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# ArAS Newsletter



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## LOCAL NEWS

### The Byurakan Astrophysical Observatory Stands with Artsakh Armenians

September has become one of the darkest months for Armenians. Because of Azerbaijan's genocidal actions the second Armenian Republic, Artsakh (Nagorno-Karabakh) will cease to exist from next year.

The so-called Azerbaijani victory triggered a huge exodus of ethnic Armenians living in Artsakh. The people were forced to leave their homes, resulting in the Armenian homeland growing ever smaller. Up to this day, more than 100,000 Armenians fled to Armenia and are hosted by different organisations, families or temporary camps.



A few of Artsakh Armenians hosted by the BAO



Left: Anna Gasparyan.

Right: BAO Director Areg Mickaelian.Artsakh.

The Byurakan Astrophysical Observatory also offered a shelter and is now hosting our compatriots from Artsakh. Over 40 people are now living in the BAO guest house and have the full support of the BAO administration.

The Observatory does its best to provide them with all the necessities, including job opportunities. The BAO has hired Anna Gasparyan, an employee of the Artsakh Scientific Center, to join the “Astronomical Surveys” research department. It is of the utmost importance that our compatriots from Artsakh feel safe in all terms.

In case you want to help but don't know how, reach out to us for details.

## Yet Another International Seminar at BAO

On September 7, the Byurakan Astrophysical Observatory hosted a seminar by Tigran Arshakyan from the University of Cologne (Germany), who is also a scientific consultant of the BAO.

The report was devoted to the topic of “BL Lacertae: Relativistic transverse waves and superluminal jet motion”.

T. Arshakyan presented the studies of BL Lacertae jet dynamics on parsec to sub-parsec scales. During the seminar, he mentioned that

they had used the data obtained from monitoring at 15 GHz with VLBA (Very Long Baseline Array) for 20 years thanks to the international programme MOJAVE (Monitoring of the Jets in AGN with VLBA Experiments). He also noted that moving and quasi-stationary radio components as well as transverse waves travelling downstream of the jet at superluminal speeds had been detected.



Tigran Arshakyan

### III Regional Astronomical Summer School (3RASS)

On September 11-15, III Regional Astronomical Summer School (3RASS) took place at the Byurakan Astrophysical Observatory. During the school, the students had the opportunity to do observations with 1 or 2.6 m telescopes, practical tutorial sessions on data reduction, analysis, statistics. Moreover, they enriched their knowledge in the Astronomical Surveys, Databases, Archives and Virtual Observatory tools.

For the first time this year, the BAO organized the Inter-Regional Astronomical Summer School (IRASS) between the IAU South West and Central Asian (SWCA) and Arab World Regional Offices of Astronomy for Development (ROADs), combining it with the Summer School.

It was organized in the framework of the collaboration agreement between the 2 ROADs and was the first ever such initiative for the IAU all regional offices. The idea was to strengthen the collaboration between the neighboring regional offices and give opportunity to more young astronomers to communicate to each other and the lecturers.

The school brought together MSc and PhD students in Astronomy, as well as BSc students in the later stages.



“Non-Stable Phenomena in the Universe” International Symposium Participants. Group Photo. September 2023. BAO.

## **“Non-Stable Phenomena in the Universe” International Symposium Dedicated to Viktor Ambartsumian’s 115<sup>th</sup> Anniversary**

On September 18-21, the Byurakan Astrophysical Observatory (BAO) hosted [“Non-Stable Phenomena in the Universe” International Symposium](#) dedicated to Viktor Ambartsumian’s 115<sup>th</sup> anniversary.

The main topics of the symposium were as follows: Active Sun and the Solar System, Instability phenomena in the world of stars and nebulae, Active Galactic Nuclei and Starburst galaxies, Groups and clusters of galaxies, Observational and Theoretical Cosmology, Astrochemistry, Astrobiology and Exoplanets Theoretical, interpretation of non-stable phenomena in the Universe, etc.

The symposium was organized thanks to the joint efforts of the Byurakan Astrophysical

Observatory (BAO), Armenian Astronomical Society (ArAS), IAU South West and Central Asian Regional Office of Astronomy for Development (SWCA ROAD), RA Ministry of Education, Science, Culture and Sports (MESCS) Science Committee, as well as Peter the Great St.Petersburg Polytechnic University (SPbPU).



Symposium dedicated to Viktor Ambartsumian’s 115<sup>th</sup> anniversary.

## ANNIVERSARIES

### Dr. Jivan Stepanian's 75<sup>th</sup> Anniversary



Jivan Stepanian

Jivan Avetis Stepanian was born on September 7 1948, in Kirovabad. He studied at the Physical-Mathematical Department of the Yerevan State University (YSU) and graduated in 1970 with a specialization of Astrophysics. After graduation, he started working at the Byurakan Astrophysical Observatory (BAO), first as an administrator of the Computing Centre of the Observatory. He passed his military service as signaller in Mongolia.

