



HIPPARCHOS

The Hellenic Astronomical Society Newsletter

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20 years
of Hel.A.S.



Contents

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Hipparchos is the official newsletter of the Hellenic Astronomical Society. It publishes review papers, news and comments on topics of interest to astronomers, including matters concerning members of the Hellenic Astronomical Society.

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Cover Image: NGC 6632 in Hercules

Exposure date: July, 16th+17th 2012, Location: Skinakas Observatory at Crete, Greece
Photographer: Makis Palaiologou, Stefan Binnewies, Josef Pöpsel
<http://www.capella-observatory.com/ImageHTMLs/Galaxies/NGC6632.htm>

Message from the President

Dear friends,

Our Society has grown up. It has been twenty years since the official establishment of the Hellenic Astronomical Society, but to me it seems much shorter. Time flies! I fondly remember our first conference in Athens in 1992. The science was good, but the food was excellent and has not been matched in any of our subsequent conferences. In the tight times that we are living, a memorable conference dinner would be desirable. I very much would like to have our celebratory conference dinner in the Acropolis museum, but the cost turned out to be large and unjustified for our Society's economic ability. Thus, the garden of the National Observatory of Athens will be a nice alternative. The view from the top of the hill is fantastic. Do not miss it!

Looking back in the last twenty years, I wondered whether any qualitative change has occurred in our Society. I can clearly see one: on average, the younger generation of Greek Astronomers is better than the older one, not only in productivity, but also in the quality of science. A significant number of young Greek Astronomers have been trained in excellent Centers, either as PhD students or as postdoctoral researchers, and have brought home knowledge in areas that did not exist in Greece before. I am proud to say that now nearly all branches of Modern Astrophysics are represented in Greece. As for the quality of science, this has been proven beyond any doubt by the highly competitive observing and funding proposals that our members have won.



Despite the difficult situation that our country is in, few governmental actions inspire hope. On the other hand, we as Astronomers cannot help much on a global scale. We do and should continue doing what we can do best, namely research and teaching in Astronomy. I do not feel that every branch of the Greek society does the best that it can, and that's frustrating. On the other hand, hope dies last!

Happy Anniversary Hel.A.S.!

Nick Kylafis
President of Hel.A.S.

Messages of former presidents for the 20 years of Hel.A.S.

The growth of Astronomy in Greece during the last decades has been impressive. When I was a student, around 1950, there were only a few astronomers, doing mainly observational work. There were only 3 professors of Astronomy, in the Universities of Athens and Thessaloniki and in the Technical University of Athens. Today there are hundreds of Greek Astronomers, in Greece and abroad. These cover all the branches of Astronomy, both observational and theoretical. Many are professors or research workers in international research centers. I see often new Greek names in papers published in the best international journals.

Hel.A.S. was created out of the need for contacts and collaboration between the Greek astronomers, when their number became too large. When I was elected as the first president of Hel.A.S. there were about 140 members. But this number was increased substantially the

following years and today it has reached over 250 members. This number can increase even further if Hel.A.S. becomes known to the multitude of young astronomers that are distinguishing themselves abroad.

After its creation Hel.A.S. started several important activities. It organized several very successful meetings and issued an important newsletter, namely *Hipparchos*, that today it has taken a very impressive form. The members of Hel.A.S. have developed collaborations, both in Greece and abroad and they publish hundreds of scientific papers every year. In this way the participation of Greece in international Astronomy is really impressive. I believe that this participation is one of the most important services that we offer to our country. It is remarkable how the Greek Astronomy is characterized by leading scientists all over the world.



George Contopoulos

I am sure that this upward development of Greek Astronomy will be continued and I wish every success to the present and future Hel.A.S.

The first serious attempt to establish a *Hellenic Astronomical Society* was undertaken in 1982 during the XVIII General Assembly of the International Astronomical Union, which took place in Patras, Greece. There, during several meetings, a dozen astronomers gathered in order to put the foundations of the long sought Society.

Later, several people attempted to draw a draft Constitution which would form the basis of the Society. Individual drafts were made by P.G. Niarchos, by M.E. Gontadakis and by M. Danezis, J. Deligiannis, X. Mousas, D. Papathanasoglou and Th. Papayiannopoulos. Gr. Antonakopoulos, M. Papagiannis and Th. Prokakis made several attempts to organise meetings and smooth out the difficulties that had risen during these very first steps towards the establishment of the Society. Unfortunately, these efforts did not pro-

duce any definite results.

In the mid-eighties there were some discussions among colleagues during working lunches. J. Ventura and J.H. Seiradakis started collecting relevant material, which later proved very useful.

In November 1991, when P. Laskarides issued the first announcement of the 1st Hellenic Astronomical Conference, the idea of the establishment of an Astronomical Society seemed ripe again. J.H. Seiradakis, on sabbatical leave in Bonn, drafted a first Constitution. This was restructured and completed during several meetings with D. Synachopoulos, either in Bonn or in Brussels. Later S. Avgoloupis, B. Barbanis, S. Persides, N. Spyrou and H. Varvoglis commented on it and a semi-final version was sent to the major astronomical establishments in Greece for further comments. A final version of the Constitution was presented to the participants of the 1st Hel-

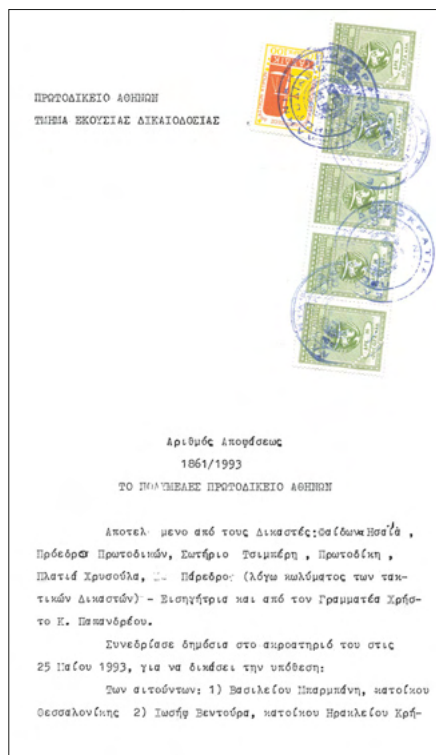


John Seiradakis

lenic Astronomical Conference, which was held in Athens, at the Eugenides Foundation Planetarium, in September 1992.

During the Athens Conference, several astronomers signed to become founding members of the Hellenic Astronomical Society. A few more astronomers signed the Constitution during the next few weeks bringing the total number of founding members to sixty six (66). A provisional Council was appointed. The paperwork for the recognition of the Society was undertaken by a lawyer in Athens. Some further delays were encountered, but finally on May 25 1993 the Hellenic Astronomical Society, HEL.A.S. (in greek: Ελληνική Αστρονομική Εταιρεία, ΕΛ.ΑΣ.ΕΤ.) was recognised by the Court of Justice in Athens.

The appointed Council of HEL.A.S. became aware of the verdict of the Court of Justice in June 1993. The President of the provisional Council, B. Barbanis (Thessaloniki), assisted by J. Ventura, Vice-President (Crete), P. Laskarides, Secretary (Athens), K. Makris, Treasurer (Athens), Chr. Goudis (Patras), K. Poulakos (Athens) and V. Tsikoudi (Ioannina) Members,



initiated the procedure for the first elections of HEL.A.S. In the elections, which took place on June 2 1994, participated 83% of the founding members.

Meanwhile by January 1994 another 74 colleagues had applied to become members, bringing the total number to 140. Currently the Society has 214 members, two thirds of which are associated with greek academic institutions.

The Hellenic Astronomical Society has been active ever since. It has been recognised as an Affiliated Member of the European Astronomical Society. It has established links with other international astronomical societies. It has organized 11 International Conferences in several cities in Greece. Its well looked-after web pages receive several thousand visits per month. Its authority has been extended in intergovernmental issues, in international exchanges of astronomical knowledge and has been recognized as truly representing all greek astronomers.

(Part of this report was published in the 1st issue of *Hipparchos* in May 1995)

In the late seventies or early eighties some scientists from the Greek Universities and the Observatory of Athens attempted to form for the first time a Greek Astronomical Union with only professional members working in Astronomy and Astrophysics and the relative scientific fields. The first meeting took place at the Campus of the University of Athens (Panepistimiopolis) with the participation of about thirty people. Very few of them were actually interested in the project, but they took anyway part in the meeting only because they did not want to be left behind. A few astronomers, I recall among them Dr. Gr. Antonacopoulos, Dr. J. Seiradakis and Dr. C. Alissandrakis and probably Dr. C. Banos, had already tried to state down some working rules for this Union, but the whole project failed because the political climate made some of us cautious, since it was the time that some chairmen of new formed unions used the “stamp” at will to express publicly various political views on behalf of the union.

Thus, time past by, until the First Panhellenic Astronomical Meeting, organized

by the National Astronomical Committee (NAC) was held in Athens in 1992 (September 21- 23). As it was the practice at the time, President of NAC was Academician Ioannis Xanthakis, vice – President Professor George Contopoulos and members Lyssimachos Mavrides, Paul Laskarides and Emmanouel Sarris. Having already the experience of two international meetings of the IAU, I suggested to the Committee the organization of such a meeting for all the Greek Astronomers working anywhere in the world. The committee accepted my suggestion and gave me the go ahead. A scientific committee was formed, which, in addition to the above members of the NAC included G. Veis, G. and C. Banos, J. Ventura, G. Antonacopoulos, N. Spyrou and C. Poulakos.

The meeting took place at the Athens Planetarium and had a great success with 143 participants from all over the world. It was during this meeting that John Seiradakis and his friends took the opportunity to take advantage of the climate of euphoria and to call the historical meeting among the interested partici-



Paul Laskarides

pants for the formation of a Greek Astronomical Union. They approached me and asked me to sell the idea to the President of NAC, in order to make this gathering as official as possible. But J. Xanthakis refused steadfastly to allow such a gathering. I believe that the idea of the existence of another Astronomical body with another President around would have re-

duced his own influence on the State. So, I suggested to John to hold his own meeting in a secondary room with myself stating total ignorance of the fact. This time the gathering was successful and around sixty, I think, astronomers signed the formation of Hel.A.S.

The late professor Vassilis Barbanis was designed as the first interim President of Hel.A.S., with me as Secretary and the late C. Macris as Treasurer. We prepared Hel.A.S. for its first elections in 1994. At that time our Union entered the historical period of its life.

I worked as hard as possible for the progress and expansion of our Society, acting two terms as Treasurer and two terms as President. I feel proud of the present state of the Society and I hope that the general crisis of the Greek society will not influence this progress.

In the following we provide a summary of the main activities of the Hellenic Astronomical Society during the 2006-2008 and 2008-2010 Governing Council terms under the Presidency of Prof. K. Tsinganos. The Governing Council of the Society consisted of V. Charmandaris (Secretary), A. Mastichiadis (Treasurer) and I. Daglis for the whole period. In addition, during the 2006-2008 term K. Kokkotas (as Vice President), I. Papadakis and M. Plionis served in the Council, while for the 2008-2010 term M. Plionis (as Vice President), N. Stergioulas, and L. Vlahos offered their time and energy to the goals of the Society.

The 8th and 9th Conferences of Hel.A.S. were the main astronomy events in Greece during that period and they were organized with great success by the Council. The first took place in the island of Thassos from September 13th to 15th 2008, with the assistance of the staff of the Univ. of Thrace. The high quality plenary and keynote reviews by top international scientists, as well as the natural beauty of the island impressed all participants. Furthermore, a special session was organized commemorating the 50th anniversary of Space exploration, initiated by the launch of Sputnik in October 1957. The 9th Conference took place in Athens from September 20th to 24th 2010 and was supported by the staff of the Univ. of Athens. Not only it was the largest conference ever organized by the Society but it also attracted scientists from 15 different countries increasing the international exposure of the Society. The conference also coincided with the culmination of various activities related to the International Year of Astronomy 2009 (IYA2009), which were coordinated by the Governing Council of Hel.A.S. A complete record of all IYA2009 events is available in the web page of the Society.

During its four years in office the Council took measures to improve the

visibility, prestige and smooth functioning of the Society. A new bilingual web page of the Society was created, as well as a centralized web system for organizing and managing the Conferences of Hel.A.S. An SQL database hosting all member details and the newsletters of the Society was also established. These greatly facilitated the administrative duties of the Council and the efficient dissemination of information to all members over the past 7 years. The quality of the biannual edition of *Hipparchos*, the official publication of the Society, was greatly improved thanks to the diligent efforts of the editors. Review articles by established members of the Society are now included on a regular basis in *Hipparchos*, along with select science highlights and information of the various activities taking place in Greece. The distribution of the monthly e-newsletter has also continued uninterrupted.

