ANNUAL REPORTS
OF THE
ASTRONOMICAL INSTITUTES
OF GREECE
1974

PUBLISHED BY THE GREEK NATIONAL COMMITTEE
FOR ASTRONOMY

ATHENS
1975

CONTENTS

Annual Report for the Year 1974 of the:

ASTRONOMICAL INSTITUTE
NATIONAL OBSERVATORY OF ATHENS

ANNUAL REPORT 1974

Staff. Prof. Dr. D. Kotsakis has retired from his post as Director of this Institute.

Prof. Dr. E. Mariolopoulos, President of the Board of the National Observatory of Athens, was in charge of the Institute.

Mr. E. Kontizas received an eight month leave of absence to continue his training at the Edinburgh University and the Royal Observatory of Edinburgh.

Equipment. Regarding the program for the installation of the 48-inch reflector, the following work has been carried out:

a) A road, 1200 m long, for access to the site was constructed.

b) The enclosure of the property was completed and the water supply was near completion at the end of the year.

c) The supply of electricity was also completed.

d) The construction of the building was also near completion.

e) The dome, constructed by Grubb-Parsons Co., has arrived and was transported to the site.

f) An order for the supply of a mirror-aluminising plant was placed with Edwards High Vacuum, Crawley Sussex, England.

A Joyce-Loebl microdensitometer, equipped with a magnetic tape recorder, was installed at the Penteli station.

Observations. a) S u n. The Razdow flare-patrol telescope was in continuous operation at the Penteli station. Hα filtergrams, on band, were obtained continuously during the whole year. Moreover visual observations of chromospheric events and sunspots were made daily.

Radio monitoring of the Sun was carried out on 1415 MHz, 2695 MHz, 5005 MHz and 8800 MHz.

The observations were made by observers of the AWS group under the supervision of Dr. Prokakis.

Mr. Elias continued routine observations of sunspots in Athens for the determination of their position, number and type.

b) P l a n e t s, Dr. C. Banos continued observational work on Jupiter and specially on the Red Spot, using the Newall telescope, at Penteli.

e) C o m e t s. Mr. D. Elias determined positions and magnitudes of comets.

d) M o o n. Mr. D. Elias continued photographic observations of the Moon.

e) S t a r s. Mr) D. Elias continued his observations of variable stars, He also observed several occultations.

Mr. P. Rovithis continued his observations of eclipsing binaries.

Mr. E. Kontizas carried out spectrophotometric observations of stars in order to study the interstellar absorption.

g) S e e i n g. Dr. Th. Prokakis measured microthermal fluctuations of the air in Athens and Kryonerion, using a ΔT-instrument made by the Nuclear Research Center «Democritos».

Dr. Th. Prokakis, Mr. Elias, Mr. E. Sarris and Mr. P. Rovithis carried out photographic and photoelectric observations of stars at Kryonerion to determine image - quality.

g) W o r k s h o p. Messrs E. Sigalas, A. Vouzas, Ch. Bourdas and J. Zacharopoulos carried out technical work on the instruments, and also proceeded to routine servicing.

h) D a r k r o o m. Mr. J. Zacharopoulos and Miss E. Philippakou were responsible for the photographic and all related processings.

Research: Prof. Dr. D. Kotsakis, Dr. G. Banos and Mr. D. Elias studied the preliminary meteorological and astronomical observations made at Kryonerion.

Drs G. Banos and Th. Prokakis studied phenomena of the solar activity.

Dr. C. Banos studied phenomena of the Jovian atmosphere.

Mr. E. Sarris studied families of periodic orbits in the restricted three-body problem and in a tridimentional continuum. He also studied the atmospheric activity of Jupiter for the period 1967-1973.

Mr. P. Rovithis continued his study on eclipsing binaries.

Mr. D. Elias continued his work on the photometric parameters of comets, and the influence of the solar wind on the absolute brightness H_0 and he exponent n of comets. He also studied the seeing in Athens and at Kryonerion during the daytime.

Mr. E. Kontizas studied intrerstellar absorption as a research student of the Edinburgh University.

Time service. Routine work was carried out by Messrs D. Elias, E. Kontizas, P. Rovithis.

International cooperation. Dr. G. Banos spent two weeks at the Meudon Observatory.

Dr. J. Meaburn, of the Manchester University, worked for 3 weeks at the Penteli station, observing interstellar matter.

Mr. E. Kontizas spent nine months at the Royal Observatory of Edinburgh.

A photoelectric spectrum scanner was borrowed from the University of Edinburgh for observations at the Penteli station.

Monthly reports on solar activity were regularly sent to the IAU special centers. Hα filtergrams were also sent to the Meudon Observatory for the preparation of the «Cartes synoptiques de la Chromosprère solaire».

Visits. The members of the Institute gave lectures for the Public and the students, and explained the operation of the instruments and the work done at the Observatory.

Meetings, Symposia. Prof. Dr. D. Kotsakis, Dr. C. Banos and Mr. E. Kontizas attended the second European Astronomical Meeting at Trieste, Italy.

