type galaxies are in fact much younger than we believed in the past. The environment plays an important role in the evolution of galaxies. For example, cosmological tidal fields can produce effects such as counter-rotation. The interaction of galaxies affects their chemical properties. Submerging in compact groups can influence the star formation rate. The questions discussed during the session provide challenging topics to be answered by focused research in the next few years.

N. Voglis

Observational astronomy-Instrumentation

Convenors:
J. Van Paradijs
P. Niarchos
J.H. Seiradakis

There have been three sessions devoted to Observational Astronomy-Instrumentation. The first session (Wednesday, July 2, 1997, 12:30-13:30) was opened by Dr. R. Giacconi, as invited speaker. He presented a progress report on the Very

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Large Telescope Array, which ESO is now establishing at Paranal, Chile. The first of the 4 telescopes (8.2 m each) is expected to be ready by 1998 and the whole project to be finished within the next 2-3 years. The second presentation in the same session was given by Dr. Espinosa from the Instituto de Astrofisica de Canarias, Spain, and it was about the new Spanish 10m telescope under construction. A call for participation in this project was made by the Spanish delegation.

During the second session, held on Friday, July 4, 1997 (11:00-13:00) several interesting papers were presented. In a review paper Dr. I. Andronov presented methods and algorithms for periodic and a periodic processes in variable stars with applications to stars of various types. In the second paper the results of the long-term spectroscopic and photometric observations of the recurrent nova T CrB were presented by Dr. L. Hric (Hric et al.)These results establish firmly that the hot component of T CrB is a white dwarf. Next, the long-term photoelectric, photographic and visual observations of some symbiotic novae were presented by Dr. Choclol (Chochol et al). Explanation of the observed variation by the presence of circumstellar matter, variability of the cool component as well as possible triplicity of the systems were also discussed. In the next paper, a new observational approach for the determination of gravity darkening exponents in contact systems of W UMa type was presented by G. Pantazis (Pantazis and Niarchos). The results confirm the validity of von Zeipel's and Lucy's theories. The session was closed by the paper about DIVA - An Interferometric Satellite for Astrometric and Photometric Measurements, presented by Dr. S. Wagner (Wagner et al.). A description of this satellite and the results of the first studies of its optics were also presented.

During the third session, held on Saturday, July 5, 1997 (09:30-11.00) some interesting instrumental papers were presented. The All Sky Patrol Astrophysics (ASPA) project was presented by Dr. C. la Dous (la Dous and Kroll). This project aims at bringing Sky Patrol up to the level of modern high-tec by using fully automated telescopes at several locations in the world. The existing photographic plates will be scanned and processed at Sonneberg Observatory. The next presentation was about an new technique for automated detection and classification of objective prism stellar spectra and it was given by E. Bratsolis (Bellas-Velidis et al.). The method, its application and the results from tests were also discussed. Next, the Wide-Field Plate Database (WFPDB) and the possibilities for its application as a research tool in observational Astronomy were presented by Dr. M. Tsvetkov (Tsvetkov et al.). The WFPDB may be useful in studies of a variety of Astronomical objects and phenomena, and especially for long-term investigations of variable objects and for multi-wave length research. A paper on many purposes measuring tool (PARSEC) was presented by Dr. Sergeeva (Sergeev and Sergeeva). The automatic measuring PARSEC can be used in developments of precise readout systems for wide range of astronomy purposes as well as in optical technologies, geodetic purposes as well as in optical technologies, geodetic devices, etc. Next, Dr. Bochkarev described the astronomical facilities the Russian/Former Soviet Union astronomers have. Small optical telescopes (mirror diameter up to 1 m) are used to carry out classical and modern type astronomical observations. The session ended with a paper on the Joint Institute for very Long Baseline Interferometry (VLBI) in Europe (JIVE) presented by Dr. Polatides Active galactic nuclei, gravitational lenses, supernovae, galactic and extragalactic masers, radio stars and high accuracy astrometry are commonly studied by VLBI. A demonstration of the support JIVE provides to the astronomical community was made and some recent results with VLBI were also reviewed.

In addition do the above oral papers, a number of very interesting poster papers were also presented. The poster papers presented are:

A photometric study of the eclipsing system YY CMi (Niarchos et al.). From a photometric analysis of V observations it comes out that the system is a marginally contact system, very probably in the broken contact phase.