In the financial front, the Council reduced its operating budget without any effect on its efficiency by using new technologies and teleconferencing. Payment of the annual membership fees by credit card and direct transfer was made possible for the first time, which facilitated both the recruitment of new members, as well as the timely payment of fees by existing members. To increase the transparency of its procedures the Governing Council instigated the online presentation of the minutes of all its meetings via the web page of the Society, a practice which continues until today.

Finally, the Council placed under the auspices of the Society, as well as supported financially, numerous astronomy related initiatives in Greece. These included most IYA2009 events, the Pan-Hellenic high school astronomy competition, the petition to the completion of the 2.3m Aristarchos telescope, the in-



Kanaris Tsinganos

crease in the number of national graduate fellowships in astrophysics and space physics as well as ESA funded fellowships to Greek nationals.

One can find more details on the specific actions taken during the 2006-2010 period in the two reports of the President of the Society in 2008 and 2010, as well as in the corresponding minutes of the Council meetings.

It should be noted that completing what we believe was a successful term in office was made possible by the close collaboration, professionalism, and dedication of all members of the Council. Keeping in mind what was best for Greek astronomy, the needs of the members of Hel.A.S., and focusing on the work to be done kept the Council united and efficient. We are delighted to witness the great steps the Society has taken over the past 20 years. We feel honored to have been given the opportunity by the members of Hel.A.S. to contribute to some of these steps and look forward to support, as ordinary members, all future activities of our Society.

20 Years of Hel.A.S.



1. Profile and Membership

The Hellenic Astronomical Society was founded in 1993, by 66 founding members. Another 74 members joined the society and participated in the election procedure for the first Hel.A.S. Council, on June 2, 1994. The number of members has been increasing ever since, currently reaching 214.



Figure 1: Cover page of the court decision legally establishing Hel.A.S.

According to its constitution, the goals of Hel.A.S. are: a) to develop and promote the science of astronomy, in its wider sense, in Greece, b) to responsibly inform the public, as well as all interested parts, on subjects related to the science of astronomy, and c) to support the work and the interests of its members, in favor of whom the society may act as representative. The members of Hel.A.S. can be: i) ordinary (Ph.D holders whose research, authorship or professional activity contribute to the goals of the society), ii) junior (up to 35 years old) working on the completion of doctoral studies in astronomy, and iii) associate, i.e. persons or legal entities with an internationally recognized work in astronomy, or an outstanding support and friendly action towards the goals endorsed by the society.

The current geographic distribution of Hel.A.S. members is as follows

Membership Class	#	%
Founding Ordinary Member	38	18
Ordinary Member	134	62
Junior Member	36	17
Associate Member	6	3

Country of Residence	#	%
Greece	140	65
USA	24	11
France	12	6
United Kingdom	11	5.5
Germany	10	5
Belgium	3	2
Canada	2	1.5
Italy	2	1.5
Australia	1	0.5
Oman	1	0.5
Portugal	1	0.5
Spain	1	0.5
The Netherlands	1	0.5

The Greek members are distributed in 20 different departments of Greek universities or research institutes. About 85% of the Hel.A.S. members currently work in academic and research institutions in Greece or abroad.

Distribution within Greece	#	%
Athens	83	67
Thessaloniki	19	15
Crete	9	8
Patras	5	4
Thrace	3	2
Ioannina	2	2
Other	2	2

The percentage of women in Hel.A.S. has changed from about 13% in 2004 to a current 23%. The mean age of Hel.A.S. members has lowered over the years. The current age distribution is:

Age distribution	%
<40	22
40-60	47
>60	31

A large number of members of Hel.A.S. have been quite actively involved in both observational and theoretical main stream research in astronomy. A rough categorization of research topics yields the following estimates:

Research orientation	%
Mainly observational	36
Combined theoretical and observational	22
Mainly theoretical	42

A short analysis of the human resources in astronomy, astrophysics and space physics in Greece can be found in the Hel.A.S. official newsletter Hipparchos, volume 2, issues 2 (by V. Charmandaris), and 1 (by M. Plionis).

2. Elected Councils

► **Founding Council (1993):** B. Barbanis (president), J. Ventura (vice-president), P. Laskarides (secretary), K. Makris (treasurer), C. Goudis, K. Poulakos, V. Tsikoudi (members).

► **Term 1994-1996:** G. Contopoulos (president), J. Hadjidemetriou (vice-president), J.H. Seiradakis (secretary), P. Laskarides (treasurer), M. Contadakis, E. Kontizas, J. Ventoura (members).

► **Term 1996-1998:** G. Contopoulos (president), J. Hadjidemetriou (vice-president), J.H. Seiradakis (secretary), P. Laskarides (treasurer), M. Contadakis, X. Moussas, N. Spyrou (members).

► **Term 1998-2000:** J.H. Seiradakis (president), N. Kylafis (vice-president), H. Varvoglis (secretary), P. Niarchos (treasurer), E. Kontizas, H. Rovithis-Livaniou, X. Moussas (members).

► **Term 2000-2002:** J.H. Seiradakis (president), N. Kylafis (vice-president), H. Varvoglis (secretary), P. Niarchos (treasurer), S. Avgolopoulos, H. Rovithis-Livaniou, M. Plionis (members).



Figure 2: Last assembly of the 2000-2002 Council: (from left to right) P. Niarchos, H. Varvoglis, J. Seiradakis, N. Kylafis, S. Avgolopoulos, H. Rovithis-Livaniou, M. Plionis.

► **Term 2002 - 2004:** P. Laskarides (president), E. Antonopoulou (vice-president), K. Tsiganos (secretary), K. Theodossiou (treasurer), D. Hatzidimitriou, M. Mathioudakis, M. Plionis (members).

► **Term 2004 - 2006:** P. Laskarides (president), D. Hatzidimitriou (vice-president), K. Tsiganos (secretary), K. Theodossiou (treasurer), V. Geroyannis, K. Kokkotas, X. Moussas (members).

► **Term 2006-2008:** K. Tsiganos (president), K. Kokkotas (vice-president), V. Charmandaris (secretary), A. Mastichiadis (treasurer), I. Daglis, I. Papadakis, M. Plionis (members).

► **Term 2008-2010:** K. Tsiganos (president), M. Plionis (vice-president), V. Charmandaris (secretary), A. Mastichiadis (treasurer), I. Daglis, N. Stergioulas, L. Vlahos (members).

► **Term 2010-2012:** N. Kylafis (president), L. Vlahos (vice-president), I. Papadakis (secretary), N. Vlahakis (treasurer), A. Anastasiadis, C. Efthymiopoulos, G. Tsiropoula (members).

► **Term 2012-2014:** N. Kylafis (president), C. Efthymiopoulos (vice-presi-

dent), I. Papadakis (secretary), N. Vlahakis (treasurer), A. Anastasiadis, A. Bonanos, K. Tsiganis (members).

3. Hellenic Astronomical Conference

One of the central responsibilities of Hel.A.S. is to organize, every second year, the *Hellenic Astronomical Conference*. This is the major scientific event of the greek astronomical community. The conference, which takes place every time in a different part of Greece, typically brings together about 100-150 scientists with research interests in astronomy, astrophysics, and space physics.

Besides the opportunity given to Greek astronomers in Greece or abroad for meeting and discussing progress in their research fields and activity, the Hellenic astronomical conferences are open to and attract considerable international participation. One of the main benefits, for young astronomers in particular, is the opportunity to meet with outstanding international scientists invited as plenary speakers. The eleven conferences so far hosted the following plenary speakers:

Plenary speakers in Hel.A.S. conferences:

S. Antiochos	S. Krimigis
W. Baumjohann	R.P. Kudritzki
J. Binney	O. Lahav
M. Blanc	D.J. McComas
S. Cabrit	D. Mihalas
F. Combes	E. Mueller
T. Courvoisier	F. Occhionero
A. Coustenis	M. Papagiannis
R. Dvorak	J. van Paradijs
Th. Economou	E.N. Parker
M. Edmunds	T. Piran
G. Efstathiou	N. Prantzos
E. Emsellem	E. Priest
A. Ferrari	T. Ray
A. Gabriel	R. Rebolo
R. Genzel	M. Rowan - Robinson
B. Grammatikos	R. Schilizzi
P. Grosbol	J. Spyromilios
A. Hood	R.A. Sunyaev
K. Horne	Y. Terzian
B. Hultqvist	J. Truemper
M. Kafatos	J. Truran
D. Kazanas	R. Tuffs
J. Kirk	S. Wagner
Z. Knezevic	R. Wielebinski

Besides the scientific sessions, the Hel.A.S. conferences regularly host a popular talk, usually combined with the opening cere-



Figure 3: The conference photo of the 9th Hellenic Astronomical Conference.

mony, as well as various special sessions devoted to issues like education in astronomy, the possible participation of Greek astronomy in international organisations (like ESO), and or the astronomical infrastructure in Greece. Also, since 2011 the Hel.A.S. conference hosts a “Highlight talk by a young astronomer”, presenting results of a young astronomer who have attracted significant international attention.

11th Hellenic Astronomical Conference
Athens, 8-12 September 2013

10th Hellenic Astronomical Conference
Ioannina, 5-8 September 2011

9th Hellenic Astronomical Conference
Athens, 20-24 September 2009

8th Hellenic Astronomical Conference
Thassos, 13-15 September 2007

7th Hellenic Astronomical Conference
Kefalonia, 8-11 September 2005

6th Hellenic Astronomical Conference
Athens, 15-17 September 2003

5th Hellenic Astronomical Conference
Heraklion, 20-22 September 2001

4th Hellenic Astronomical Conference
Samos, 16-18 September 1999

3rd Hellenic Astronomical Conference
(JENAM-97)
Thessaloniki, 2-5 July 1997

2nd Hellenic Astronomical Conference
Thessaloniki, 29 June - 1 July 1995

1st Hellenic Astronomical Conference
Athens, 21-23 September 1992

4. Hipparchos and electronic newsletter

A main vehicle to maintain and enhance coherence between the society’s members, as well as to inform them on major aspects of activity in astronomy, astrophysics and space physics, is *Hipparchos*, the official Hel.A.S. newsletter. The first issue was published in May 1995. It contained the “message of the president” (G. Contopoulos), the list of founding members, supporting letters by the president of the International Astronomical Union (I. Woltjer), and the presidents of the American (F. Shu) and Royal (M. Rees) Astronomical societies re-

spectively, and various short announcements and articles. Supporting messages by representatives of various astronomical societies worldwide appeared in subsequent issues.

The current issue is the 24th in a period of 19 years. Besides growth in size and content, a major change in the format of *Hipparchos* took place at the transition from volume 1 to volume 2 (January 2006, editor K. Kokkotas). All past issues are presently available in the webpage of Hel.A.S. under pdf format.

The content of *Hipparchos* has also evolved over the years in a significant way. The first issues contained short presentations of astronomical activities in Greece and abroad, a discussion of issues related to astronomy in Greece, short news about conferences or other events, the so-called “brief science news”, referring to a year’s highlights in astronomical research worldwide, and, finally, some review articles, of purely scientific content. However, the space devoted to articles of the latter category gradually increased, giving eventually rise to full scientific review articles. After a council decision in 2011, such arti-

cles are currently indexed in the NASA ADS database. About 50 review articles, covering a wide range of topics, appear in total in all Hipparchos issues.

An important impact of Hipparchos stems from its use as reference to the main astronomical infrastructure in Greece. Articles can be found in various issues about all the important telescopes in the country, a variety of instruments used in these telescopes, but also about the participation of Greece, as a country, or of particular academic and research institutes, in major international astronomical facilities and organizations. The September 2007 [volume 2 (3)] issue was devoted to the “present status of the Hellenic observational astronomy”. In the present issue, an attempt is made to outline the education and research contribution of the major institutes in Greece where Hel.A.S. members are active.

In addition to Hipparchos, since 1998 all Hel.A.S. members receive by e-mail, at the beginning of each month, an electronic newsletter. It contains brief news, announcements of conferences and job openings in Greece, as well as other news which could be of interest to the members of the Society. The electronic newsletter is much shorter than Hipparchos. Nevertheless, it plays an equally significant role in the maintenance of Hel.A.S. coherence and spirit. In fact, the electronic newsletter is the way for the society to periodically renew its contact with the members, to provide quick access to information, and, eventually, to keep the “family spirit” that has constantly characterized the society’s place in the mind and heart of its members.

