

ArAS News

NEWSLETTER OF THE
ARMENIAN ASTRONOMICAL SOCIETY (A r A S)

No. 51 (November 16, 2011)



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The ArAS Newsletter in the INTERNET: <http://www.aras.am/ArasNews/arasnews.html>

YOUNG SCIENTISTS CONFERENCE “50 YEARS OF COSMIS ERA”



The **Young Scientists Conference “50 Years of Cosmic Era: Real and Virtual Studies of the Sky”** will be held on November 21-25, 2011 in Yerevan, Armenia. This is a conference of young scientists from FSU countries, dedicated to the 50th anniversary of Yuri Gagarin’s flight to the Space. The main goal of the Conference is to gather young scientists from FSU countries to familiarize them with the latest developments of Astrophysics and Space Physics, including the using of the latest technology and techniques. Such event contribute to the education of students and young researchers, as well as improving their professional

skills, communication with famous scientists, exchange of experience, new contacts and cooperation. Within three days, for the young scientists will be organized lectures and practical exercises on various areas of Astrophysics and Space Research, as well as opportunity will be provided to them to present their works. Official languages of the Conference are English and Russian. The Intergovernmental Foundation for Educational, Scientific and Cultural Cooperation is sponsoring the Conference. Some 50 students and young researchers from Armenia, Russia, Ukraine, Latvia, Lithuania, and Tajikistan will take part, including 29 foreign ones. Four lecturers from France, Russia, and Armenia will give a number of invited lectures. The students will present their M.Sc. or Ph.D. diploma theses or the results of their research.

Program:

21.11, Monday

Arrival day, registration and excursion

22.11, Tuesday

09:30-10:00 Opening of the conference

10:00-13:30 Lectures (A.M. Mickaelian, N.N. Samus, A. Sarkissian)

14:30-16:00 Presentations by young participants

16:30-18:00 Practical exercises (A. Sarkissian)

19:00-24:00 Excursion to the Byurakan Astrophysical Observatory (Observations)

23.11, Wednesday

09:00-13:30 Excursion to Garni and Geghard

14:30-17:00 Presentations by young participants

17:00-18:30 Practical exercises (A.M. Mickaelian)

24.11, Thursday

09:00-12:30 Lectures (A.M. Mickaelian, O. Malkov, N.N. Samus)

12:30-16:00 Presentations of the participants

16:30-18:00 Round table, conclusion and closing

18:00-22:00 Conference dinner

25.11, Friday

Excursion and Departure day

The official opening will take place on November 22, 09:30 at the Small Hall of the Presidium of the Armenian National Academy of Sciences.

More details are given at the Conference webpage at <http://www.aras.am/50years/index.html>.

Contacts: Dr. Areg Mickaelian, Chair of the Organizing Committee (phone: +374-91-195914, e-mail: aregmick@aras.am); Gohar Harutyunyan, Secretary of the Organizing Committee (phone: +374-77-797090, e-mail: goharutyunyan@gmail.com).

ArAS X ANNUAL MEETING



ArAS X Annual Meeting will be held on Monday, December 19, 2011 at the Byurakan Astrophysical Observatory. There will be a general discussions on ArAS matters rather than scientific session. All ArAS members, other astronomers, as well as science-writing journalists are invited to participate. There also will be invited guests at the meeting.

The program consists of:

- Ceremony of inauguration of **Markarian's survey included in the UNESCO Memory of the World (MOW) Register**
- Award of **ArAS/OxArm Popular Astronomy Prizes 2011**
- *Coffee/tea-break*
- **ArAS Annual Report 2011** by the ArAS Co-President A.M. Mickaelian
- **Discussion on ArAS affairs:** membership, webpage, newsletters, annual meetings, annual fees, etc.
- Award of **ArAS Annual Prize for Young Astronomers (Yervant Terzian Prize) 2011**
- Award of **BAO/ArAS Annual Prize for the best Scientific Paper 2011**

The beginning of the meeting is scheduled for Dec 19, 12:00, Viktor Ambartsumian room at the Main building of BAO.

ArAS ANNUAL PRIZE for YOUNG ASTRONOMERS



December 1 is the deadline for nominations for **ArAS Annual Prize for Young Astronomers (Yervant Terzian Prize) 2011**. The prize will be awarded to a young scientist under 35 working in astronomy or related field and showing significant results in research and/or



other scientific activities connected anyhow with the Armenian astronomy.