Dr. Th. Prokakis attended the annual meeting of the JOSO and GESRA at Berne, Switzerland.

The Scientific staff participated to the Seminars on Astronomy held at the Research Center for Astronomy of the Academy of Athens.

Publications. 1) Banos, C.,: Interplanetary matter - zodiacal light. Technika Chronika, No 1, p. 88, 1974 (in Greek).

2) Banos, C.: The 25-inch Newall refractor of the Astronomical Station in Penteli. Special volume dedicated to Prof. S. Plakidis on his 80th birthday, p. 277, 1974 (in Greek).

3) Banos, G.: Quasars. Special volume dedicated to Prof. S. Plakidis on his 80th birthday, p. 251, 1974 (in Greek).

4) Elias, D.: Absolute magnitude and coefficient of logr over various time spaces. I.A.U. Circular, No 2616.

5) Elias, D.: Nova Sgr 1974. I.A.U. Circular Nos 2713 and 2720.

6) Kotsakis, D., Banos G., and Prokakis Th.: The solar research at the Astronomical Institute of the National Observatory of Athens. Technika Chronika, No 2, p. 103. 1974 (in Greek).

7) Kotsakis. D., Banos G., and Elias D.: Preliminary results from a study of the site where the 48-inch telescope will be installed. Memoirs of the National Observatory of Athens, Series I, Astronomy, No 17, 1974 (in Greek).

8) Kotsakis, D.: The new 48-inch Cassegrain - Coudé telescope. Special volume dedicated to Prof. S. Plakidis on his 80th birthday, p. 161, 1974, (in Greek).

9) Kotsakis D.: The Universe: Creation or Chance? Athens 1974 (in Greek).

10) Kotsakis D.: The pioneers of Science and the creation of the Universe. Athens 1974 (in Greek).

11) Prokakis Th.: The depth of sunspots. Solar Physics, Vol. 35, p. 105, 1974.

12) Prokakis, Th.: Solar radio emissions. Special volume dedicated to Prof. S. Plakidis on his 80th birthday, p. 341, 1974 (in Greek).

13) Sarris E.: Study of the atmospheric activity on Jupiter during the period 1955-1973. Technika Chronika, No 7, p. 569, 1974.

The Director
of the Institute
Prof. E. MARIOLOPOULOS

DEPARTMENT OF ASTRONOMY
UNIVERSITY OF ATHENS

ANNUAL REPORT 1974

Staff: Professor D. Kotsakis retired from the University of Athens and from this Department on August 31. Professor M. Moutsoulas was appointed Acting Director of the Department.

Mrs M. Arzoglou - Kontiza continued post-graduate studies at Edinburg University, on leave of absense from this Department.

Equipment: The following instruments were acquired in 1974:

1) A high-voltage power supply system (V7, 2,5 kV/10mA) for the photoelectric photometer. 2) A side projector. 3) Two Sharp (Model PC-1801) electronic calculators. 4) A Hewlett Packard (Model He-46) electronic calculator with printer.

Teaching: Professor D. Kotsakis held a course in General Astronomy for the 3rh year students of Mathematics.

Professor M. Moutsoulas held a course in Dynamic Astronomy and Cosmology, as well as one in Astronautics, for the 4th year students of Mathematics.

The tutorial classes of the General Astronomy course were held by Drs. P. Laskarides and M. Zikides. The laboratory exercises of the course were supervised by Miss E. Antonopoulou and Messrs J. Deliyannis, P. Niarchos, D. Papathanasoglou, Th. Papayannopoulos, A. Pinotsis and D. Vaiopoulos.

The tutorial classes of the Dynamic Astronomy and Cosmology course, as well as those of the Astronautics course, were held by Dr. D. Dionysiou.

Observations by students with the instruments of the Penteli Station of the National Observatory of Athens were supervised by Professor M. Moutsoulas.

Research: Professor M. Moutsoulas worked during the summer at the NASA Johnson Space Center and the Lunar Science Institute in Houston on the development of a scientific station on the Moon. He studied

in particular the feasibility of covering the power supply requirements of the station by solar energy. He also worked on the development of links between various selenographic measurements, namely: Earth based photography, orbital photography, radar mapping, very long base interferometry, visual observations by astronauts, laser ranging, etc.

Professor M. Moutsoulas and Mr. P. Niarchos carried out protometric studies of Jupiter's Galilaean satellites with the Newall Refractor and the photoelectric photometer at Penteli Observatory.

Dr. D. Dionysiou worked on problems of gravitational fields and waves.

Dr. P. Laskarides worked on aspects of Cepheid variables. He, also, worked with Messrs D. Vaiopoulos and A. Pinotsis on problems of stellar evolution.

Dr. M. Zikides worked on aspects of the restricted three-body problem.

Miss E. Livaniou completed at the University of Manchester her work on light changes of eclipsing variable stars in the frequency domain and was granted a M.Sc. degree in December 1974. She has commenced work on Fourier analysis of the light curves of eclipsing variables, for a Ph.D. thesis under the joint supervision of Profs. Z. Kopal and M. Moutsoulas.