5. Miscellaneous activities and support

The following are some extra activities of Hel.A.S. over the years:

- **Webpage:** Since 2006 the society maintains a dynamic webpage (www.helas.gr). This webpage has served

as the immediate reference point of Hel.A.S. members, providing access to information about the members themselves, the society’s activities, the conferences, various editions, news, and finally links to several other sites of major astronomical interest. The webpage’s main menu comprises: “About Hel.A.S.” (brief history), Council (present and past), Members (an electronic directory, along with the very useful directory containing CVs in pdf format produced by the former Hel.A.S. president prof. P. Laskarides), Joining Hel.A.S. (instructions on how to apply for membership), Newsletters (all Hipparchos issues in PDF format as well as all electronic newsletters), News & Events, Conferences of Hel.A.S., Career opportunities (announcements of new job openings, or openings related to post-doctoral or doctoral studies in Greece and abroad), Greece and ESA (information related to Greece’s membership in ESA), Facilities in Greece (links to the main astronomical facilities’ websites), Astronomy Resources (links to major journals and databases, observatories and other institutes, pages devoted to astronomy and popular links), and finally a special link devoted to the International Year of Astronomy 2009.

- **Best Ph.D award:** The society welcomes applications (on a two-year basis) for a best Ph.D award. This competition aims to promote, and increase the visibility of, the research work done by the Junior members of our Society. Eligible candidates should be members of Hel.A.S. who successfully defended their thesis within a fixed period in a university either in Greece or abroad. Any ordinary or associate member of the Society can propose a candidate for the competition. Proposals are accompanied by a reference letter, the CV of the proposed candidate, a list of publications in referred journals and oral/poster presentations in international con-

ferences, and an abstract of the candidate’s thesis. Proposals are evaluated by the Hel.A.S. council. Awards are accompanied by financial support for the participation of the award recipient in an international conference to present the results from his/her thesis. The award recipient is also given time for an oral presentation in the Society’s conference.

- **Collaboration with other societies and individual member support:** over the years, the society has provided support to other societies hosting educational or diffusion activities related to astronomy in Greece. Such support has taken place both in material and/or “in kind” form. Examples are the constant support of the Panhellenic high school astronomy contest organized by the Astronomical Society of Volos, the participation of Hel.A.S. members to the training of high school students participating in Astronomy Olympiads, collaboration with the Hellenic Astronomical Committee in commonly promoting the interests of astronomers in government decision making, small scholarship grants or travel grants given to young Hel.A.S. members participating in astronomical conferences abroad.

6. Conclusion

The 20 year anniversary of Hel.A.S. is marked by a constant society’s growth. This is obvious in the figures, the quality, and the width of spectrum of activities encompassed by the society. With such a vivid presence and role within the Greek astronomical community, Hel.A.S. faces future with optimism, and a constant dedication towards uniting its members in a common goal, namely to serve astronomy and bring about an important contribution to science and society.

A short review of research and education in Astronomy, Astrophysics and Space Physics in Greece

In past issues over the whole history of *Hipparchos*, several Hel.A.S members presented particular astronomical facilities as well as activities related to research and education in Astronomy, Astrophysics and Space Physics, that take place in university departments or research institutes in Greece. Also, some attempt was made to provide statistical data about publication rates and/or the impact of the work of astronomers working in Greece. This latter task seems hard to complete without detailed study. For the former task, however, we believe it would be useful to attempt to provide, as in the following pages, a brief review of the astronomical scientific activity hosted in main university and research departments in which Hel.A.S members are active. The following presentation comes in groups corresponding to the geographic distribution of the Hel.A.S members. Thus, the groups represent Athens, Thessaloniki, Crete, Ioannina, Thrace, and Patras. Even so, the present review is not complete, as it does not include the activities of a number of colleagues working in small groups in university departments not listed below. We hope, however, that the information provided in the sequel could serve as a starting point for a more thorough and detailed review.

The editorial committee of *Hipparchos* would like to kindly recognize the help, in producing the present information, of the following colleagues: V. Charmandaris, E.P. Christopoulou, V. Geroyannis, D. Hatzidimitriou, A. Nindos, I. Papadakis, P. Patsis, Th. Sarris, N. Sergis, N. Stergioulas, K. Tsiganos.



20 years of Hel.A.S.



Department of Astrophysics, Astronomy and Mechanics, Faculty of Physics, National & Kapodistrian University of Athens

The Department of Astrophysics, Astronomy and Mechanics of the Faculty of Physics of the National and Kapodistrian University of Athens was founded 30 years ago, in 1983. The Department currently has 15 faculty members and 4 emeritus professors as well as about 70 postdoctoral fellows, PhD and MSc students.

There are several undergraduate and graduate courses taught by the depart-

ment's academic staff, in the disciplines of Observational Astrophysics, Theoretical Astrophysics, Theoretical Mechanics, Plasma Astrophysics, Relativity and Cosmology, Solar and Space Physics, High Energy Astrophysics, Applied Optics, as well as History and Philosophy of Physical Sciences.

The department's educational activities are supported by the Laboratory of Astrophysics, the Laboratory of As-

tronomy and Applied Optics, and the Gerostathopoulou University Observatory, which hosts a 40cm telescope, equipped with modern instruments (CCD cameras, a diffraction grating spectrograph, focal reducer, filters etc). The facilities include a fully equipped computer room with 20 work stations for the training of students in data analysis and astronomical techniques, and a machine room.



Figure 1: The Gerostathopoulou University Observatory: Left, the 5-m dome; Right, the 40-cm telescope with the stellar spectrograph mounted.

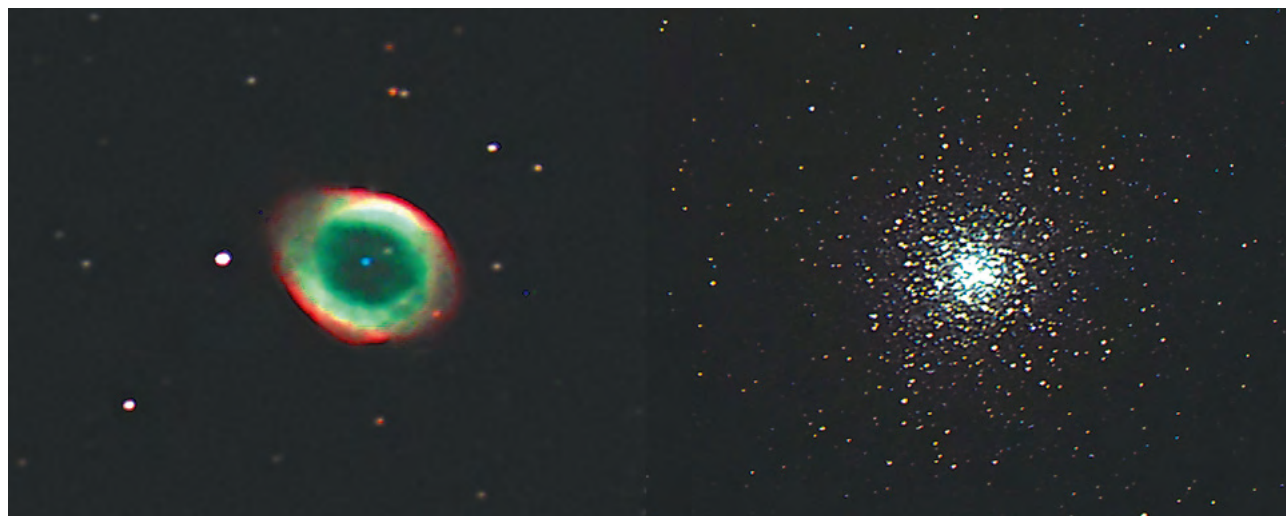


Figure 2: Images obtained by undergraduate students with the 40-cm telescope during the Observational Astrophysics Laboratory course.

The faculty members of the Department are conducting research in various areas of Astrophysics, Astronomy and Theoretical Mechanics. Several collaborations have been established with well-known Research Centers, Astronomical Institutes and University Departments in Greece and abroad, in both theoretical and observational projects.

The main areas of research include:

1. Theoretical Astrophysics

- Plasma Astrophysics
- Relativistic and non-Relativistic Magnetohydrodynamics
- Accretion Disks in Astrophysical Environments
- High Energy Astrophysics
- Relativistic Astrophysics (compact objects) – Gravitational Waves

2. Observational Astrophysics

- Stellar Physics (stellar structure and evolution, stellar atmospheres, binary stars, stellar variability, asteroseismology, star clusters)
- Star Formation and the Interstellar Medium
- Extragalactic Astronomy
- Astronomical Instrumentation
- Astronomical Photometry and Spectroscopy
- Image Processing and Data Reduction from Earth-based and Space Observatories

3. Solar and Space Physics

- Solar Physics (quiet sun, solar activity, solar wind, heliosphere)
- Solar Observation instrumentation (ARTEMIS IV Multichannel solar radio-spectrograph operated by the University of Athens, located at Thermopylae Satellite Station),
- Space Physics (solar-planetary coupling, space plasma dynamics, charged particle acceleration, magnetic storms, radiation belt dynamics, cosmic radiation, planetary magnetospheres, space weather)
- Space Applications (satellite Earth observation, measurement techniques in space plasmas)
- Space technology (LIDAR and MOEMS technology, optical applications for EXOMars Mars Sample Return missions, thermal and optical study of Nd:YAG crystals and applications for missions ADM-AEOLUS and EarchCARE-ATLID)

4. Theoretical Mechanics

- Classical and Relativistic Mechanics, Non-Linear Dynamics, Geophysical and Astrophysical Fluid Dynamics
- Application of collineations in relativity and dynamical systems

5. Cosmology

- Cosmology and Relativity

There is also research activity pertaining to the History and Philosophy of Astronomy and Applied Sciences and Archaeoastronomy (study of the Antikythera Mechanism)

Over the past 5 years, the average research productivity of the current (15) members of staff is ~7.5 (3.5 in refereed journals) publications on average per person per year.

Members of the academic staff and associated researchers are involved in

various aspects of the preparation of future ESA space missions, such as the astrometric mission GAIA (to be launched at the end of 2013) which will compile a 3D space catalogue of approximately 1 billion stars, the ASPICS/PROBA-3 mission, a formation flying externally-occulted giant coronagraph mission (to be launched in 2017), the Solar Orbiter mission dedicated to solar and heliospheric physics (to be launched in 2017 or 2018), the ESA cornerstone mission BepiColombo to planet Mercury and the Swarm constellation mission, which will map the Earth's magnetic field in unprecedented detail.

The Department of Astrophysics, Astronomy and Mechanics also supports several outreach activities including public lectures, monthly open nights at the Gerostathopoulou Observatory and educational activities involving schools.

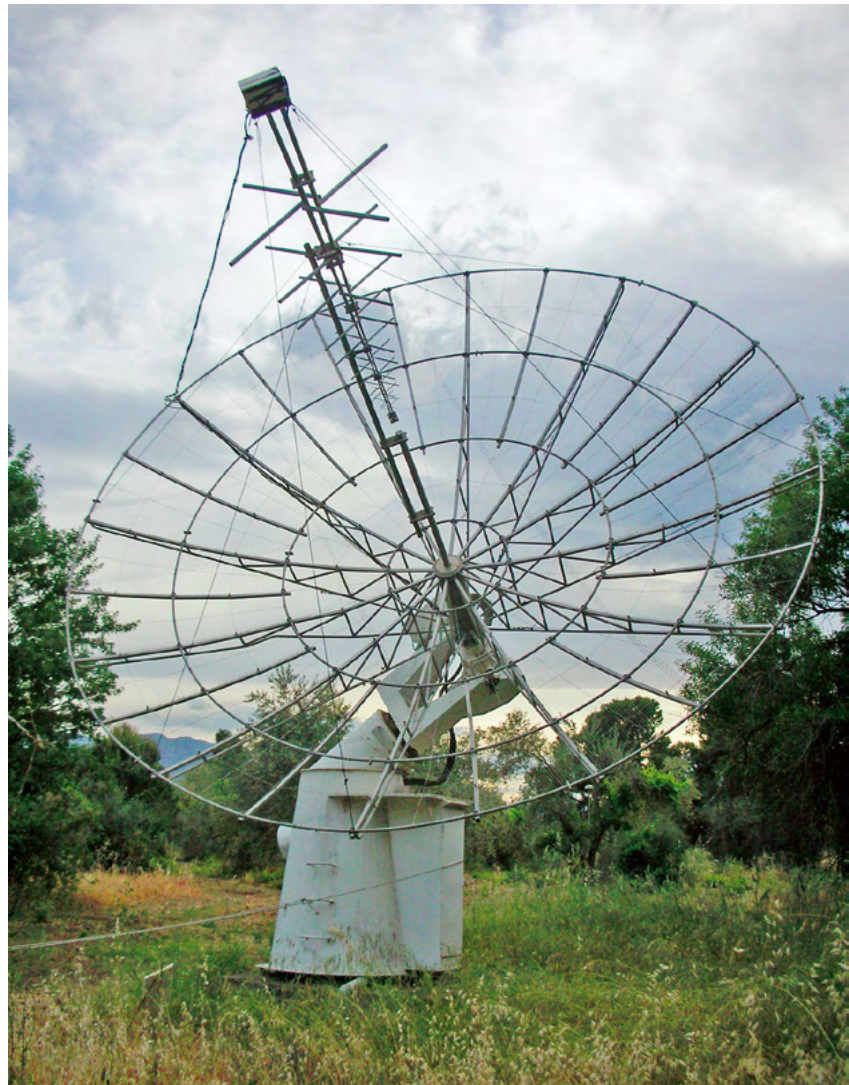


Figure 3: ARTEMIS IV Multichannel solar radiospectrograph operated by the University of Athens, located at Thermopylae Satellite Station.