The program of the first observations on the Ventspils 32m radio telescope (Z. Schmeld). The present status of the 32m antenna and its characteristics are considered. The program for the first radio-observations and invitation for co-operation are proposed.

Models for origin of pulsar velocities and confrontation with observations (Deshpande et al.). A reexamination of the improved and enlarged pulsar data on polarization and proper motions to assess support for various expansions for birth velocities of pulsars is given.

Asymptotic parabola fit of Astronomical Signals (V.I. Marsakova). The method is proposed for application to the light curves of many pulsating stars, minimum of eclipsing variables and O-C diagrams.

Computer programs for time series analysis of Variable Stars. (A.V. Halevin and I.L. Andronov). This program package allows to view the whole data set and its parts, to scale, edit and partially reduce. The applications are presented for pulsating and eclipsing binary stars.

Parametric and non-parametric methods for the periodogram analysis (I.L. Andronov and L. L. Chinarova).A numerical comparison of the methods for periodogram analysis carried out for the parametric and non-parametric modifications of the Fourier transform is presented.

Long-term activity of the eclipsing binary AB And (Djurasevi'c et al.). The orbital and physical parameters of the active eclipsing binary AB And are found by interpretation of its photometric observations. The light curve irregularities are explained by the presence of dark spots on the primary component.

Coronal variability of RS CVn binaries in the EUV (Antonopoulou et al.). The timing analysis of the coronal emission from several RS CVn binaries observed in EUV is presented. The preliminary results show that the systems have different levels of coronal variability.

The European Pulsar Network Pulse Profile Database (Lorimer et al.). The European Pulsar Network (EPN) is an association of European astrophysical research institutes that co-operate in the subject of pulsar research. A WWW database of pulse profiles obtained from telescopes all over the world is maintained.

Weighing the mass of Vela X-1 (Barziv et al.). The first results of a spectroscopic campaign on the supergiant HD 77581, the optical counterpart of the X-Ray pulsar Vela X-1 are presented.The high quality data obtained can be used for a more accurate

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estimate of the mass of the neutron Star.

P.G. Niarchos

High energy astrophysics

Convenors:
J. Ventura,
G. Kanbach,
A. Mastichiadis

A. Plenary Talks

The field of High Energy Astrophysics was very strongly represented in JENAM-97 by three plenary talks, and a well attended H.E.A. Parallel Session. J. Trümper set the stage by presenting the grand design of recent advances in X-ray and Gamma-ray Astronomy, highlighting GRO discoveries of pulsars and active galactic nuclei, as well as ROSAT and ASCA observations of radio pulsars, supernova remnants, and distant QSOs which have greatly enhanced our understanding of these objects. R. Sunyaev discussed the consequences of recent observations of gamma-ray lines in the Galactic Center region. These allude to recent high activity of Sgr A, and, together with infrared observations of high velocities close to the Galactic Center, reported by R. Genzel, point to the presence of a supermassive black hole at the Galactic Center. In the third plenary talk J. van Paradijs focussed on the increasing number of stellar type galactic black hole candidates in accreting binary systems. The recent discovery of kHz QPOs may be related to the neutron star or black hole radii in such systems. Several of these problems were also covered during the HEA parallel sessions.

B. Parallel Sessions

Of special interest were the reports on the perennial problem of the gamma-ray bursts, where it was possible to obtain first hand news on the recent discoveries of X-ray (Frontera, Heise), and optical (van Paradijs) counterparts and, especially, for the case of the February 28 GRB for which a fading optical counterpart was found to coincide with a permanent diffuse faint source, probably a distant galaxy. The systematic BATSE results and relevant GRB theories were also reviewed (Kouveliotou) in the perspective of the recent identifications, where the fast response capabilities of the BEPPO-SAX experiment played a crucial role.

In extragalactic astrophysics an overview on the variability of active galactic nuclei (AGN), combined observational results in the optical, UV and X-rays with their theoretical interpretation (Courvoisier). Kazanas et al. presented an analysis on how the temporal variability may be linked via Comptonization to the spectral characteristics of these objects. Temporal fast variability of blasars at various frequencies, ranging from optical to GeV and TeV gamma-rays was further discussed by Wagner et al. while HEGRA TeV observations of Mkn 501 were reported by Petry et al. and by Pulhoffer et al. Models by Mastichiadis et al. discussed results on AGN variability in the context of the synchro-Compton models and contrasted them to results from Comptonized external photons.