Mr. D. Papathanasoglou continued studies of the solar «seeing» with the Newall refractor at Penteli. He also continued, in collaboration with Mr. J. Deliyannis, work on the variation of the focal length with temperature for the same telescope. Messrs D. Papathanasoglou and J. Deliyannis and Miss E. Antonopoulou studied also the light curves of the Newall and Doridis refractors.

Mr. Th. Papayannopoulos worked on problems of galactic dynamics in collaboration with Professor G. Contopoulos and Dr. L. Georgala.

Meetings: Prof. M. Moutsoulas participated in the following Meetings:

a) COSPAR-Symposium on Satellite Dynamics, and Plennary Meeting, Sao Paolo, Brazil (June 19-29), where he presented a paper on Reference Points for Selenodetic Control.

b) IAU-Colloquium 28 on Planetary Satellites, Cornell University, Ithaka, New York (August 18-20), where he presented a pepar on Photometry of Jupiter's Satellites Eclipses and Occulations.

c) 143th Meeting of the American Astronomical Society, Rochester, New York (August 21-24).

Mrs. M. Arzoglou - Kontiza and Mr. J. Deliyannis attended the 2nd European Regional Meeting of the IAU, Trieste (September 2-5).

Publications: 1) Dionysiou: «Flux of Momentum of n-bodies system by gravitational waves», Inter. J. Th. Phys., Vol 10, No 5, p. 355.

2) D. Dionysiou: «Black holes as sources of gravity waves», Special volume In Honorem S. Plakidis p, 53 (in Greek).

3) D. Kotsakis: «The new 48-inch Cassegrain-Coudé telescope», Special Volume In Honorem S. Plakidis p. 189 (in Greek).

4) P. Laskarides. «The Richardson Spectrograph for the 25-inch Newall refractor», Special Volume In Honorem S. Plakidis, p. 189 (in Greek).

5) P. Laskarides: «A possible theoretical explanation of the erratic period changes of RR Lyrae variables in globular clusters», Astrophysics and Space Science, Vol. 27, p. 485.

6) M. Moutsoulas: «Scaled Photogrammetric Research - Selenodetic Control Networks» AFOSR 72-2261-2 (with Z. Kopal).

7) M. Moutsoulas: «Solar Radiation as Source of Electric Power», LSI Technical Report 21.

8) M. Moutsoulas: «Principles and Applications of Astronautics». Special Volume In Honorem S. Plakidis, p. 237 (in Greek).

9) M. Zikides: «Atomic Frequence Standards». Special Volume In Honorem S. Plakidis, p. 93.

10) M. Zikides: «Elements of Spherical Astronomy» (in Greek).

Miscellaneous: a) Professor M. Moutsoulas has served as the Associate Managing Editor of «The Moon», and as the Assistant Editor of «Astrophysics and Space Science»; he also co-edited the lunar bibliographic reviews which are prepared in collaboration with the Lunar Science Institute of NASA in Houston.

The Head of the Department
Prof. M. MOUTSOULAS

ASTRONOMY DEPARTMENT
UNIVERSITY OF THESSALONIKI

ANNUAL REPORT 1974

Staff: Dr. G. Contopoulos was a Visiting Professor at the Astronomy Program of the University of Maryland for 3 months during the summer of 1974.

Dr. N. Spyrou was appointed Chief Assistant in June. Mr. N. Karanicolas was appointed Assistant in March. Thus the staff of the Department consisted of the following: 1) Dr. G. Contopoulos, professor, 2) Dr. S. Persides, assistant professor, 3) Dr. N. Spyrou, chief assistant, 4) Miss B. Kessidou, Mr. C. Mertzanidis, Mr. C. Terzides, Mr. D. Papadopoulos and Mr. N. Karanicolas, assistants, 5) Mrs. F. Papageorgiou, Miss D. Mori and Mrs. C. Mertzanidis, secretaries.

Dr. Y. Terzian, from Cornell University, was a Visiting Professor from January to June 1974.

The following persons also worked in collaboration with the Department: Dr. E. Georgala, Mr. P. Phylactopoulos, Mr. J. Ioannides, Mr. J. Pascalis and Mr. P. Michaelidis.

Mr. J. Colin, from the Observatory of Besançon and Mr. P. Grosbol, from the Copenhagen Observatory, spent a few months at the Department.

IAU: Dr. G. Contopoulos continued as General Secretary of the IAU. Dr. A. Jappel and Mrs. J. Dankova continued their duties as permanent staff of the IAU Secretariat. Miss S. Emanouilidou replaced Miss A. Dorta as secretary of the IAU in December.

Dr. Contopoulos participated to the Meeting of the Executive Committee of the IAU in Haute Provence, France, and the Meetings of the General Committee and General Assembly of ICSU in Ankara and Istanbul. He attended also two Meetings of the Officers of the IAU in Paris and Athens, and he visited the sites of the next IAU General Assemblies in Grenoble and Montreal.