National Observatory of Athens

Established in 1842
Lofos Nymfon, 118 10 Thissio, Athens

Mission: To conduct basic and applied research and provide social services in:

- (a) Astronomy, Astrophysics, Space Applications and Remote Sensing,
- (b) Environmental Research and Sustainable Development,
- (c) Geodynamics.

NOA as a *National Lab* covers all territory of Greece with a densely distributed network of about 400 stations: 174 seismological stations (44 seismological stations, 116 accelerographic stations, 14 GPS stations), 211 weather stations, 4 astronomical telescopes, 4 magnetic stations, several ionospheric stations, remote sensing antennas and atmospheric pollution stations. NOA does not only produce new knowledge via basic research and provide social services but additionally makes them available to the wider society via its well organized public outreach centers (Visitors Centers and Astrogeophysics Museum).

Director: Professor Kanaris Tsinganos

Staff: 56 Researchers (A,B,C,D), 36 Scientific staff, 19 Administrative staff, 22 Technical and Support Staff. Total staff with permanent status: 133 Under contract and in research programmes: 75 including postdoctoral researchers.

Finances: Annual turnover (2011): approx. €10 million

Research Institutes:

- Astronomy, Astrophysics, Space Applications and Remote Sensing
- Environmental Research and Sustainable Development
- Geodynamics

Strategic priorities:

- Basic research and expansion of its activities in new, emerging, state-of-the-art scientific research areas with high added-value at the scientific level.

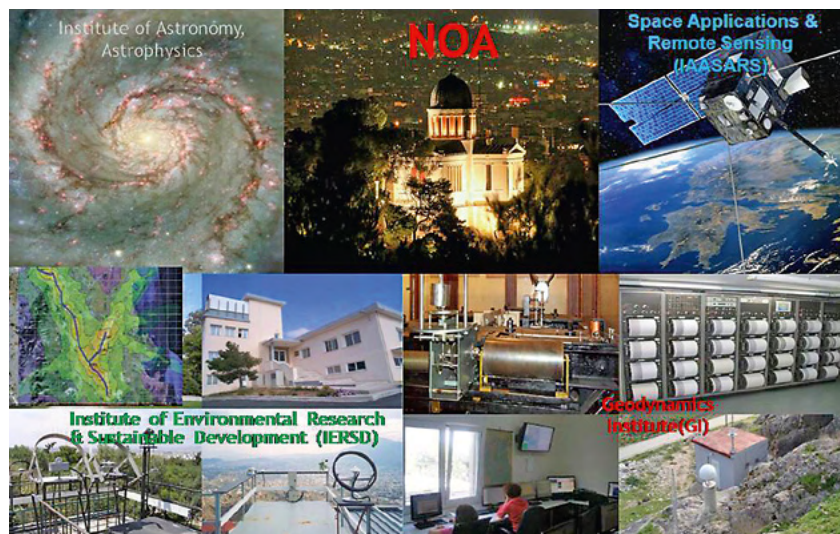
- Expansion and modernization of unique NOA's Panhellenic networks.
- Provide operational space-borne products related to basic research, the environment and the security of the citizens to the public and private sector.
- Link research products with private enterprise and industry
- Public outreach activities.

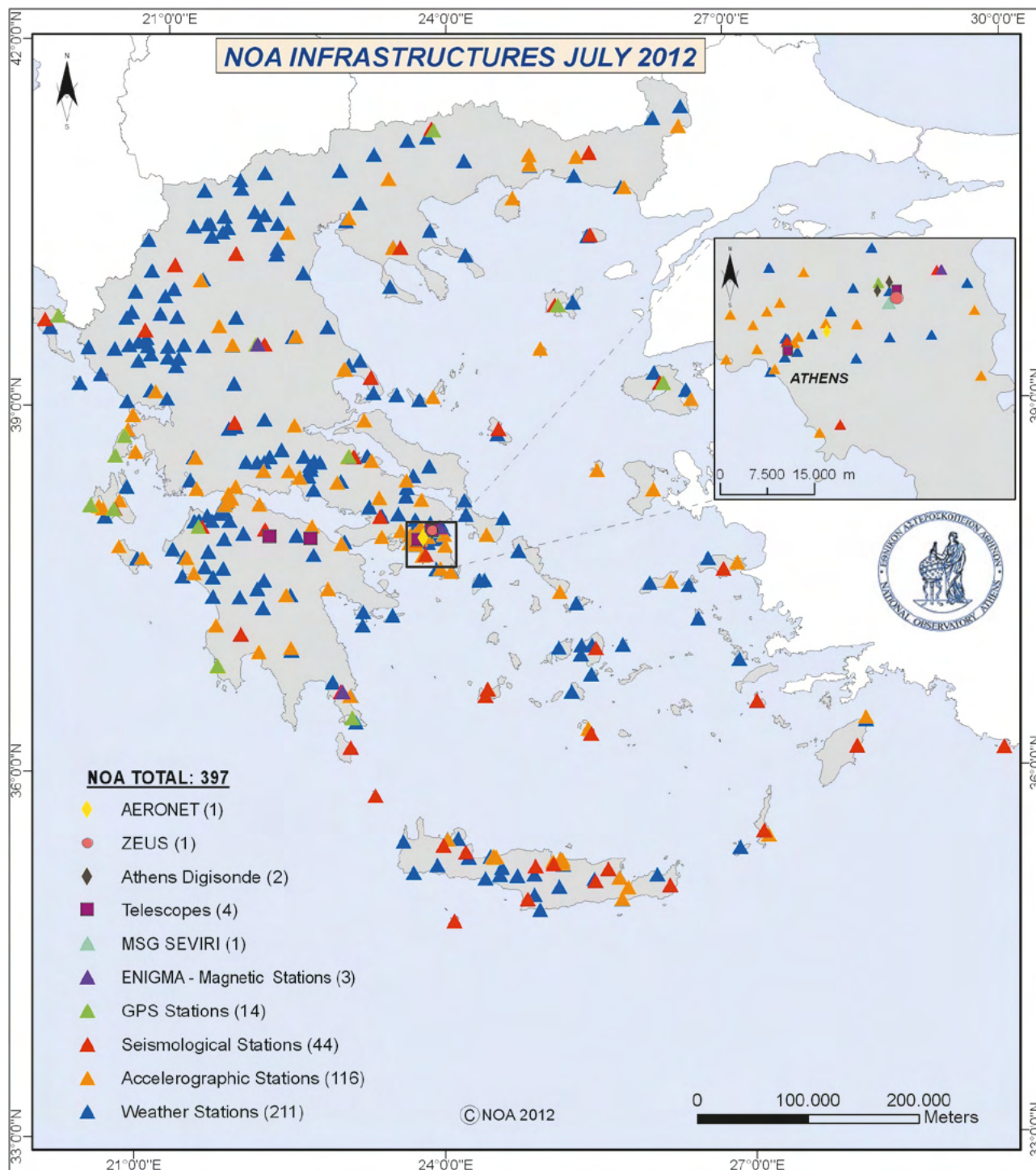
Main assets / infrastructure:



- Geoastrophysics Museum at Sina historic building (est. 1842)
- 400 Panhellenic stations of seismological, meteorological, astronomical and space networks
- 2.3 m Ritchey-Chretien Telescope "Aristarchos" - Helmos Observatory (altitude 2350 m), part of the European OPTICON network

- 1.2 m Cassegrain Telescope – Kryoneri Observatory, Corinthos area
- Newall Telescope, (62.5 cm refractor), Penteli station
- Doridis Telescope (40 cm refractor), Pnyka site
- Ionospheric station
- HELLINic GeoMagnetic Array (ENIGMA)
- EUMETcast Satellite Receiving Station
- Popular weather site **meteo.gr** (400.000 hits per day, 2nd in visibility in all Greece)
- Atmospheric Remote Sensing Station
- Atmospheric Pollution Laboratory
- Radiation Measurement Laboratory
- Atmospheric Chemistry Laboratory
- Calibration of Meteorological Instrumentation Laboratory
- A mobile atmospheric pollution measurement station
- A DOAS (Differential Optical Absorption System) pollution monitoring station
- Radiosonde and tethered balloon atmospheric profiling system
- National Tsunami Center at the Geodynamics Institute





Main achievements

- High Evaluation marks at the competitive "ΚΡΗΠΙΣ" proposal (2012)
- 3 ARISTEIA grants (2012).
- Several Marie Curie grants (2012).
- Successful participation in competitive programs (FP6, FP7, ESA), some international of which are coordinated by NOA researchers.
- Award of the European Union/Europa Nostra cultural heritage prize (2010) for the restoration of the historical buildings of NOA.
- 271 total publications with 2845 citations (2011).
- Participation of IERSD researchers in the climatic change group IPCC which was honored with the Nobel peace prize (2007).
- Popular Visiting Centers: since 1995, about 700.000 visitors.
- Chair of the UNESCO Chair for Natural Hazards, the National Tsunami Center at the Geodynamic Institute and the Greek GEO Office.
- Development of a national version of the EPA-NR software for all building energy audits.
- Increasing the numbers of the existing accelerographic stations and installation of a new Geodetic network.

The 2.3 m Aristarchos Telescope

The 2.3m “Aristarchos” telescope is the largest research infrastructure of the National Observatory of Athens (NOA). It is an f/8 Ritchey-Chretien telescope, built by Carl Zeiss GmbH, a German company with an established tradition in telescope design and construction. The Institute of Astronomy Astrophysics Space Applications and Remote Sensing (IAASARS) of NOA manages the telescope, which is located at an altitude of 2340m at Helmos Observatory, approximately 220km southwest of Athens, near the city of Kalavryta. In addition to the main telescope building, a small dome housing a seeing monitoring telescope, a modern guesthouse and associated support infrastructure are at the site of the Observatory. It should be noted that Helmos Observatory is the highest altitude facility in Greece for which a connection to the public electricity network as well as a fiber-optic Internet access have been installed.



Figure 1: The 2.3m Aristarchos Telescope.

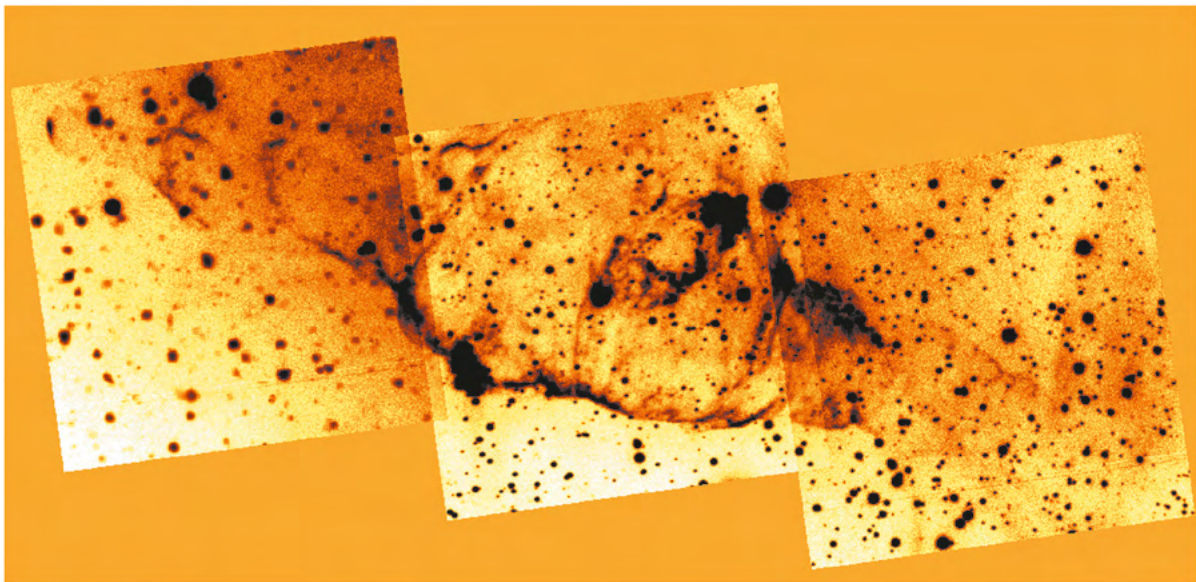


Figure 2: An $\text{H}\alpha + [\text{NII}]$ image of the KJpN 8 planetary nebula, obtained in 2011 with 2.3m Aristarchos Telescope. The mosaic is approximately $6' \times 12'$ and displays the filamentary structure of the interstellar medium shaped by the strong winds during the late stages of evolution of the central star (Boumis & Meaburn 2013).