Nominations may be made by ArAS members or any research organization from Armenia or elsewhere and should be sent to one of the ArAS Co-Presidents. They should include personal data for the nominee and a brief description of his/her achievements during the year, including important scientific results, all published papers, participation in meetings, given talks, etc., whatever is considered to be important. At least one refereed publication is required to qualify for the Prize.

The winner will be announced in the last issue of ArAS Newsletter at the end of the year and the Prize will be awarded on December 19 at the ArAS X Annual Meeting. A diploma and sum of **\$500** will be awarded to the winner (note, the sum has been increased from \$250 in 2010 to \$500). The Prize is being sponsored by the ArAS Co-President **Prof. Yervant Terzian**.

BAO/ArAS ANNUAL PRIZE for the BEST SCIENTIFIC PAPER



December 10 is the deadline for application for **BAO/ArAS Annual Prize for the Best Scientific Paper 2011**, joint award announced by the Byurakan Astrophysical Observatory (BAO) and the Armenian Astronomical Society (ArAS) (note, the



deadline has been slightly changed from Dec 15 to Dec 10). Applications may

be made by individual authors or groups of co-authors. The full paper published or accepted for publication before Dec 10, 2011 is required. In case of several co-authors, at least half of them should be authors from BAO and in such cases advantage will be given to papers with BAO astronomers as first co-authors. Only papers in refereed journals will be considered and papers in journals with higher impact factor will have priority.

The recipient(s) will be announced in the ArAS Newsletter at the end of December and the Prize will be awarded on December 19 at ArAS X Annual Meeting. The winner(s) will receive BAO/ArAS certificate and monetary award.

ArAS/OxArm POPULAR ASTRONOMY PRIZES



November 30 is the deadline for submission of applications for **ArAS/OxArm Annual Popular Astronomy Prizes 2011** jointly established by ArAS and the Oxford Armenian Society (OxArm, <http://oxarm.com/Home.html>). The



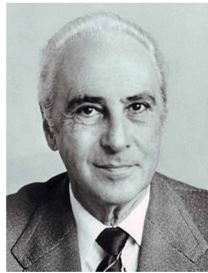
Prizes intend to encourage popular astronomy publications and TV/radio programs in Armenia. The Committee (Jury) consists of scientists and journalist and will evaluate the presented works and select the winners. The established Prizes are:

- **for the best newspaper/journal/online article**
- **for the best radio/TV program**
- **for the most active journalist** (more than one prizes are possible)
- **for the best astronomical photo**

Materials published or broadcasted and photos taken during 2011 will be taken into account. Hardcopies and/or electronic versions of these materials should be submitted. The works should be somehow related to space themes. To give better visibility and possibility to make comments, all materials may be posted in the Facebook Scientific Journalism group page (http://www.facebook.com/home.php#!/home.php?sk=group_144651068920380&ap=1) and these comments will be taken into account by the Jury.

Each prize consists of ArAS/OxArm official certificate, 30,000 Armenian Drams (AMD) monetary award, and annual subscription to one of the international science journals (*Science*, *Nature*, or *New Scientist*), as well as Celestron amateur telescopes will be given as special prizes. The best works will be placed at ArAS and OxArm websites. The Prizes will be awarded on December 19 at ArAS X Annual Meeting and the results will be announced in the ArAS Newsletter at the end of December.

OSKANIAN-90 / IOANNISIAN-100 SEMINAR at BAO



An anniversary seminar was held at the Byurakan Astrophysical Observatory on Monday, October 24, 2011 devoted to the 90th anniversary of one of our famous astronomers **Vahe Oskanian** and the 100th anniversary of one of the world best constructors of astronomical instruments **Bagrat Ioannisian**. The first half was devoted to Vahe Oskanian, who was one of the leaders of one of the most important Byurakan research areas, studies of variable stars.

His son, also an astronomer Ara Oskanian told about Vahe Oskanian's life and scientific activity. A number of reports were given by other BAO associates, Lidia Erastova, Susanna Hakopian, Ludvik Baghyan, Areg Mickaelian, Ashot Gharibjanian, Hovhannes Pikichian, and Haik Harutyunian. The second half of the anniversary seminar was devoted to Bagrat Ioannisian, who was the supervisor of the construction of the largest telescopes of the Soviet Union (including Crimea 2.6m, SAO 6m, and BAO 2.6m). Tigran Movsessian told about the conference devoted to B.K. Ioannisian's 100th anniversary recently held at the Russian Special Astrophysical Observatory (SAO). Then a movie made on the initiative of the same observatory devoted to Ioannisian was shown. At the end, reports were given about him by Edward Khachikian and Ludvik Baghyan.