During 1974 two Information Bulletins of the IAU were published by the General Secretary.

Research Programs: I. Galactic Dynamics and Related Fields.

1) Contopoulos worked on the non-linear theory of resonances in spiral galaxies.

A convenient formulation of the problem of spiral structure using action-angle variables was made. By a transformation of variables all angle dependent non-resonant terms were eliminated. Thus the resonant terms were isolated and their effects were studied. In particular the appearance of a new integral of motion near each resonance was made obvious.

Several resonant orbits of stars were calculated numerically, in collaboration with Mr. Mertzanides. Their form was explained by the theory developed above. The distribution of resonant orbits was found by expressing the initial distribution function in terms of the appropriate integrals of motion and the corresponding angle variables and averaging over the angles.

This allows to find expressions for the density response in a spiral galaxy. In this way the resonant self-consistent problem can be attacked.

In particular one can exclude certain spiral configurations that are clearly non self-consistent. E.g. a trailing spiral must have its amplitude decreasing to zero inside the inner Lindblad resonance.

The first results of this research were presented at the «International Symposium on the Dynamics of Spiral Galaxies» in Paris.

2) Various effects of the linear theory of resonances were considered by Dr. Contopoulos, in collaboration with Dr. Georgala and Messrs Terzides and Mertzanides. In particular various dispersion relations that do not have a gap near the particle resonance were solved numerically. The effect of a halo was also considered.

3) Dr. Contopoulos continued his work on integrals of motion in resonant cases of the dipole field. A computer program producing the algebraic forms of such integrals was developed.

4) Mr. Karanicolas continued his work on various cases of the «third integral» in nearly spherical systems.

5) Dr. Contopoulos with Mr. Michaelidis and Miss Kessidou studied the periodic orbits, in various two-dimensional dynamical systems, and their stability.

6) Dr. Contopoulos and Mr. Colin worked on the resonant form of a new integral of motion near the particle resonance.

7) Mr. P. Grosbol studied the orbits and places of origin of the stars of the solar neighbourhood. The purpose of this work is to find the positions of the spiral arms in the past and thus derive the angular velocity of the spiral pattern.

II. General Relativity.

1) Dr. Persides continued his study of wave phenomena in black-hole space-times. Certain global properties of the radial wave functions have been established relating the near zone wave phenomena to the far zone behavior of the field.

2) Dr. Persides and Mr. Ioannides continued their study of asymptotically flat Einstein-Maxwell fields. The mass loss due to gravitational and electromagnetic radiation was studied. This work is near completion.

3) Dr. Persides and Mr. Papadopoulos continued their work on the Newman-Penrose constants in asymptotically null spherical coordinates.

4) Dr. Persides and Mr. Pascalis continued the study of the gravitational two-body problem in the space-time of a Schwarzschild black-hole.

5) Dr. Spyrou worked on the problem of the transformation properties of the Eulerian equations of motion in the post-Newtonian approximation.

6) Dr. Contopoulos and Dr. Spyrou continued their work on the problem of the center of mass in the first post-Newtonian approximation in the case of a system of N-bodies. This work is near completion.

III. Interstellar Matter-Radio Astronomy.

Dr. Terzian studied the energy content of our galaxy, with emphasis on the ionization and heating of the interstellar gas, and heating of the dust. He also worked on data reductions and interpretation of radio recombination lines from planetary nebulae, and Markarian radio galaxies.

Dr. Terzian visited the Max-Planck Institute for Radio Astronomy in Bonn, West Germany and performed radio observations with the newly completed 100-meter radio telescope. He also visited the Meudon Observatory in Paris, France (these trips were sponsored by the U.S. National Science Foundation).

Publications. 1) G. Contopoulos (editor): Highlights of Astronomy, Reidel, Dordrecht, 1974.

2) G. Contopoulos and A. Jappel (editors): Transactions of the IAU, XVB, Deidel, Dordrecht, 1974.

3) G. Contopoulos: Formal Integrals of Hamiltonian Systems in Resonance and Near-Resonance Cases, in D. Kotsakis (ed.). In Honorem S. Plakidis, Athens, 1974, p. 139=Contr. Astron. Dept. Univ. Thessaloniki, No. 70.

4) G. Contopoulos: Some Recent Developments in the Theory of Spiral Structure, in J.R. Shakeshaft (ed.) IAU Symposium 58, Reidel, Dordrecht, 1974, p. 413 = Contr. Astron. Dep. Univ. Thessaloniki, No 72.

5) S. Persides: Black Holes and the Structure of Space-Time, in D. Kotsakis (ed.). In Honorem S. Plakidis, Athens, 1974, p. 325 = Contr. Astron. Dep. Univ. Thessaloniki, No 69.

6) S. Persides: Scalar Waves in the Exterior of a Schwarzschild Black Hole, J. Math. Phys. **15**, 885, 1974 = Contr. Astron, Dep. Univ. Thessaloniki, No 71.