The inauguration of “Aristarchos” took place in 2007. The telescope remains the largest in the Balkans and the second largest in continental Europe. It utilizes technology currently used at 10m class telescopes allowing for superb pointing accuracy as well as excellent tracking. The telescope is currently equipped with the following scientific instruments:

- a) a 5'x5' CCD camera with an optical filter set including both broad-band and narrow-band filters,
- b) the RISE-2 exoplanet transit detection system,
- c) the low/medium resolution fiber-fed Aristarchos Transient Spectrometer (ATS),
- d) the 12'x12' Vernikos-Eugenides CCD camera (VEC),
- e) the high resolution Manchester Echelle Spectrometer (MES-AT).

The first two instruments are fully commissioned while the technical characterization and commissioning of the remaining instruments is underway.

The “Aristarchos” telescope is already a member of the FP7-II OPTICON consortium of 2-4 meter telescopes, which share their facilities and observing time with the European astronomical community. It is currently operating in shared-risk commissioning mode. As a consequence, over the past few years observing time has been made available to astronomers of the National Observatory of Athens and collaborating institutions in Greece. The first refereed publication using imaging data from the telescope entitled “The expansion proper motions of the extraordinary giant lobes of the planetary nebula KJpN 8 revisited” appeared in 2013 (Boumis & Meaburn 2013, MNRAS, 430, 3397) and

Helmos Observatory
Aristarchos Telescope

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[Instrumentation](#)
[Atmospheric Conditions](#)
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[Publications](#)
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[Links](#)

2.3m Telescope "ARISTARCHOS"

The 2.3m "Aristarchos" telescope is the largest research infrastructure of the National Observatory of Athens (NOA). It is an f/8 Ritchey-Chretien telescope, built by the Germany company Carl Zeiss GmbH, which has an established tradition in telescope design and construction. The Institute of Astronomy Astrophysics Space Applications and Remote Sensing (IAASARS) of NOA manages the telescope, which is located at an altitude of 2340m at Helmos Observatory, approximately 220 km southwest of Athens, near the city of Kalavryta.

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Please follow the links on this page for more details on the instrumentation etc.

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Institute for Astronomy, Astrophysics, Space Applications & Remote Sensing, National Observatory of Athens

Figure: "Aristarchos telescope" website (<http://helmos.astro.noa.gr>)

the press release issued by the Royal Astronomical Society received wide coverage in both Greek and foreign media.

A number of engineering and evaluation activities are taking place during the 2013-observing season in parallel with the science observations. We look for-

ward to the publication of the more scientific results, and the commissioning of the remaining instruments, which will enable the facility to become available to community in 2014.

More information can be found at: <http://helmos.astro.noa.gr>



Research Center for Astronomy and Applied Mathematics, Academy of Athens

The Research Center for Astronomy and Applied Mathematics (RCAAM), is one of the Research Institutes of the Academy of Athens.

The main competences of RCAAM are Galactic Dynamics and Galactic Morphology, Nonlinear Dynamics and Chaos Theory, Solar Physics, Magnetohydrodynamics, Cosmology and Gravitation.

Research in RCAAM is focused towards comparing theoretical results with observational data from ground based as well as from space observatories (VLT, Solar Dynamics Observatory, etc.). The main scientific goals for the period 2010-13 include the study of

the role of Chaos in supporting structures in N-body simulations, the Dynamics of the Milky Way and other galaxies, the study of the magnetic connectivity in the active-regions of the solar atmosphere, the investigation of particle acceleration in the pulsar magnetosphere and the time profiles of the resulting high energy radiation, the formation and evolution of Structures in Cosmology as well as the nature of dark matter and dark energy.

Currently at RCAAM work nine researchers (including the Supervisor Academician), five researchers in postdoctoral positions attached to specific projects of our Institute, seven PhD students

who work in RCAAM towards completing their PhD Thesis under the supervision of RCAAM members, as well as one external scientific collaborator. Researchers of RCAAM participate also in the supervising committees of two more PhD Theses. The personnel of RCAAM includes a secretary and a technician.

In the last years five PhD and three MSc Theses have been successfully completed supervised by RCAAM members. RCAAM participated also in the teaching of postgraduate and undergraduate courses at the Universities of Athens and La Plata, Argentina.

RCAAM has currently joint projects with researchers from the European

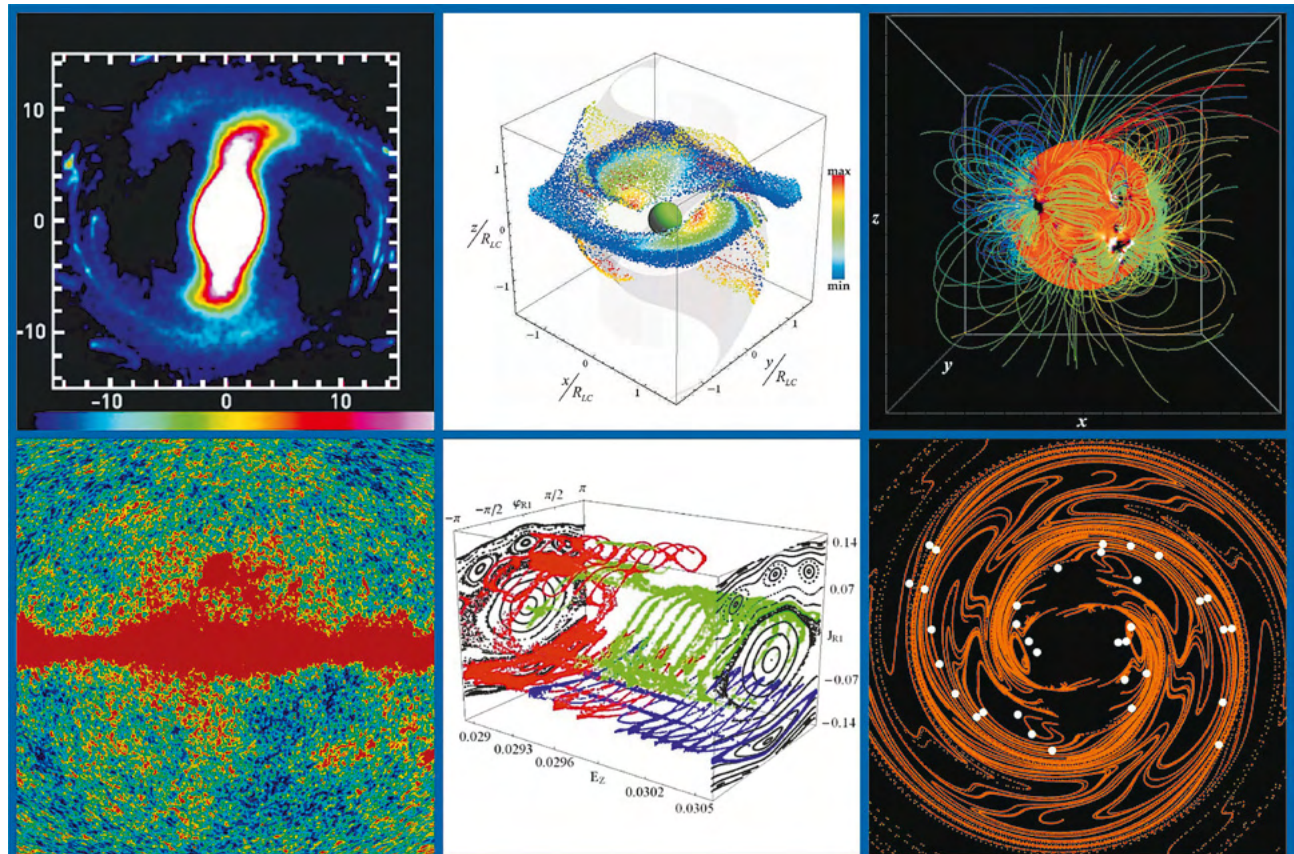


Figure: Some "pictures of the month" that have appeared in the RCAAM webpage. Visit the webpage for scientific information on these pictures.

Southern Observatory (ESO), the Max-Planck Institut fuer Astrophysik, Munich, Germany, the University Observatory of Munich, Germany, the University Observatory of Strasburg, France, the University of Stockholm, Sweden, the La Plata University, Argentina, the University Observatory of Vienna, Austria, the University of Padova, Italy, the University of Barcelona, Spain, NASA Goddard Space Flight Center, USA, the European Space Agency (ESA), the Montana State University, USA and the Colorado Research Associates (CoRA), Boulder, USA.

RCAAM organizes since 1997 a seminar on a weekly basis, during the whole year, with speakers leading scientists from Greece and abroad. The talks are

attended by many researchers, university professors and young scientists. RCAAM has organized in 2002 and 2007 international conferences on “Galaxies and Chaos” and on “Chaos in Astronomy” respectively. This series of conferences is planned to be continued during the next years. Other conferences (co-)organized by our Institute were the conferences “Classical and Quantum Gravity”, Crete 2009, the “13th European Solar Physics Meeting”, Rhodes 2011 and the workshop “The Role of the Origin of Magnetic Fields in Astrophysics”, Athens 2013. Members of RCAAM participated also in the organization of several more conferences in Greece and abroad. RCAAM organizes also a number of talks for the broad public every year.

Details about the activities of RCAAM can be found in the web page: <http://astro.academyofathens.gr/web/>. This includes lists of publications in the last years (<http://astro.academyofathens.gr/web/publications.htm>) and the Annual Reports (<http://astro.academyofathens.gr/web/about.html>).

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The screenshot shows the website of the Research Center for Astronomy and Applied Mathematics of the Academy of Athens. The browser window title is "Research Center for Astronomy | Academy of Athens". The address bar shows "astro.academyofathens.gr/web/". The page has a dark blue header with the center's name and a starry background. Below the header is a navigation bar with "Contact details" and "Search...". A left sidebar contains a menu with links: Home, News & Announcements, About us, Personnel, Research, PhD & Masters Theses, Publications, Library, Past & Future Events, Seminars, Conferences, Education & Outreach Activities, and Picture of the Month archive. The main content area features a "Featured Picture" titled "The Speed of Arnold Diffusion" which is a 3D plot showing complex, colored trajectories (red, green, blue) in a phase space defined by coordinates φ_{R1} , J_{R1} , and E_z . The right sidebar contains an "Events" section with a seminar on Tuesday 3 September 2013 by Prof. Christian Boily, and an "In Press..." section mentioning a paper by L. Tsigaridi & P.A. Patsis.



Office of Space Research and Technology of the Academy of Athens

The Office of Space Research and Technology of the Academy of Athens was established in 2005, after the election of Prof. S. M. Krimigis as a full member of the Academy of Athens in the chair of "Space Science", in 2004. The Office's main work is to conduct research in the field of Space and Magnetospheric Physics, Planetary and Plasma Physics, with emphasis on the analysis of data provided by current space missions in which the office is actively involved (Cassini, Voyager, MESSENGER). New results are constantly being published in

books and major international peer-review scientific journals, as well as in presentations in international conferences. In the five-year period 2008-2012, the Office of Space Research participated in 135 peer-reviewed scientific publications, some of which appear in the top scientific journals *Nature* and *Science*.

In parallel, the Office constantly collaborates with important research institutes as the Applied Physics Laboratory (APL) of the Johns Hopkins University (USA), the Max Planck Institute for Solar System Research (Germany) and the

Centre d' Etude Spatiale (France). Other activities include the organization of scientific conferences, various talks addressed to the scientific community (e.g. Academy of Athens seminars, talks in Greek universities etc.), as well as to the public (talks in open events, interviews to media etc).

Finally, the Office of Space Research is involved in educational activities, such as the supervision of MSc and Ph.D degree theses on the analysis of data coming from ongoing space missions.