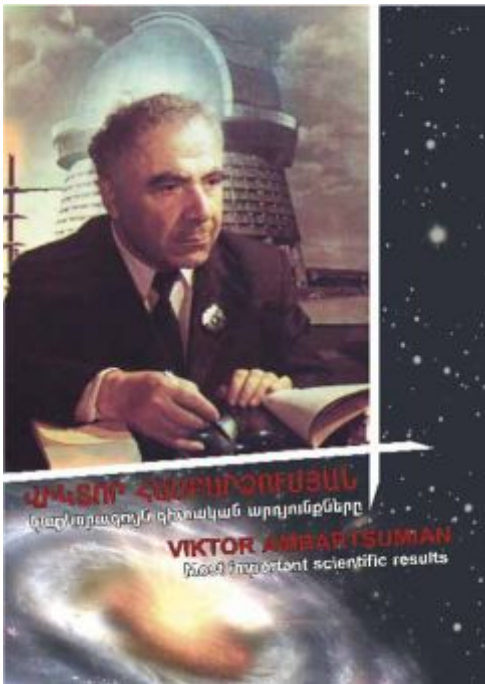
PUBLICATION of BAO BOOKLET



A popular booklet devoted to the *Byurakan Astrophysical Observatory* of NAS RA (the author is A.M. Mickaelian) was recently released by the publishing company "EditPrint", which is prepared for people interested in astronomy and BAO, pupils and students, BAO visitors, et al. The booklet consists of 64 pages, it is made as a visiting card and presents concise and full information about BAO. A brief history of the Byurakan Observatory, the biography of our great scientist Viktor Ambartsumian, brief biographies of 11 other deserved scientists formerly working at BAO (B.E. Markarian, G.A. Gurzadyan, L.V. Mirzoyan, M.A. Arakelian, et al.), information on the BAO telescopes (2.6m, 1m Schmidt, etc.) and other scientific instruments, scientific library and photographic plate archive, Byurakan surveys (including the famous Markarian survey included in the UNESCO "Memory of the World" International Register), all scientific meetings held in Byurakan, international scientific collaboration, data on full

research staff of the observatory, as well as former BAO researchers, who have moved to foreign institutions are given in the booklet. At the end, the list of the most important books published by Armenian astronomers and about them is given. Being an important scientific, educational, and cultural cradle, the Byurakan Observatory is also presented as a visiting centre, one of the most visited in Armenia. It is worth saying that before this booklet, the last one devoted to the Byurakan Observatory in Armenian was published more than 30 years ago, in 1978.

PUBLICATION of VIKTOR AMBARTSUMIAN BOOKLET



A popular booklet devoted to *Viktor Ambartsumian's most important scientific results* (the authors are H.A. Harutyunian and A.M. Mickaelian) was recently released by the publishing company "EditPrint", which is prepared for people interested in scientific heritage of our great scientist. The authors have made effort to distinguish Ambartsumian's most important (altogether 16) scientific achievements, which have had significant, in some cases revolutionary impact on the development of astronomy and physics of the 20th century. These results are presented in popular form to allow the reader easily understand their meaning and make an understanding on Ambartsumian's scientific greatness. Particularly, the theoretical prove of the existence of neutron, derivation of the distribution of the stellar spatial velocities (this method lies in the basis of the creation of the computational tomography), estimation of the age of the Universe, creation of the theory of invariance, discovery of stellar associations, development

of the idea on activity of galaxies, statistics of flare stars, etc. are included among the most important results. The booklet consists of 32 pages and beside the scientific results also presents Ambartsumian's brief biography and some maxims. The booklet is written in Armenian and English in parallel.

IVOA NEWSLETTER RELEASED



The October 2011 issue of the International Virtual Observatories Alliance (IVOA) Newsletter is now available at <http://www.ivoa.net/newsletter/>. This biannual newsletter for astronomers is intended to highlight new capabilities of VO tools and technologies for doing astronomy research. It also lists recent papers and upcoming events. In this issue, several interesting articles have been placed, including IVOA News (IVOA Recommendations Available from arXiv & ADS), VO Applications Highlights (US VAO's Iris SED Analysis Tool, VOIPortal, VO-India Android application, VOPlot v1.7, and FITSManager), some recent papers about VO-enabled science and VO calendar (10-13 Oct 2011, Kochi, India: National Workshop on Science with the Virtual Observatory; 17-21 Oct 2011, Pune, India: IVOA Interoperability Meeting; 8 Jan 2012, Austin, TX, USA: "Science Tools for Data-Intensive Astronomy" VO Workshop at AAS 219; May 2012, Washington, DC, USA: IVOA Interoperability Meeting).