7) S. Persides and J. Pascalis: The Electromagnetic Two-Body Problem in Special Relatively, Ann. Phys. **161**, 87, 1974 = Contr. Astron. Dep. Univ. Thessaloniki, No 74.

8) S. Persides: Elements of General Relativity and Relativistic Astrophysics, Thessaloniki, 1974 (textbook in Greek).

9) S. Persides: FORTRAN II, IV and V, Thessaloniki, 1974 (textbook in Greek).

10) V. Terzian: On the Ultraviolet Radiation in the Galaxy, Astrophys. J. **193**, 1974 = Contr. Aston. Dep. Univ. Thessaloniki, No. 73.

11) A. J. Kalnajs and E. Athanassoula-Georgala: The Bar Modes of Uniformly Rotating Stellar Disk, Monthly Notices **168**, 287, 1974.

Meetings. Dr. Contopoulos was an invited speaker at the IAU Symposium No. 69 on «The Dynamics of Stellar Systems» in Besançon and at the International Symposium on the Dynamics of Spiral Galaxies in Paris. His lectures are now being published in the Proceedings of these Symposia. These meetings were attended also by Dr. E. Georgala.

Dr. Persides participated in the Seventh International Conference on Gravitation and Relativity in Tel Aviv, Israel, from June 23 to June 28, 1974.

Lectures. Dr. Contopoulos gave a series of lectures at the Astronomy Program of the University of Maryland during May-August 1974. He gave also seminars at the University of Chicago, the University of North Carolina, and the University of Milano.

Dr. Persides visited the German Federal Republic as a participant in the Program of Cultural Exchanges and gave lectures at the Universities of

Hamburg and Köln, and the Max-Planck Institute for Physics and Astrophysics.

A seminar on various astronomical topics was held weekly in collaboration with the Department of Geodetic Astronomy of the University of Thessaloniki.

The Head of the Department
Professor G. CONTOPOULOS

DEPARTMENT OF ASTRONOMY
TECHNICAL UNIVERSITY OF ATHENS

ANNUAL REPORT 1974

Staff. Miss E. Cheretis, qualified rural and survey engineer, was transfered from the Department of Hydraulics to this Department as Assistant. Thus the personnel of this Department consistes of, Chief Assistant Dr. D. Vlachos graduate in Mathematics and qualified rural and survey enginner, and Assistants Mrs C. Loukidelis, graduate in Mathematics, Mrs C. Babilis, graduate in Mathematics, Mr. B. Kyriakou civil engineer and rural and survey engineer, and Miss E. Cheretis.

Teaching and Training. During the academic year 1973-74 Professor J. Argyrakos, Director of this Department, assisted by his staff, delivered a course on General, Spherical, Practical and Geodetic Astronomy. Seminars were also held for fourth year undergraduates, on special subjects. The courses were followed by 109 + 11 students of the third and fourth years, respectively, attending the School of Rural and Survey engineers of this University.

Courses were also held on Electronic Computers for the benefit of the second year students. These courses were held by Prof. J. Argyrakos assisted by Assistant Mrs C. Babilis.

Scientific Activities. In an effort to create a library of electronic computer-programs for this Department thus introducing automatization in the determinations of Geoedetic Astronomy, Chief Assistant Dr. D. Vlachos published his work on «Coordinate systems of the stars». This paper appeared in a volume in honorem of emeritus Professor Dr. S. Plakidis published by the Department of Astronomy of the University of Athens.

The introduction was written by Prof. J. Argyrakos.

The Head of the Department
Prof. G. ARGYRAKOS

RESEARCH CENTER FOR ASTRONOMY AND APPLIED MATHEMATICS ACADEMY OF ATHENS

ANNUAL REPORT 1974

Staff. In the course of this year there have been cetrain changes in the personnel of the Center. Mr. Th. Zachariadis, graduate in Physics, has been appointed Assistant to the Center; Chief Assistant Mr. C. Poulakos went to Heidelberg on a Max-Planck-Institute grant and is working there at the Observatory under Dr. Elsässer. Mr. M. Chondros, Secretary of this Center, was responsible for the secretarial work and the outside contacts of the Center. He also spend much of his time on library work, handling incoming books, periodicals and scientific publications. He likewise offered his services, acting as secretary to various scientific committees related to the Aademy of Athens. These are a) the National Astronomical Committee, b) the National Committee on Space Research, and c) the National Mathematical Committee.

Research. Research has been quite active during 1974. The principal research programms were:

1) Study of relationships between solar activity and terrestrial phenomena by the Prof. J. Xanthakis.

2) Photometry of K2,3 spectroheliogramms of ionized calcium by the Director of the Center Dr. C. Macris jointly with Mrs. Helen Daras and Mr. Th. Zachariadis.

3) Research on solar activity by Assistant Mr. B. Tritakis.

4) Rerearch on solar granulation by monochromatic photographs in Hα by Mr. Th. Zachariadis.