In 1973, he returned to the Observatory and was invited by B.E. Markarian to work on the First Byurakan Survey (FBS). He became an experienced observer and co-author of 5 Survey lists and the Catalog of Markarian galaxies. Additionally, from 1973 onwards, Stepanian simultaneously dedicated himself to developing a methodology for the Second Byurakan

Survey (SBS). He created a device for sensitization of the photographic plates by heating them in the nitrogen flow. While this method was known abroad, Stepanian was the first in the Soviet Union who implemented it. Starting from 1978 he was engaged in the SBS. This was a large project, where only images of good and excellent quality were required for getting needed results, therefore he was also often engaged in improvement of the work of the 1m Schmidt telescope. He also received observing time and studied the revealed objects on the Special Astrophysical Observatory (SAO, Russia) 6m telescope.

In 1985, Stepanian defended his PhD thesis on “The Second Byurakan Survey” (Markarian was his scientific supervisor), while working on it. In 1988, he headed the Laboratory of the 1m Schmidt telescope and from 1991 he was a senior research associate. In 1989, the research group of this laboratory received a grant from the USSR Academy of Sciences on the subject of connection of macro- and micro- Cosmos (Velikhov). Starting from 1991, Stepanian worked as Deputy Director on Science of SAO, continuing working on the SBS. Later, in 1995, he defended his Doctoral thesis.

J. Stepanian is a leading expert in the field of extragalactic surveys, QSOs, Seyfert galaxies, and other active galaxies. He is a member of IAU.

## Vahe Petrosian's 85<sup>th</sup> Anniversary

Vahe Petrosian, one of the outstanding Armenian-American astronomers, was born on September 13, 1938 in Iran. He is a Professor of Physics and Applied Physics at Stanford University.

Prof. Petrosian's main fields of scientific interests are theoretical astrophysics with concentration on high energy astrophysical processes in solar and stellar flares, gamma-ray bursts, accretion disks of stellar and active galactic black holes and clusters of galaxies, and in cosmology; early phase of the universe, the evolution of galaxies and quasars, arcs in clusters of galaxies, and gravitational lensing. His research interests have been in two broad areas of high energy astrophysics and cosmology. The former area includes studies of acceleration,

transport and radiation of non-thermal particles, developed primarily for application to solar flares. These works have also found application in a variety of other astrophysical sources including accretion disks, Gamma-ray bursts and Clusters of Galaxies.

His work in cosmology is focused on evolution of galaxies and quasars (and AGNs in general), and in luminous arcs in clusters of galaxies (of which he is a co-discoverer: R. Lynds & V. Petrosian, 1989, "Luminous Arcs in Clusters of Galaxies", *ApJ*, 336) and gravitational lensing. Another interest has been in the area of statistical methods relevant to analysis of astronomical data. This work is carried out in collaboration with B. Efron of the Statistics Department at Stanford has been concentrated on development of new non-parametric methods for determination of distribution of astronomical sources from truncated data.

Prof. Petrosian has published more than 250 scientific papers on several subjects, including Gamma-Ray Burst, quasars and AGN, Solar flares, statistical methods, and others. He had more than 30 thesis undergraduate and graduate students and 7 postdoctoral associates since 1973.

Prof. Petrosian was awarded the Iranian National Fellowship (1958-62), the Industrial Fellowship, Cornell University (1963-64), and Alfred P. Sloan Foundation Fellowship (1972-74). He is a member of the Royal Astronomical Society (RAS), International Astronomical Union (IAU), American Astronomical Society (AAS), Eta Kappa Nu, and Tau Beta Pi. He joined the Armenian Astronomical Society in April 2007.



Vahe Petrosian



## Viktor Ambartsumian's 115 Memorial Anniversary



Prof Viktor Ambartsumian

Prof. Viktor Ambartsumian (1908-1996) is one of the greatest scientists of the XX century, the greatest Soviet astrophysicist and the founder of the theoretical astrophysics school in the USSR that has fundamentally contributed to various fields of astronomy and astrophysics, cosmogony, theoretical physics, mathematics, and philosophy. His revolutionary works on stellar evolution and activity of galactic nuclei turned over the development of astrophysics and gave life to our previously unchanged Universe. Ambartsumian was also a great organizer of science, an important political and public figure. He was the founder of the astrophysics departments at the Leningrad (St. Petersburg) and Yerevan State Universities, the Byurakan Astrophysical Observatory (BAO), journal *Astrofizika* (Astrophysics), one of the founders of the Armenian Academy of Sciences. Ambartsumian was the

Director of BAO in 1946-1988, the President of the Armenian Academy of Sciences in 1947-1993, the President of the International Astronomical Union in 1961-1964 and the President of the International Council of Scientific Unions (ICSU) in 1968-1972.