Compact Galactic point sources such as neutron stars, white dwarfs and black holes were richly represented during the last day of the session. Millisecond pulsars as they now emerge after ROSAT, ASCA and EUVE results were discussed by Becker and Trümper. A correlation of these objects' emission efficiency to their spin-down rates shown in the X-ray data, as well as the power-law of their spectrum, appear to suggest a non-thermal magnetospheric origin of this radiation. The broad-band spectral character of X-ray bursts obtained from GRANAT-SIGMA results and their variability were discussed by Revnivtsev et al. Accreting white dwarfs (wd) which power the very luminous and enigmatic supersoft sources were discussed by S. Rappaport in the context of steady thermonuclear burning on the wd surface of the matter accreted from an evolved giant donor star of bigger mass. An evolutionary linkage of these objects to type-I supenovae seems plausible. The X-ray spectrum from accreting low-mass X-ray binaries may be related to the accreting neutron star's magnetic field through the efficiency of the cyclotron emission process as shown in models by Psaltis and Lamb, thus allowing us to have an estimate of the magnetic fields in these objects. An intrinsic spectral signature of accreting black hole systems appears to emerge from radiation models discussed by Titarchuk et al. and by Kylafis and Litchfield. GRO-EGRET gamma-ray point sources were reviewed by G. Kanbach. These results have yielded up to now 60 identifications with AGN's and six identifications with galactic radio pulsars, while a still larger number of sources remain unidentified, and are now at the focus of a continuing multi-waveband identification effort. Progress in radio-pulsar physics was reported in two theoretical papers: Radio emission mechanisms were discussed by E. Asseo who studies plasma instabilities capable of producing the so called "coral" or "conal" emission patterns, while Y. Gallant examines the propagation effects of the O-mode through the pulsar magnetosphere and its conversion to escaping radiation at the point where the plasma frequency equals the observing frequency.

Finally, diffuse galactic sources were considered in two review papers: The recent constraints on particle acceleration theories put by TeV observations of shocks associated with supernova remnants were tied to our theoretical understanding of diffusive particle acceleration and the always timely problem of the origin of cosmic rays by P. Duffy. On the other hand, radioactivity in our Galaxy as it emerges from GRO-COMPTEL studies of gamma-ray lines of isotopes such as ^{44}Ti and ^{26}Al (Iyudin et al) have given powerful tracers for recent energetic events such as supernovae and massive star formation. This should then allow for an independent assessment of, for instance, the Galactic supernova rate, but also elucidate the complex network of nucleosynthesis at play.

J. Ventura

Cosmology and Relativity

Convenors:
M. Rowan-Robinson
K.D. Kokkotas
D. Papadopoulos
N.K. Spyrou

In the twenty talks of the session, the speakers referred to current research subjects of particular interest in Cosmology and Einstein's General Theory of Relativity (GTR). These subjects are 1) the gravitational radiation and its detection 2) the expansion of the universe, 3) the nature and distribution of the observationally determined galactic masses, and 4) the properties of the Early Universe. More analytically:

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1) GTR predicts that a time varying gravitating source emits gravitational radiation. The speakers presented their research results on the rate of gravitational-radiation emission and signature, from perturbed relativistic compact stars, single or binary, and from the Early Universe.

2) Currently the universe is expanding at a certain rate. The detection of the expansion has been based on the so-called redshift of the spectra of galaxies and quasars, considered practically as point masses. The speakers presented their research results concerning the dependence of the above spectral shift on the fact that the emitting sources are realistic bodies with structure and finite dimensions.

3) The future of the universe depends on its total mass-energy. The speakers presented their research results on the determination of this mass, its nature and its properties in various gravity theories. All these results have been based on astrophysical phenomena like the gravitational lens, the observed motions in the galactic circumnuclear regions and haloes, and the contribution to these motions of various forms of the mass-energy of a galaxy. All these phenomena are directly related to the so-called missing-mass of the universe, which amounts to approximately 90mass-energy, but it is invisible.

4) The Early Universe is the arena of the new science of Microcosmology. The speakers referred to the properties of gravitational radiation from the Early Universe, to the particle creation in the context of certain theories, and to the formation of magnetic fields in the context of cosmic string theories.