5) Research on galactic structure by Dr. C. Poulakos in Heidelberg Observatory.

Equipment. A HEWLETT-PACKARD No 9820 electronic computer was installed in 1974, including a planimeter and other accessories as well as three small computers. The value of this instrumentation amounted to one million drachmas and was covered by apropriations from the Public Investments. The Nikon camera was likewise equiped with extra equipment permitting the use of 10 meter film reel.

Publications. The following papers have been published in the course of 1974 as CONTRIBUTIONS FROM THE RESEARCH CENTER OF ASTRONOMY AND APPLIED MATHEMATICS, ACADEMY OF ATHENS, SERIES I (ASTRONOMY):

1) Solar Activity and Precipitation Within the Zones of Latitude O-40 N, by J. Xanthakis, C. Poulakos, and B. Tritakis; The Praktika of the Academy of Athens, 1974.

2) Photometric Research for the K2.3 Chromospheric Flocculi, by C. Macris; The Praktika of the Academy of Athens, 1974.

In the Astronomy series of the Center's general publications the following are the most moterworthy:

1) Solar Research in Greece by J. Xanthakis and C. Macris; Reprinted from publications of the University of Economic and Commercial Sciences, Athens.

2) The Solar Wind, by C. Macris and H. Daras; Reprinted from the PROCEEDINGS OF THE SEMINAR ON ATMOSPHERIC PHYSICS, 17-20 September 1973. Publ. No. 5.

Library. The organisation of the library was completed this year. Incoming publications amounted to some 200 volumes and about 2,000 pamphlets, mostly from foreign institutions on an exchange basis.

Scientific Committees. Secretarial assistance has been profered by this Center to the National Committee for Astronomy, the National Mathematical Committee and the National Committee for Space Rerearch; Prof. Xanthakis is chairman of these committees. The object of these organisms is the coordination of research in this country and the maintaining of contacts with similar bodies abroad.

Meetings. Dr. C. Macris, director of this Center, participated in the JOSO annual meeting held on March 1974 in Berne, Switzerland.

Relations with other Institutions. Cooperation with other Institutions

was continued this year. The Meudon Observatory has given to this Center on loan a large collection of photographic material for processing.

Visits. In the course of 1974 this Center was visited by, a) Prof. Z. Kopal, 2) Dr. J. Meaburn who gave a lecture, 3) the president of the IAU, Prof. L. Goldberg, and. 4) The Assistant Secretay General of the IAU Dr. E. Muller.

Miscellaneous. The National Committee for Astronomy organized in the course of 1974 a series of seminars on special subjects for the benefit of the Greek astronomers. These were held it the premises of the Center.

The director of the Center, Dr. Macris, visited Meudon and selected a second series of solar plates for processing within the framework of research which he is pursuing on solar phenomena.

Assistant Mr. B. Tritakis has been awarded a PhD by the University of Athens.

The director of this Center expresses his thanks to his collaborators in the Center and to the competent authorities of the Academy of Athens who have willingly contributed to the work of this institution.

The Director of the Center
Dr. C. MACRIS

DEPARTMENT OF GEODETIC ASTRONOMY UNIVERSITY OF THESSALONIKI

ANNUAL REPORT 1974

Staff. The following new appointments were made: 1) Mr. Ch. Papantoniou, was appointed Technician, effective January 9, 1974, 2) Mr. C. Rizos, was appointed Technician, effective February 16, 1974. Thus, the staff of the Department on December 31, 1974 consisted of the following persons: 1) Professor L.N. Mavridis, Chairman, 2) Mr. A. C. Tsioumis, Chief Assistant, 3) Mr. G. Asteriadis, Chief Assistant, 4) Mr. M. E. Contadakis, Assistant, 5) Mr. M. Kessoglidis, Assistant, 6) Mr. D. Stavridis, Assistant, 7) Mr. G. Kareklidis, Assistant, 8) Mrs. H. Zervaki - Zoirou, Assistant, 9) Miss J. Karrinti, Assistant, 10) Mr. D. Arabelos, Assistant, 11) Miss P. Kyriakidou, Secretary, 12) Mrs. M. Spyropoulou - Topatsi, Secretary, 13) Miss M. Stamatelou, Secretary, 14) Miss E. Pilidou, Secretary, 15) Mr. P. Kanakis, Secretary, 16) Mr. Ch. Papantoniou, Technician and 17) Mr. C. Rizos, Technician.

Research Programs: The following research programs were carried out during 1974:

1) Photoelectric Photometry of Galactic Cepheids: The discussion of the photoelectric two-color (B, V) observations of the twelve galactic Cepheids RT, RX, SY Aur; RW Cam; SU Cas, VZ Cyg; V, Y, BG Lac; RS Ori; SV, AW Per observed by K. Bahner and L. N. Mavridis in 1956 - 59 with the 72-cm reflector of the Landessternwarte auf dem Königstuhl, Heidelberg, was continued. The discussion of the three-color (U,B,V) observations of the five Cepheids CD Cyg; X,Z,RR Lac; and U Vul carried out by L.N. Mavridis and A.C. Tsioumis in 1967-70 with the 38-cm reflector of the Hamburger Sternwarte installed at the Stephanion Observatory, was completed. The first results were published, while some additional results are ready for publication.