Supervisor: Professor S. Krimigis

Research Associates: Dr. N. Sergis, Dr. K. Dialynas

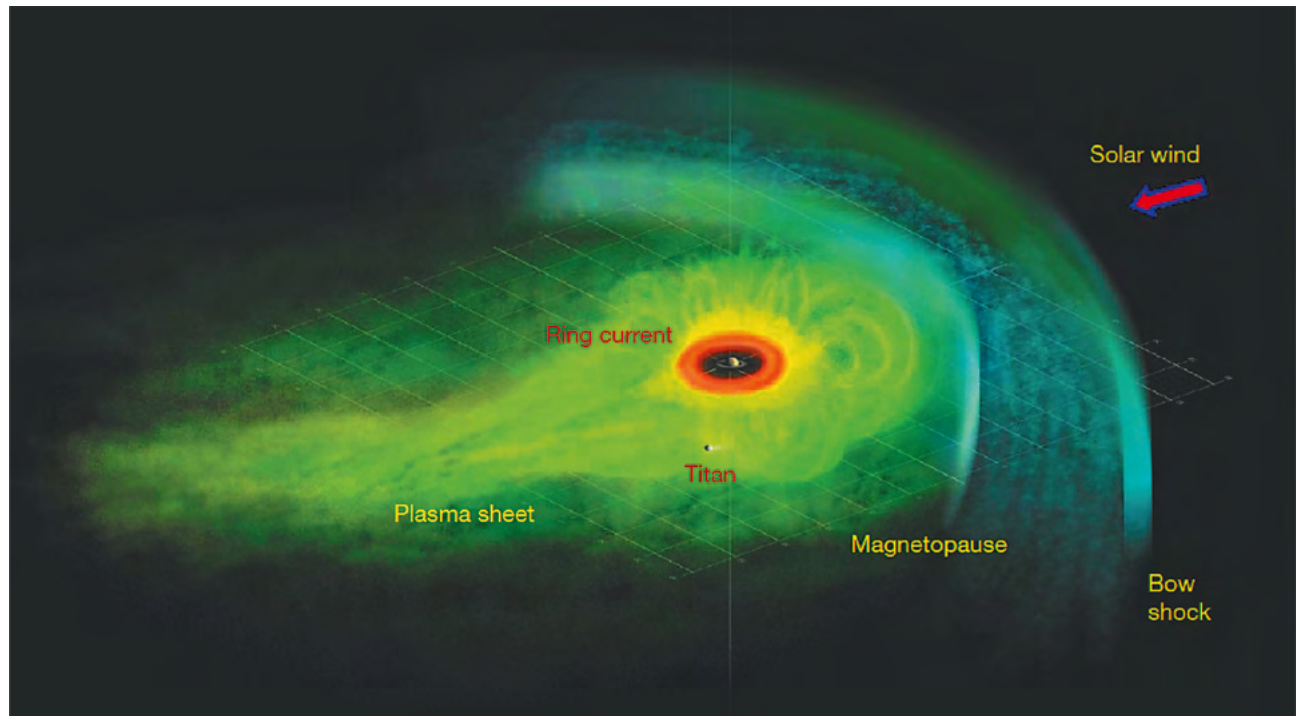


Figure: Schematic illustration of the plasma distribution in the magnetosphere of planet Saturn, as deduced by the data analysis of the measurements of the Magnetospheric Imaging Instrument (MIMI) onboard Cassini (S. M. Krimigis, N. Sergis, D.G. Mitchell, D.C. Hamilton, N. Krupp, *Nature* Vol 450, 13 December 2007).



Section of Astrophysics, Astronomy and Mechanics, Department of Physics, Aristotle University of Thessaloniki

The Section currently comprises 13 faculty members, which belong to the *Laboratory of Astronomy* and the *Unit of Mechanics and Dynamics* as well as several post-doctoral fellows (a number of which are of foreign nationality) and 13 Ph.D. students. In the last years, the Section's faculty attracted international competitive research grants with a total funding of more than 2m euros (several Marie-Curie Postdoc's, EURATOM, VESF fellowship, IKY-DAAD a.o.) as well as several competitive national grants (ΘΑΛΗΣ, ΗΡΑΚΛΕΙΤΟΣ, ΠΥΘΑΓΟΡΑΣ) with correspondingly large funding. The research output includes around 200 publications in the last 5 years in refereed journals with high impact factors, while several faculty members have already an H-index near or above 30. Faculty members of the section teach 15 astronomy-related courses at the undergraduate or M.Sc. level, while several books have been published by international publishers, such as Springer and Cambridge University Press. They also participate in the governing councils of national and international societies and the Laboratory of Astronomy is hosting the office of the Hellenic Society for Relativity, Gravitation and Cosmology (<http://www.hsrc.gr/>). There is participation in the LOFT proposal, ESA's candidate mission for a new X-ray observatory (<http://sci.esa.int/loft/>), as well as in CTA (<http://www.cta-observatory.org/>).

Within the **Laboratory of Astronomy**, research is focused on the following topics:

- ▶ **Particle acceleration in stochastic electric fields, demonstration of a new and very efficient acceleration in strongly turbulent plasmas** - Space weather, Hellenic National Network for Space Weather Research <http://proteus.space.noa.gr/~nswri> (ΘΑΛΗΣ grant, Vlahos). Predicting adverse space weather



conditions by combining cutting-edge observations, data analysis, theory, modeling, and space instrumentation - Laboratory plasmas, with emphasis on nonlinear, complex, and anomalous plasma phenomena (wave-particle interaction, small scale turbulence, plasma transport, self-organized criticality). (Vlahos)

- ▶ **Magnetized compact objects**, detailed simulations of the dynamics of strongly magnetized compact objects with emphasis on explaining observed oscillations after giant bursts in SGRs (Kokkotas, Stergioulas).
- ▶ **Effect of magnetic fields on charged particle orbits around black holes**, changing the properties of the ISCO (Papadopoulos).
- ▶ **Cosmological inference of X-ray AGN clustering**, using jointly the SNIa and/or BAO results - **Cosmological inference using the HII galaxy Hubble relation**, with High-z HII galaxies as alternative high-z tracers of the Hubble function - **Galaxy for-**

mation constraints of Dark Energy Models, in relation to future observational cluster surveys - **Local and large-scale environment of optical & X-ray AGN**, using large X-ray surveys (XMM-LSS, Chandra Deep fields, AEGIS, COSMOS, etc) and local optical samples of type I and type II AGN - **Interrelation of the morphology, environment and dynamics of cosmic structures**, criteria to determine the dynamical state of bound structures through cosmological N-body simulations. (Plionis)

- ▶ **Alternative cosmologies** (such as Bianchi-type models) - **Cosmological perturbations** (linear and non-linear) that lead to the large-scale structure we observe today - **Origin, evolution and implications of cosmological magnetic fields** - **Large-scale peculiar motions** and how these could affect the way we interpret cosmological data (awarded an "honorable mention" in the 2012 GRF essay competition). (Tsagas)

- **Oscillations of rotating neutron stars as gravitational wave sources** and formulation of gravitational-wave asteroseismology. (Kokkotas, Stergioulas)
- **Equilibrium and stability of relativistic accretion disks**, general-relativistic simulations of the runaway instability and of nonaxisymmetric instabilities. (Stergioulas)
- **Simulations of binary neutron star mergers**, nonlinear oscillations and gravitational wave emission in the post-merger phase. (Stergioulas)
- **Pulsar astronomy**, participation in the PULSE cooperation (Descartes Prize, 2005) - **Emission properties of pulsars**, using high-resolution data the width of the components of the integrated pulses is studied - **Variable Stars**, the emission mechanism has been found for a representative number of flaring stars - **Detection of Extrasolar planetary systems**. (Seiradakis)
- **The Antikythera Mechanism**, detailed modeling of the mechanism and explanation of the most important features. (Seiradakis)

- **Dynamical study of galaxies with active nuclei and dark matter**, using new galactic models - **Periodic orbits in dynamical systems**, using fast and reliable semi-numerical methods. (Caranicolas)

Within the **Unit of Mechanics and Dynamics**, research is focused on the following topics:

- **Asteroid population - satellite dynamics - gravitational scattering by free-floating planets - evolution of planetary systems** under stellar mass loss - **Evolution of extrasolar systems**, focusing mainly on the formation and migration of planetary systems and their long-term stability - **Classical methods of Celestial Mechanics** are used e.g. perturbation techniques, periodic orbits, stability theory etc. - the **general three body problem** is used as a basic model but, additionally, **long-term integrations are performed of N-body models**. In the last case an effort is taken to develop numerical integrator using **GPU accelerators**. (Varvoglis, Tsiganis, Voyatzis)

- **Nonlinear oscillations**, mainly in Hamiltonian systems, and applications in various fields, including systems consisting of few or many coupled nonlinear oscillators - in particular **energy diffusion or energy transport, breathers** and other phenomena are studied, through the use of **theoretical methods of singularity analysis** and determination of integrals of motion - **tools for the efficient integration of nonlinear systems** and the **discrimination of regular from chaotic** behavior are developed with applications to the chaotic energy transfer in: 1-dimensional disordered nonlinear lattices; the stability of particle beams in accelerators; and the chaotic behavior in time dependent models of barred galaxies - **Symmetries of charged particles in electromagnetic fields**, all the Lie point symmetries of their orbits and also the corresponding integrals of motion through Noether's theorem were studied. (Meletlidou, Skokos, Voyatzis).

Section of Astrophysics, Astronomy and Mechanics, Department of Physics, Aristotle University of Thessaloniki website:

<http://www.astro.auth.gr/>



Section of Astrophysics and Space Physics, Physics Department of the University of Crete

At present, the Section of Astrophysics and Space Physics consists of six faculty members, two emeritus professors, three associated scientists, as well as three post-docs and six graduate students.

Research in Astrophysics and Space Physics in Crete is both theoretical and observational and covers a broad range of subjects, ranging from studies of the Earth's atmosphere and ionosphere, to the study of distant galaxies. Within our Solar System, research is concentrated on the evolution of planetary atmospheres and Earth's ionosphere. Within our Galaxy, neutron stars, black holes, planetary nebulae and supernova remnants, are studied. Beyond our Galaxy, areas of investigation include star formation mechanisms, history and evolution of galaxies in the Local Group, dust distribution and infrared properties of spiral, starburst and ultra-luminous infrared galaxies, jets and other exotic phenomena in active galactic nuclei and quasars.

The datasets used for our research are obtained from a variety of ground-based optical telescopes including Skinakas Observatory, radio telescopes, and radars. Space-borne facilities, such as the Hubble Space Telescope in the optical, ROSAT, RXTE, CHANDRA, and XMM in the X-rays, ISO, Spitzer and Herschel in the infrared, are also being used. Several earth-observation satellites (e.g., Meteosat) also provide a wealth of remote sensing data. Locally, the research activities of the Section are mainly supported by the Skinakas Observatory, the Lab-



UNIVERSITY OF CRETE DEPARTMENT OF PHYSICS SECTION OF ASTROPHYSICS & SPACE PHYSICS

oratory for Environmental Research (at FORTH), and the Laboratory for Ionospheric Physics. Recent annual reports of the Section are available online, as a PDF file, in its web site (<http://www.physics.uoc.gr/en/menu/astro.php>).

Within the Section, four of the faculty members and the three associated scientists comprise the Astrophysics Group of Crete. Its webpage (<http://astro.physics.uoc.gr/>) lists the research interests of the Group, its annual reports of activities, and a list of publica-

tions for the last 10 years. As an example of the scientific impact of the Astrophysics Group of the Section, quantified by the number of publications in international refereed journals, the four permanent faculty members and the three associated scientists of the Group published 42 papers in 2012. Over the last six years, the Astrophysics Group has been supported by competitive research grants which amount to approximately 2.5 million euro.

Skinakas Observatory

“Skinakas Observatory” (<http://skinakas.physics.uoc.gr>) was founded by the University of Crete, the Foundation for Research and Technology - Hellas (FORTH) and the Max Planck Institut fuer Extraterrestrische Physik, German, and is operated by the Astrophysics Group of the University of Crete and FORTH. Its prime function is to conduct fundamental research in astronomy and astrophysics and to promote Astronomy in Greece. It currently houses three fully functional telescopes: a 1.3m modified Ritchey–Chrétien telescope, a 0.6m remotely controlled telescope, and a 0.3m Schmidt-Cassegrain telescope. The 0.6m telescope is a joined project of the University of Crete and the University of Tuebingen, Germany.