Comments and feedback are encouraged; you may contact the editors at ivoa-news-editors@ivoa.net. IVOA Newsletter Editors are: Mark G. Allen, Sarah Emery Bunn, Chenzou Cui, Evanthia Hatziminaoglou, Thomas. A. McGlynn, Christopher J. Miller, and Jonathan Tedds.

ALEX LAZARIAN's PAPER in NATURE

Buckle your belts: It is turbulent there

Nature, Vol. 478, p. 214-217 (2011), <http://arxiv.org/abs/1110.2896>



The last decade has been marked by a substantial changes in many interstellar processes, including star formation one. For instance, it is getting increasingly clear that the textbook description of the star formation that is happening in quasi-statistic manner is not valid. Instead, a more violent turbulent picture is



emerging. In a new emerging paradigm the material is being collected and redistributed by compressible turbulence and the process based on turbulent reconnection, which I termed "reconnection diffusion", is removing magnetic fields from star forming clouds.

Developing ways of quantitative studies of interstellar turbulence using observational data is extremely important. This has been one of my directions of research for a number of years. For instance, with my colleague from the University of Alberta (Canada) *Prof. Dmitry Pogosyan* we developed new techniques that have been used to obtain spectra of turbulent velocities using Doppler-shifted emission and absorption lines. Application of our techniques to observations persuaded many researchers that, indeed, interstellar media, like atomic hydrogen and CO, are turbulent and this type of turbulence can be successfully quantified. What about ionized medium in warm and hot gas? Is this also a part of a big turbulent cascade in the galactic interstellar plasmas?

Working together with my graduate student at the University of Wisconsin-Madison Ms. Blakesley Burkhart we provided the theoretical foundations that were used in a recent paper dealing with studying magnetic turbulence using synchrotron fluctuations. The paper has just been published by *Nature*. Collaborating with Bryan Gaensler, a professor of astronomy at the University of Sydney, as well as other Australian and Dutch groups, we used their newly developed statistical methods to make "synthetic observations" to match the results of the Southern Galactic Plane radio survey of the Milky Way obtained from a radio telescope known as the Australian Telescope Compact Array.

The results of this matching revealed that turbulence in the ionized interstellar gas responsible for the synchrotron emission is transsonic, as opposed to supersonic turbulence revealed by our techniques in atomic hydrogen and CO. The results, however, correspond well to our earlier studies of turbulence of warm interstellar medium phase obtained with Wisconsin H α Mapper (WHAM) survey.

In short, our results testify that turbulence really ubiquitous in the interstellar medium, being subsonic and transsonic in the warm phase and getting supersonic as the interstellar gas cools down. They also show that the interstellar turbulence is not any more hand-waving escape for a theorist unable to find the quantitative correspondence between his model expectations and observations, but a parameter that can be well measured from observations. Further observational studies of turbulence will put to the quantitative test the new ideas that have been developed about star formation, cosmic ray transport as well as other key astrophysical processes.

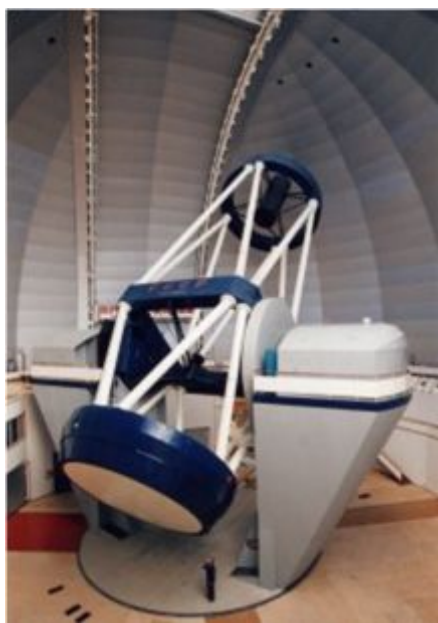
Alex Lazarian

ANNIVERSARIES



Bagrat IOANNISIAN – 100. Constructor Bagrat K. Ioannisian is one of the most famous persons of astronomical instrument-making; under his supervision the greatest Soviet telescopes: 6m telescope in the Southern Caucasus and 2.6m telescopes in the Crimea and Byurakan, were made and mounted. He was the first scientist who used the alt-azimuthal system of mounting of the telescopes, due to which new opportunities were given for the construction of large telescopes.