2) Rotational Velocities of the Members of Selected Open Clusters (Professor L. N. Mavridis in collaboration with Professor R. Kraft). The

study of the rotational velocities of 50 stars in the area of the open cluster NGC 6633 reported last year, was continued.

3) Investigation of Problems of Star Formation (Professor L. N. Mavridis in collaboration with Professors B. Strömgren and J. Xanthakis). The survey of the stars with ultraviolet excess contained in an area of 2.000 square degrees in high galactic latitudes reported last year, was continued.

4) Distribution of the M-, S- and C- Type Stars in Selected Areas of the Milky Way (Professor L. N. Mavridis). The photographic photometry and the study of the space distribution of the M-, S- and C- type stars found in the four areas centered on the open clusters NGC 188, NGC 752, UGC 7790 and M25, was continued.

5) Photoelectric Observations of Flare Stars (Professor L. N. Mavridis in collaboration with Dr. A. Tsioumis, Mrs. H. Zervaki - Zoirou and Messrs. M. E. Contadakis, D. Stavridis, G. Kareklidis, D. Arabelos and Farouk Mahmound). Photoelectric observations of the flare stars: 1) AD Leo, 2) BD+13°2618, 3) BD+16°2708, 4) BD+55°1823, 5) BY Dra, 6) EV Lac, 7) UV Cet and 8) YZ CMi were carried out with the 30-inch reflector of the Department of Geodetic Astronomy installed at the Stephanion Observatoy. The results are being prepared for publication.

6) Period Changes of Galactic Cepheids (Professor L. N. Mavridis in collaboration with Dr. K. Bahner). The investigation of period changes in selected galactic cepheids reported last year was continued.

7) Gravity and Magnetic Investigations in Greece. The gravity measurements reported last years were continued by the Department of Godetic Astronomy. The results are being prepared for publication.

8) Propagation of Optical Radiation and Microwaves through the Earth's Atmosphere (Professor L. N. Mavridis in collaboration with Mr. A. Bandellas). The discussion of the measurements reported last year was continued. A paper containing the first results was presented by A. Bandellas and L. N. Mavridis during the International Symposium on Terrestrial Electromagnetic Distance Measurements and Atmospheric Effects on Angular Measurements held at the Royal Institute of Technology, Stockholm, Sweden, 19-24 August 1974.

9) Kinematics of Stellar Systems (Dr. A. Tsioumis in collaboration with Professor W. Fricke). A determination of the Oort's constants A and B was undertaken with the help of the FK4-FK4 Suppl. stars. A summary of the results was presented by W. Fricke and A. Tsioumis at the Tagung

der Astronomischen Gesellschaft held in Garching, West Germany, 6-9 March 1974.

The research programs Nos. 3 and 4 were carried out in co-operation with the Research Center for Astronomy and Applied Mathematics, Academy of Athens.

Publications: The following publications appeared in 1974:

Contributions from the Department of Geodetic Astronomy, University of Thessaloniki:

No. 10: G. Asteriadis, L. N. Mavridis and A. Tsioumis: On the Stability of the Light Curves of Galactic Cepheids. In L. N. Mavridis (Editor) «Stars and the Milky Way System», p. 17, Berlin-Heidelberg-New York: Springer-Verlag, 1974.

No. 11: B. Lovell, L. N. Mavridis and M. E. Contadakis: Large Flare on the Red-Dwarf Star UV Ceti, Nature, Vol. 250, 124, 1974.

Also the following publications:

1) L. N. Mavridis (Editor) «Stars and the Milky Way System», Proceedings of the First European Astronomical Meeting, Athens, September 4-9, 1972, Vol. 2, Berlin-Heidelberg-New York, Springer-Verlag, 1974.

2) A. C. Tsioumis: Contribution to the Study of the Spiral Structure of the Galaxy with the Help of Red Giant Stars, PhD Thesis, University of Thessaloniki, 1974.

3) W. Fricke and A. Tsioumis: Kinematik und Dynamik von Sternsystemen. Mitteilungen der Astronomischen Gesellschaft Nr. 35, 86, 1974.

Teaching. During the academic year 1974-75 Professor L. N. Mavridis delivered courses in General and Spherical Astronomy to the second year undergraduates, in Goedetic Astronomy to the third year undergraduates and in Higher Geodesy to the third and fourth year undergraduates of the Faculty of Technology, Division of Rural an Surveying Engineering of the University.

Visitors. Mr. Farouk Mahmound, Helwan Observatory, worked at the Department between June and December 1974.