The Observatory was founded in 1986, with the completion and start of operations of the 0.3m telescope. The 1.3 m telescope was inaugurated in

1995, while the 0.6m telescope was installed on site in 2006. The Observatory is located on top of the Ida mountain in Central Crete at an altitude of 1750m. The site offers excellent seeing conditions, and is arguably one of the best sites for high quality astronomical observations in the Mediterranean area. The median seeing measured with a two-aperture Differential Image Motion Monitor (DIMM) in 200 and 2001 was 0.64” and 0.69” respectively.

The Observatory is the best equipped Observatory in Greece. Two cameras with a 2048 × 2048 CCD array, and one with a 200 × 800 CCD array, are currently used for the direct imaging and spectral observations. The Observatory owns a full range of broad band (Johnson-Cousins) and narrow band (Stromgren and Interference) optical filters, covering nearly all research needs in Astronomical imaging of objects in

the Universe. A set of SDSS filters, and a suite of red-shifted H α narrow band filters, will become operational shortly. Spectroscopic observations are currently performed with the Slit Spectrograph which is mounted on the 1.3m telescope (a fiber spectrograph is expected to be operational in the next year as well). Spectroscopy is achieved by reflection gratings, with a resolution ranging from 0.57Å/pixel to 4Å/pixel. The Observatory also hosts the only operational near-infrared camera in Greece. The camera consists of a 1024 × 1024 HgCdTe Focal Plane Array, with 18.5 × 18.5μm pixels, made by Rockwell Science Center, Inc. It offers a 6.5arcmin × 6.5arcmin field of view and is sensitive in the spectral range between 1-2.4μm. A set of broad-band filters (J 1250, H 1635, Ks 2150) and narrowband filters (Fell 1644, H-2 2122, H-2 2144, BrG 2166, CO 2295) are mounted on its two filter wheels.



Figures 1-2: The dome of the 1.3m telescope at Skinakas Observatory (left). The 1.3m telescope at Skinakas observatory (right).

The latest instrument mounted on the 1.3m telescope is “RoboPol” (<http://robopol.physics.uoc.gr/>), a specialized photopolarimeter designed specifically for the 1.3m telescope. The instrument was commissioned in the spring of 2013. It was conceived, designed, and developed by the “RoboPol Collaboration”, which comprises of the University of Crete and the Foundation for Research and Technology – Hel.A.S. in Greece, the California Institute of Technology in the United States, the Max-Planck Institute for Radioastronomy in Bonn, Germany, the Nicolaus Copernicus University in Poland, and the Inter-University Centre for Astronomy and Astrophysics, in Pune, India. The instrument is unique, worldwide, as it uses no moving parts. It is designed with high observing efficiency and automated operation as prime goals. The primary science goal of the “RoboPol” project is the monitoring of the optical linear polarization of >100 gamma-ray bright blazars, which will allow to test models of the jet structure, composition, magnetic fields, and emission mechanism.

The Skinakas Observatory has been very productive, both scientifically as well as in its educational activities. More than 120 papers, using data obtained with the telescopes at the Observatory, have been published in international refereed journals since 1993 and at least 8 PhD dissertations have also used data from the Observatory. In addition, the facilities of the Observatory are widely used for educational and teaching activities. Many undergraduate and graduate students of the University of Crete, and other institutes, have the opportunity to participate in research projects based on observations performed at Skinakas. The subsequent data analysis is performed locally using a modern com-



Figures 3: “Skinakas Observatory” website (<http://skinakas.physics.uoc.gr>)

puter network in the Astrophysics Lab of the Physics Department of the University of Crete. Based on this experience, members of Skinakas Observatory have designed a set of projects for undergraduate students who wish to obtain a hands on experience in astronomical data analysis. These projects, as well as a set of video tutorials, are available to the community in the Observatory’s web site.

Finally, the staff and affiliated researchers of Skinakas Observatory have been very active in various public outreach

activities. A full list of recent outreach events can be found in the web page of the Observatory. “Open Days” are organised during the summer months, five times per year, and they are very popular, attracting hundreds of people at a time. Recently, the book “ΑΣΤΕΡΟΣΚΟΠΕΙΟ ΣΚΙΝΑΚΑ: ΜΕ ΘΕΑ ΤΟ ΣΥΜΠΑΝ”, with tens of high quality images from the Observatory, was published by the “Crete University Press”.

Laboratory of Astronomy, Section of Astrogeophysics, Physics Department, University of Ioannina



Astrophysics at the University of Ioannina is conducted in the Laboratory of Astronomy which is part of the Section of Astrogeophysics of the Physics Department. The Laboratory of Astronomy consists of Profs C.E. Alissandrakis (director of the Laboratory), A. Nindos, S. Patsourakos, Dr. O. Podladchikova (post-doctoral fellow), as well as three graduate students.

The research activities of the members of the Laboratory of Astronomy are focused on solar and space physics as well as space weather. Physical processes occurring in the solar atmosphere and the interplanetary medium are studied both observationally and theoretically. Observations are obtained from both ground-based and space-borne observatories, and practically cover the entire electromagnetic spectrum (from hard X-rays to radio wavelengths). The research covers all layers of the solar atmosphere and all levels of solar activity from the “quiet” Sun to solar active regions and solar eruptive phenomena. The impact of solar eruptive phenomena on the Earth is also studied.

Funding for the research activities of the Laboratory has been provided by a number of national and international grants. All members of the Laboratory have been actively collaborating with scientists affiliated with univer-

LABORATORY OF ASTRONOMY DEPARTMENT OF PHYSICS UNIVERSITY OF IOANNINA, GREECE

Courses Offered	Department	Semester	Hours per Week *
Introduction to Astrophysics	Physics	5, 7	3-1-0
Observational Astrophysics	Physics	6, 8	3-1-0
Solar and Space Physics	Physics	5, 7	3-1-0
Space Weather	Physics	8	3-1-0
Physics of the Solar-Planetary System	Physics	7	3-1-0
Galaxies and Cosmology	Physics	8	3-1-0
Introduction to Astronomy	Mathematics	8	2-1-0
Undergraduate Research Project	Physics	7, 8	-

* Lectures-Tutorials-Laboratory

Staff	Position	Office	Telephone	E-mail
Constantine E. Alissandrakis	Professor	F2-407	08480	calissan@cc.uoi.gr
Alexander Nindos	Assistant Professor	F2-410	08496	anindos@cc.uoi.gr
Spyros Patsourakos	Assistant Professor	F2-406	08478	spatsour@cc.uoi.gr

Honorary Members

George I. Banos - Professor Emeritus

sities and research institutes in Greece and abroad.

The faculty members of the Laboratory have been involved in teaching undergraduate and graduate courses at the University of Ioannina. They are also involved in public outreach activities (giving public lectures, mostly in the Ioannina

region, as well as TV and radio interviews).

The phone numbers and emails of the members of the Laboratory of Astronomy can be found on the contact page of the Department of Physics at: <http://www.physics.uoi.gr/home/?q=el/node/32>



Space Research Laboratory, Democritus University of Thrace

The Space Research Laboratory (SRL) of the Department of Electrical and Computer Engineering of the Democritus University of Thrace (DUTH) was established in 1977 and has extensive experience and involvement in Space Science, Experimentation, Technology and Modeling of the Space Environment; in parallel it has a leading role in educating the next generation of Greek Space Scientists and Engineers, through an extensive curriculum as well as opportunities to participate in cutting-edge space science and experimentation projects.

The main DUTH/SRL activities in **Space Science** are focused in space plasma electrodynamics, with the processing and analysis of energetic particles, plasma and electromagnetic fields data obtained by a long series of NASA, ESA, ISAS, INTERKOSMOS and RAS Spacecraft, such as: the early Explorers 33, 34 & 35, IMP-6, 7 & 8, Pioneer-10 & 11, Voyager-1 & 2, Helios-1 & 2, ISEE-1, 2 & 3, AMPTE/CCE, Ulysses, Geotail, Interball Tail & Interball Aurora, ACE, WIND, Demeter, Cluster-II (4 Satellites), THEMIS (5 Satellites), and the recent Van Allen Probes mission (2 satellites). Based on the above experimen-

tal data, DUTH/SRL has been active in theoretical studies of **Energetic Particle and Plasma Phenomena** in Solar, Interplanetary, Magnetospheric and Ionospheric Physics, in studies of **the relation between the Space Environment and Geotectonics** as well as in **Chaotic Analysis of Time Series of Space Particles and Fields Data**.

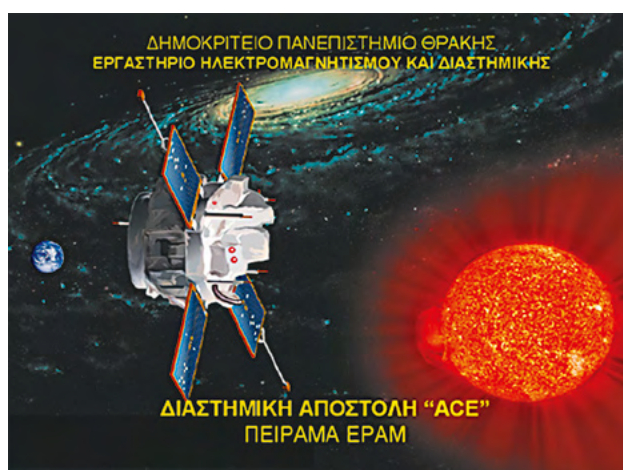
DUTH/SRL has extensive experience in **Space Experimentation**, through participation as Principal Investigator or Co-Investigator in **experiments on board 15 Spacecraft**, such as: Ulysses (HISCALE experiment), Geotail (EPIC experiment), MARS-96 (RADIUS-MC experiment), Interball (DOK-2 & DOK-S experiments Co-PI), Voyager-1 & 2 (LECP experiment), Cluster-II (RAPID experiment), ACE (EPAM experiment), HotPay-2 rocket (PEEL particle instrument, Co-PI) and SPEKTR-R (MEP Instrument, Co-PI).

DUTH/SRL has also acquired extensive expertise in the field of **Space Technology**, in particular in the areas of: **(a) Development of Front End Electronics for Detector Heads** (used on DOK-2, DOK-S & RADIUS-MC experiments); **(b) Development of Data Processing Units** (used on MARS-96 /

Intelligent Memory Management Module; CASSINI/MIMI DPU; ISS/ICAM, Intelligent Camera for Microgravity Diagnostics); **(c) Development of radiation-hardened, low power, mixed Analog/Digital ASICs**, which are used for the end-to-end development of bigger subsystems; in particular, following Greece's membership to ESA, DUTH/SRL has undertaken the development of ASICs under a number of ESA projects.

In the field of **Space Environment modeling**, DUTH/SRL is actively participating in modeling of: **a) the radiation belt environment, b) electromagnetic wave distribution and evolution and c) the electrodynamics of the space environment**. Currently, DUTH/SRL, as consortium leader, is coordinating a multi-national ESA study on the Electrodynamics Study of the Upper Atmosphere, through which state-of-the-art computer models and datasets of the Earth's Upper Atmosphere are cross-compared, with the goal to identify knowledge gaps and to provide suggestions to ESA on space exploration missions optimal measurement techniques.