Bagrat Ioannisian was born on October 23 (November 5), 1911 in Yerevan. He studied at the Leningrad Exact Optical-Mechanical Institute, finished courses for constructors. In 1936-1985 he worked at the Leningrad Optical-Mechanical Union after Lenin (LOMO, formerly optical-mechanical factory of Leningrad). Since 1956 he was the Chief Constructor and the Head of the construction bureau of large astronomical devices of LOMO. In 1945-1956 he worked at the Leningrad State Optical Institute as well. In 1957-1965 he worked as a Chief Constructor of the Department of Astronomical Instrument-making at the principal Pulkovo Observatory of the USSR Academy of Sciences. Since 1949 he had scientific and business relations with the Byurakan Astrophysical Observatory.



BTA-6m (SAO, Russia) and ZTA-2.6m (BAO, Armenia) telescopes by B.K. Ioannisian

He took up questions on projection, construction and mounting of astronomical instruments and devices. In common with D.D. Maksutov he began working on the implementation of meniscus systems of telescopes in astronomy. He is considered to be the author of a number of new original constructions of astronomical instruments. He has created the ASI-1 nebular spectrograph (1949), the ASI-2 meniscus telescope with 500mm in diameter (1959), a number of original instruments though of small size (ASI-4 mirror-lens, ASI-5 reflecting telescope with a slitless quartz spectrograph, Alma-Ata 60cm, as well as (in common with Maksutov) one of the world largest meniscus telescopes with automatic system of management; the AC-32 mounted in the Abastumani Astrophysical Observatory (with a telescope aperture of 700mm and a main mirror of 975mm in diameter). In 1961 the mounting of ZTSh reflector (a mirror telescope after G.A. Shain) with a mirror of 2.6m in diameter was completed at the Crimea Astrophysical Observatory of the

USSR Academy of Sciences. This telescope, one of the largest telescopes of Europe, was created by Bagrat Ioannisian at LOMO. Later in 1976 a similar telescope with a mirror of 2.6 in diameter (ZTA), constructed by Ioannisian, started operating at the Byurakan Astrophysical Observatory (BAO). In 1975 the world largest telescope of that time with a mirror of 6m in diameter was put into operation at the Special Astrophysical Observatory (SAO) of the USSR Academy of Sciences; Ioannisian is its chief constructor as well. During the working out of the project of this telescope (which was called BTA: "Large Azimuthal Telescope") they could deny the use of traditional schemes and for the first time apply for the large optical telescope the principle of following the object by the telescope in the alt-azimuthal coordinate system (height and azimuth); one of the axes is mounted vertically and the second one horizontally. Such a principle has a number of advantages and opens new ways for the creation of large telescopes.

In 1957 Ioannisian was awarded a Lenin prize, and he was awarded two Lenin orders. In 1964 he was awarded an Honorary Doctorate of technical sciences. In 1977 he was given a title of Hero of Socialist Labour. Bagrat Ioannisian passed away on December 10, 1985 in Leningrad.

Areg Mickaelian

Norair YENGIBARYAN – 70. Recently *Prof.* Yengibaryan celebrated his 70th anniversary. Norair Bagrat Yengibaryan was born on 12 November 1941 in Yerevan. In 1963 he graduated from the Yerevan State University (YSU) Department of Mechanics and Mathematics, in 1963-1966 he took his Ph.D. studies and in 1968 successfully defended the Ph.D. thesis under the supervision of V.A. Ambartsumian. Yengibaryan has worked at the NAS RA Institute of Problems of Applied Physics (in 1980-1989 he was the head of the Laboratory of Mathematical Physics), Byurakan Astrophysical Observatory (in 2001-2003 he was the Deputy Director) and the NAS RA Institute of Mathematics; at present he is the head of the Department of Mathematical Physics Methods. He is a D.Sc. since 1980 and Professor since 1982, for many years has been teaching at the YSU and has been the supervisor of many students, including a number of presently known mathematicians. Yengibaryan's research relates to mathematical physics and theoretical astrophysics: theory of functions, integral equations and radiation transfer theory. He has created the theory of non-linear equations of factorization of integral operators, including Wiener-Hopf type ones. He has built the normal convergence domains of Loran multiple series. He has developed new methods for solution of the radiation transfer linear and non-linear problems. As a result, Yengibaryan has published more than 90 research papers. He is a member of the International Mathematical and Astronomical Unions.

NEW ArAS MEMBERS

We are happy to inform that a young USA scientist, **Timothy Christian ARLEN** recently became a new ArAS member. Tim is 28 and at present he is a Ph.D. student and Graduate Student Researcher at the University of California-Los Angeles (UCLA), Department of Physics and Astronomy. His fields of interest are Very High Energy Gamma Ray Astrophysics and Cosmic Ray Astronomy.