Miscellaneous. Professor L. N. Mavridis was appointed Vice-President effective January 17, 1974 and President effective December 17, 1974 of the Administrative Council of the newly established Democritus University of Thrace. He also attended the following scientific meetings: 1) The Inter-

national Symposium on Terrestrial Electromagnetic Distance Measurements and Atmospheric Effects on Angular Measurements held at the Royal Institute of Technology, Stockholm, Sweden, 19-24 August 1974 and presented (in collaboration with Mr. A. Bandellas) a paper on «The Accuracy of Microwave Distance Measurements». 2) The British Council Seminar on New University Planning and Design held in Brighton, Colchester, Cambridge, Manchester, Loughborough and London, 1-13 September 1974.

Dr. A. Tsioumis received his PhD degree from the Faculty of Sciences, University of Thessaloniki, in May 1974. He also visited in July 1974 the Astronomisches Rechen-Institute, Heidelberg, West Germany and discussed scientific problems of common interest with Professor W. Fricke.

Messrs. M. E. Contadakis and G. Kareklidis attended the Second European Astronomical Meeting held in Trieste, Italy, September 2-5, 1974.

Mr. G. Asteriadis received, effective October 1, 1974, a second one-year leave of absence from the Department and continued working at the Astronomisches Rechen - Institute, Heidelberg, West Germany.

The Head of the Department
Professor L. N. MAVRIDIS

DEPARTMENT OF ASTRONOMY
UNIVERSITY OF IOANNINA

ANNUAL REPORT 1974

Staff.: Prof. D. Miliotis, Professor of Applied Physics at the University of Ioannina is temporarily acting Director of the Department.

Teaching: Prof. Miliotis held courses in Astronomy to the third year undergraduate students of Physics and Mathematics.

Laboratory training, tutorial courses and a general introduction in Astronomy were carried out with the assistance of Mr. P. Kromydas.

Research Program: Mr. Kromydas started a spectroscopic study of Ap stars on plates taken at the Haute Provence Observatory.

DEPARTMENT OF ASTRONOMY
UNIVERSITY OF PATRAS

ANNUAL REPORT 1974

Staff. During 1974 there has been no change in the staff of this Department. Dr. E. Evangelidis worked as research fellow from April until December.

Teaching. Dr. B. Barbanis held courses in Astronomy to the third and fourth yeer undergraduate students, and courses in Differential Equations to the second year students in Mathematics and Physics. Dr. Gr. Antonakopoulos held courses in Astronomy to the third year undergraduate students in Mathematics and Physics and Analytical Geometry to the first year students in Mathematics. Laboratory training of the students in Practical Astronomy was carried out by Assistant Mrs. C. Flogaitis. Assistant Mr. P. Antonopoulos was responsible for the exercises in General Astronomy and Differential Equations.

Research Program. a) Dr. B. Barbanis continued his work on particle resonance. A paper on this subject is under preparation.

b) Dr. G. Antonacopoulos has been working on the restricted three-body problem taking into account the effect of non gravitational forces on the motion of the bodies.

c) Dr. E. Evangelodis has been working on resonances appearing in density-wave theory.

d) Mr. P. Antonopoulos studied orbits in a Spiral Galaxy under the supervision of Dr. B. Barbanis.

Publications. 1) B. Barbanis and J. Hadjidemetriou (Editors) «Galaxies and Relativistic Astrophysics» Proceedings of the First European Astronomical Meeting, Vol. 3, Springer - Verlag, Berlin 1974 (248 pages). 2) B. Barbanis: Spicyclic Motions and their Applications, In Honorem S. Plakidis, Ed. D. Kotsakis, p. 284 Athens. 1974 (in Greek).

Visitors. Professor Z. Kopal, University of Manchester, U. K. and Professor Yervant Terzian, University of Cornell, U.S.A., gave lectures at the University of Patras.

Meetings. Dr. Barbanis participated in the following meetings:

1) The IAU Symposium No 69 on «Dynamics of Stellar Systems». Besançon, France, September 9-13, 1974.

2) International Colloquim of the Centre Nationale de la Recherche Scientifique on «Dynamics of Spiral Galaxies», Bures-sur-Yvette, France, September 16-20, 1974.

The Head of the Department
Professor B. BARBANIS

CHAIR OF ASTROPHYSICS
UNIVERSITY OF ATHENS

ANNUAL REPORT 1974

Teaching: Prof. S. Svolopoulos held courses on Astrophysics to the foutrh year students, and on space Physics to the third year students of Physics.

Research: Prof. S. Svolopoulos continued his studies on B stars from spectra taken at Haute Provence Observatory.

Publications: 1) The Formation of contemporary Astronomy (in Greek) Bull. of Geographical Service of the Greek Army, 102-4, 1974. 2) Contemporary problems of the eclipsing variables. Special Volume In Honorem S. Plakidis, Athens, 1974. 3) Lessons in Astrophysics, Athens University, 1974.

Visitors: Prof. Z. Kopal, of Manchester University, and Prof. Y. Terzian, of the Cornell University (Ithaca, U.S.A.,) while visiting the University gave a number of lectures to the students of the Department of Physics.

The Head of the Chair
Professor S. SVOLOPOULOS