N.K. Spyrou

History of astronomy

Convenors:
Efstratios Theodossiou
Maria Papathanassiou

The Session History of astronomy took place on Friday, 4th July 1997, from 9:30 to 10:30 a.m. with Dr. E. Theodossiou as the Chairman. The first speaker was Prof. Mary Blomberg from Sweden. Her talk by the title "*Possible Minoan Contributions to Greek Astronomy*" presents the results of orientation studies of important Minoan monuments and the interpretations of their significance for the later Greek Astronomy. The second talk with the title "*Evidence for Prehistoric Astronomy in the Aegean*" by Professor Emeritus G. Banos, was presented by Dr. M. Papathanassiou due to the absence of Prof. G. Banos. In his study, Prof. Banos is trying to find some evidence based on literacy and archaeological sources, for the astronomical knowledge of the inhabitants of the Aegean region in prehistoric times. Then, the Ucranian astronomer Dr. M.S. Dementev gave a talk by the title: "*New interpretation of ancient constellations*". He tries to find a correlation between the stellar and the geographical map -in the Mercator's projection on the same scale. Finally, Dr. M. Papathanassiou presented the work "*Orientation of the Greek temples on Delos*" by M. Papathanassiou and Z. Papadopoulou. In their paper they show results of orientation studies of the majority of the temples and the sanctuaries on Delos, which date from different periods of the history of the island. The session continued on Saturday, 5th July, 1997 from 9:30 to 11:00 a.m. with Dr. M. Papathanassiou as Chairwoman. The first speaker was Dr. M. Papathanassiou. Her talk by the title "*Historia Alexandri Magni: Astronomy, Astrology and Tradition*" presents a popular text on birth, life and death of Alexander the Great, which is attributed to Pseudo-Callisthenes. The same person presented the second talk with the title: "*Alexander the Great's Tomb at Siwa: The Astronomical Orientation*" by L. Souvaltzi, Em. Souvaltzis, M. Papathanassiou and X. Moussas. Their paper is a preliminary report on the possible astronomical orientation of the Tomb of Alexander the Great, found recently and excavated by the Greek archaeologist L. Souvaltzi. he third speaker was Dr. Efstratios Theodossiou. His talk with the title: "*A presocratic cosmological proposal*" by E. Danezis, E. Theodossiou, M. Stathopoulou and Th. Grammenos, presents the theogonic cosmogony of the Greek poet Alcman (7th century B.C.), according to whom the observable universe has emerged out of a point singularity interior to a white hole, which, due to the time symmetry of Einstein's field equations, can be considered as a time-reversed black hole. Dr. Th. Grammenos was the fourth speaker; his talk with the title: "*Cosmological implications on the Hexameron of St. Basilius*" by E. Danezis, E. Theodossiou, M. Stathopoulou and Th. Grammenos presents St. Basilius' views about the conditions before the creation of the material universe and time as a dimension. These views resemble with remarkable accuracy a number of modern cosmological approaches. The Romanian astronomer Dr. M. Stavensky gave a talk by the title: "*Astronomical contribution of Chryssanthos Notaras, Patriarch of Jerusalem*". In her paper, she presented some aspects of Notaras' activity as an astronomer. The Greek astronomer Dr. P. Rovithis presented his work about Chryssanthos Notaras by the title: "*Chryssanthos Notaras as an astronomer*". In his paper he emphasized the contribution of Chryssanthos Notaras (16??-1731) to the spreading of Astronomy in the beginning of the 18th century. The Ukranian astronomer V.A. Smirnov gave a talk by the title: "*Theory of music and method of harmony in J. Kepler's book Harmony of Universe*". He said that Kepler's method of the "Harmony" leads to the explanation of the existence of anti-entropic processes which are widely spread in nature. Finally, the Estonian astronomer Izold Pulstylnik gave the last talk by the title: "*An early history of resolving the Algol Paradox*", where he briefly analyzed the early history of resolving the famous Algol Paradox.

Stratos Theodossiou

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like, education, grants, databases, large facilities, scientific matters. The motive of this activity is to contact young people and if possible to track all of them in Europe to prepare a report on the situation and number of people who are research students and/or just got their PhDs in Europe. Doing so we intend to be the link among young people and facilitate their communication. I will appreciate if you can circulate this to as many people you know as possible. Suggestions and comments are most welcome. Please answer back to:

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M. Kontizas