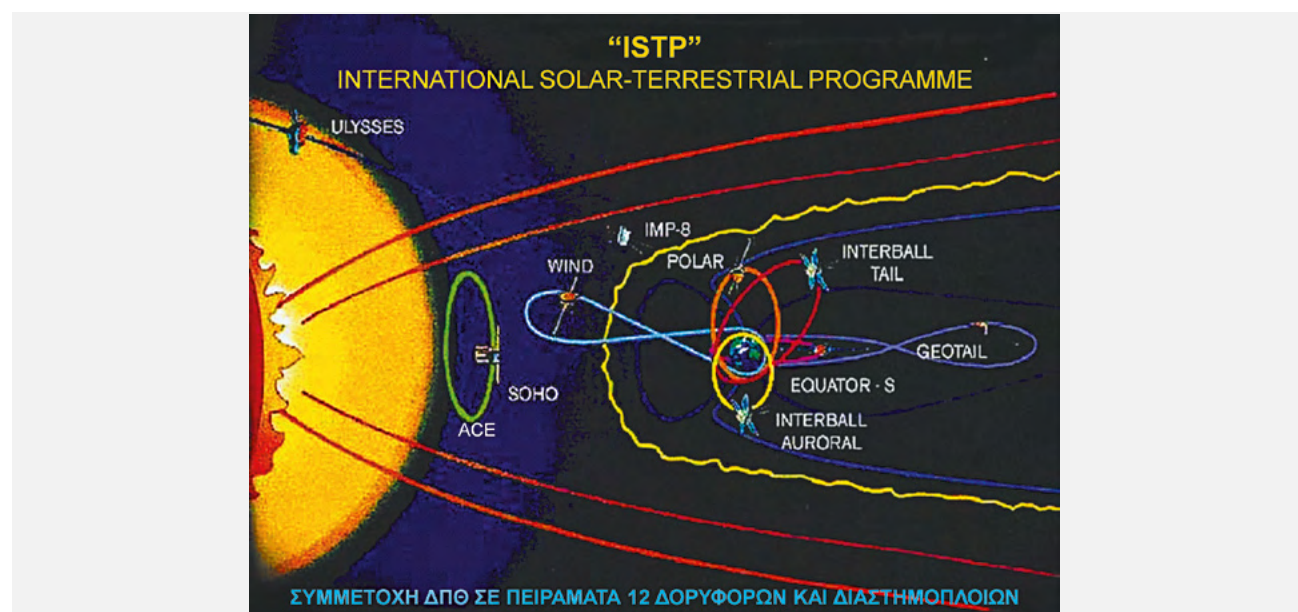
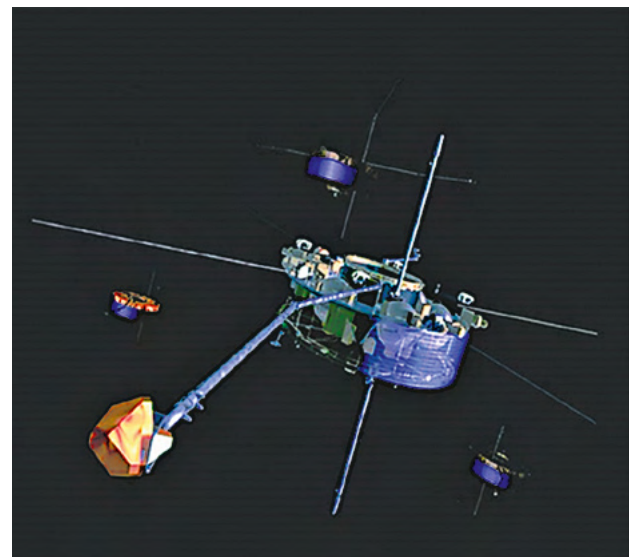
Finally, DUTH/SRL is actively pursuing **Space Education**, both in the undergraduate and graduate level. DUTH



has the only Engineering Department among Greek Universities that includes a Sector and Laboratory explicitly specializing in Space Physics, Technology and Applications, offering a large number of Space-related studies and activities through: **(a) an Undergraduate Program** with courses in: Electromagnetism of the Earth's Environment; Plasma Physics; Magnetohydrodynamics; Remote Sensing; Satellite Communications. **(b) A Graduate Programme**, including

courses in: Space Applications; Technology of Space Systems; Satellite Communications; Ionizing Radiation; Physics of Planetary Magnetospheres; Space Plasma and Magnetohydrodynamics; Space Electrodynamics; Space Measurement Analysis; Analysis of Experimental Time Series with non-linear dynamics methods. **(c)** An ongoing effort to build and operate a **miniaturized satellite** funded through the ARISTEIA/GSRT program, whereby DUTH scientists and engineers are in-

involved in training and overseeing undergraduate and graduate students as they develop a fully functional miniaturized "CubeSat" satellite, scheduled to be launched in 2015 in the framework of the EU QB50 programme, to study the variable and largely unknown edges between the Earth's upper atmosphere and the space environment.





Astronomy program at Physics Department, University of Patras

The Astronomy program at Physics Department at the University of Patras offers an exciting undergraduate and postgraduate study of astronomy and astrophysics and offers unparalleled facilities for its students including an on-campus observatory and both theoretical and observational astrophysics research groups.

Education

The undergraduate program offers a wide variety of courses related to Astrophysics and Cosmology that include Introduction to Astronomy and Astrophysics, Astrophysics I, Astrophysics II, Computational Physics, Cosmology but also undergraduate Astronomy Lab and Astrophysics Lab.

Postgraduate Lessons related to Computational Astrophysics and Cosmology: Computational Astrophysics, Special Issues on Cosmology.

Postgraduate Lessons related to Observational astronomy: Special Topics on Observational Astrophysics (Preparation of observations, Introduction to Linux, VO tools, CCD imaging and photometry, data analysis and stellar modeling).

Concerning the Undergraduate Studies in the Department of Physics, the subject of many Undergraduate Theses was in the field of Theoretical Astrophysics and Cosmology and in a wide variety of Observational projects in astrophysics.

Research

Theoretical Astrophysics

Emphasis is given on the Computational Astrophysics. The main subjects of this research activity have as follows:

1. Models of white dwarfs and neutron stars with rotation and magnetic field.

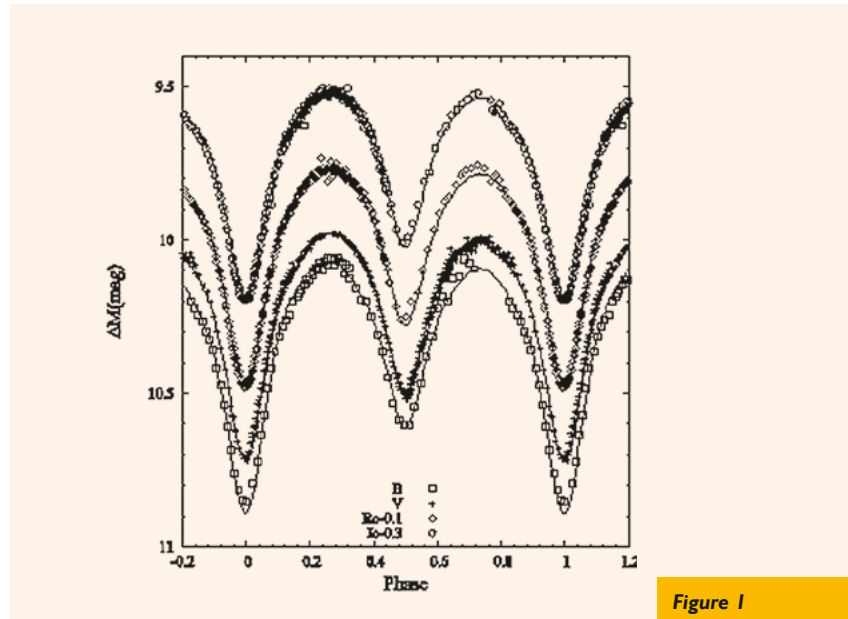


Figure 1

2. Models of the solar planetary system and of the systems of satellites of large planets (like the Jupiter's system of satellites).
3. Cosmological models assumed to obey particular pregeometries.

Observational Astrophysics

Photometric observations of eclipsing binaries, of cataclysmic variables, detection of new variables, longterm (monitoring) projects of variability and follow-up ground based observations as support to space observations. Examples of recent published results of the eclipsing binary system TY Boo are shown in Fig.1 Since 2012 we participate in the new international observational campaign, "DWARF", aimed at detection of circumbinary extrasolar planets using the timing of the minima of low-mass eclipsing binaries. Emphasis gradually shifted to the development of neural networks in order to apply the concept of Eclipsing Binaries with Artificial intelligence (EBAI) that aims to provide auto-

mated estimates of principal parameters for thousand of eclipsing binaries from large survey data bases. Recently we founded a research group aimed at the ground-based follow-up observations of KEPLER mission (preparatory work, target selection, data processing, data analysis, stellar modelling, interpretation and publication of the result).

Concerning the Postgraduate Studies in the Department of Physics, the subject of six (6) PhD Theses (Doctoral Dissertations) and of six (6) Master's Theses (Master's Dissertations) was in the field of Computational Astrophysics. In the field of Observational astrophysics there were five (5) Master's Theses and there are three (3) current PhD Theses.

On-Site Facilities and Equipment

During the last years a small observatory was established on the roof of the Astrophysics Laboratory building at the

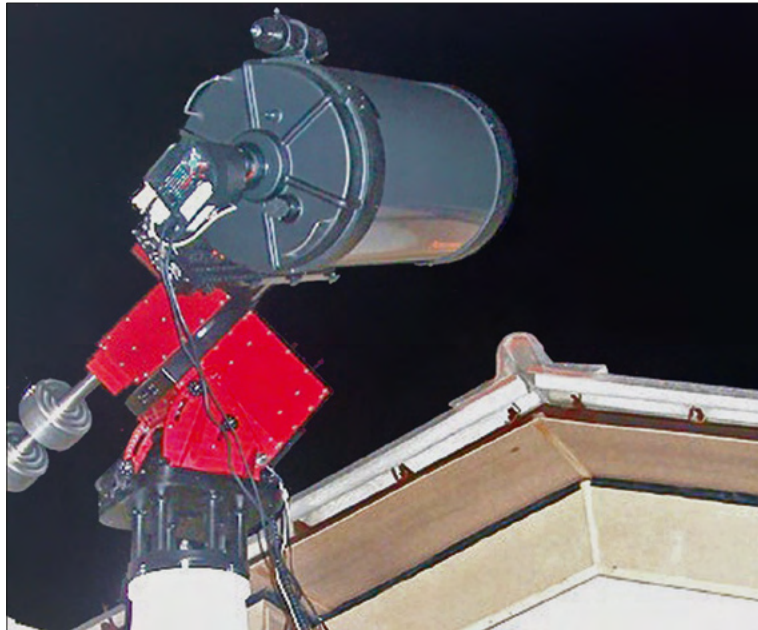


Figure 2

campus of the University of Patras. This was named “Mythodeia” Observatory after the homonymous NASA “2001 Mars Odyssey” choral symphony by the Greek composer Vangelis Papathanassiou, Honorary Doctor of Physics Department, University of Patras. It houses two modern telescopes (a CELESTRON 14’’ Schmidt Cassegrain and a MEADE 12’’) on computerized Paramount Equatorial Mounts (Fig.2). Additional resources include a full range of computer facilities for data reduction and analysis, in Linux/Windows environment, a weather station, image processing facilities and numerous portable telescopes. On-site telescope instrumentation includes CCD computer imaging systems (SBIG ST-10XME and ST7XME CCD cameras).

Students receive hands-on training with this equipment and are actively involved in the collection and interpretation of research data using these tools (undergraduate and postgraduate level)

Off-Site / Facilities

The observational astrophysics group have access to Aristarchos 2.3 m telescope in Xelmos observatory as part of the co-funding of the ATS: Aristarchos Transient Spectrometer from the University of Patras.

Furthermore Dr. Christopoulou is a founding member of the HELYCON “Hellenic LYceum Cosmic Observatories Network” project. HELYCON is a cosmic ray telescope which utilizes, instead of light, extensive air showers pro-



Figure 3

duced when cosmic rays interact with the earth atmosphere (Fig.3). The detectors of the telescope are constructed in the Physics Laboratory of the Hellenic Open University in collaboration with scientists from University of Patras, Aegean University, University of Cyprus, University of Athens, National Technical University of Athens and from the NC-SR “DEMOKRITOS”. HELYCON is one of the founding members of EUROCOSMICS, a collaboration of European Universities and Research Institutes that aim at developing an extensive network of cosmic ray telescopes, deployed on High Schools across Europe

11th Hellenic Astronomical Conference


RCAAM Academy of Athens, 8-12 September 2013

Under the Auspices of H.E. the President of the Hellenic Republic Dr. Karolos Papoulias

Session 1: Sun, Planets and Interplanetary Medium
Session 2: Extragalactic Astronomy and Astrophysics
Session 3: Cosmology and Relativistic Astrophysics
Session 4: Stars, our Galaxy and the Local Group

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Plenary Speakers:
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The screenshot shows the Hel.A.S. website with a navigation menu on the left containing links to Home, About Hel.A.S., Council, Members, Joining Hel.A.S., Newsletters, News & Events, Career Opportunities, Greece & ESA, Facilities in Greece, and Astronomy Resources. The main content area features a welcome message, a brief history of astronomy, and a list of current events and resources. The website is designed with a blue and white color scheme and includes a search bar at the top right.

Visit our website
<http://www.helas.gr>

The above web server contains information, both in greek and english, about the Hellenic Astronomical Society (Hel.A.S.), the major organization of professional astronomers in Greece. The Society was established in 1993, it has more than 250 members, and it follows the usual structure of most modern scientific societies. The web pages provide information and pointers to astronomy related material which would be useful to both professional and amateur astronomer in Greece. It contains a directory of all members of the Society, as well as an archive of all material published by the Society such as the electronic newsletters, past issues of "Hipparchos", and proceedings of Conferences of Hel.A.S. The server is currently hosted by the University of Thessaloniki.

Back issues of Hipparchos

Hipparchos is the official newsletter of the Hellenic Astronomical Society. It is distributed by post to the members of the society. You can download back issues from: <http://www.helas.gr/news.php>