Victor Ambartsumian was born on September 18, 1908, in Tbilisi. Ambartsumian played a significant role in different fields, in particular, in the theory of multiple light scattering. The invariance principle, formulated in these works for the first time, had a wide application in a number of other fields of science.

Ambartsumian's investigations on the problem of stellar evolution brought in 1947 to the revealing of stellar systems of new type - stellar associations. The existence of stellar associations in the Galaxy, dynamically non-stable and disintegrating systems, was the first observational evidence in favour of continuing at present star-formation in it.

Ambartsumian put forward a hypothesis about the joint origin of the diffuse matter and stars of dense matter of unknown nature – protostars. Ambartsumian's studies of early stages of evolution of stars and stellar systems are rather significant. It was shown that in the early stages of evolution, the instability of state reveals itself, being the regular phase of the cosmogonic processes. Among these results the conclusions about the existence of stellar systems of positive total energy in the Galaxy, non-thermal nature of ultraviolet stellar radiation of T Tauri type and flare stars, are to be mentioned. New principle results were achieved by V.

Ambartsumian in the study of evolution of galaxies. It was shown for the first time that the central regions of galaxies - their nuclei, play a decisive role in the phenomena of instability, observed in galaxies. Besides the stars and diffuse matter, they must contain dense massive bodies of unknown nature. The activity of galactic nuclei defines their evolution. At present the active galactic nuclei (AGN) are the most intensively studied objects in extragalactic astronomy.

Ambartsumian was awarded governmental prizes, orders and medals of a number of countries:

- 1940 - Title of Honorary Scientist of the Armenian SSR
- 1968 - Title of the Hero of Socialist Labour with investiture of Lenin Order and Gold medal "Hammer and Sickle"
- 1968 - Title of Honorary Scientist of the Georgian SSR
- 1978 - Title of the Hero of Socialist Labour with investiture of Lenin Order and Gold medal "Hammer and Sickle"
- 1994 - Motherland Order and title of "National Hero of Armenia"
- And many more.

Victor Ambartsumian died on August 12, 1996 in Byurakan.

In 2010, Viktor Ambartsumian International Science Prize was created. It is one of the important awards in astronomy/astrophysics and related sciences. It is being awarded to outstanding scientists having significant contributions in physical-mathematical sciences from any country and nationality.

## OTHER NEWS

### **New JWST portrait showcases the dazzling Saturn's rings**

Saturn's rings are dazzling in a new image taken by the James Webb Space Telescope (JWST). The effect is caused by methane gas in Saturn's atmosphere. It absorbs incoming sunlight, making the planet appear dark. On the other hand, Saturn's rings lack methane, so they are the standout feature at this wavelength. They consist of pieces of ice and rock ranging in size from a grain of sand to earthly mountains.

We learn from the [Astronomy magazine](#) that the photo was snapped on June 25, and is among several taken using the Near-Infrared Camera (NIRCam) as part of the Webb Guaranteed Time Observation program 1247. "Such images test JWST's ability to detect faint moons around the planet". If any new moons are discovered, scientists will be able to piece together more of Saturn's past and gather a complete picture of the current-day Saturnian system.



## 100 Hours of Astronomy



100 Hours of Astronomy is one of the IAU Outreach Global Projects of the year officially endorsed by the IAU.

From 1 to 4 October, the IAU Office for Astronomy Outreach (OAO) will carry on the tradition of commemorating 100 Hours of Astronomy. The theme for this year revolves around “One Planet.” The aim is to create an experience that fosters a sense of unity, connection, and togetherness among the public, inspired by the camaraderie astronauts feel when returning from space missions, called the Overview Effect.

*“[The Overview Effect](#) is a term coined to describe a profound and transformative shift in consciousness that astronauts often experience when viewing the Earth from space. It is a cognitive and emotional response to the breathtaking sight of our planet from orbit or the Moon.”*

There will be a series of events celebrating the beauty of our shared planet and promoting global cooperation, environmental stewardship, and a collective commitment to a better future. You can [register your event](#) to be part of this Global Outreach Project!

*ArAS News* is the electronic newsletter of the Armenian Astronomical Society. It was distributed to all ArAS members from the beginning of 2002, 4 times a year, typically at the end of each trimester. In 2009-2014, 8 issues annually and since 2015, 12 issues annually have been released.

ArASNews publishes information materials on ArAS, Byurakan Astrophysical Observatory and the Armenian astronomy in general, reports on ArAS Annual Meetings and participation of the Armenian astronomers in important international meetings, articles on occasion of anniversaries of famous Armenian astronomers and ArAS members, acceptance of new ArAS members, achievements of the Armenian astronomers, astronomical education in Armenia, Armenian archaeoastronomy, as well as science articles (reviews) on important studies.

So, if you want to share your studies with the scientific community, send us your articles to [melin.asryan@gmail.com](mailto:melin.asryan@gmail.com). They will be reviewed for the publication in ArAS Newsletters next issues.

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