

ArAS News

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

No. 32 (June 30, 2009)



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

INTERNATIONAL YEAR of ASTRONOMY NEWS



Update from the **International Year of Astronomy (IYA-2009)** events (world and Armenia).

Latest activities and events:

- May 15 IYA-2009 meeting at the Yerevan State University (YSU)
- May 16 IYA-2009 meeting at Yerevan Phys.-Math. school
- May 19 IYA-2009 meeting at Yerevan “Quantum” specialized school
- May 26 Meeting between astronomers and historians / archaeologists on archaeoastronomy matters
- June 17 Launch of Lunar Reconnaissance Orbiter (LRO) and Lunar CRater Observation and Sensing Satellite (LCROSS)
- June 19 Young artists’ exhibition and contest “*The Universe and me*” combined with the visit of professional artists
- June 27 Meeting at Karahunge (the Armenian “Stonehenge”) in frame of the AMAP (Armenian Monuments Awareness Project)

Next important events planned in Armenia:

- July 1-8 Third Byurakan Summer School for the Yerevan State University (YSU) students in Byurakan
- July 6-8 ArAS VIII Annual Meeting, Byurakan
- July 22 Total Solar eclipse (India, Bangladesh, China), longest eclipse of the 21st century (6^m39^s)
- July Start of science operations of Gran Telescopio Canarias (GTC), largest in the world
- Aug 3-14 IAU XXVII GA in Rio de Janeiro, Brazil
- Aug 19-24 UNESCO Congress in Kazan, Russia: “Astronomy and World Heritage”

The IYA webpage is available at <http://www.astronomy2009.org/> and the IYA-2009 Armenian webpage, at http://www.aras.am/IYA_2009.htm.

FUTURE MEETINGS



IAU GA XXVII. The International Astronomical Union (IAU) XXVII General Assembly will be held on **August 3-14, 2009** in **Rio de Janeiro, Brazil**. The General Assembly will have 4 Invited Discourses, 6 Symposia, 16 Joint Discussions, 10 Special Sessions, the Women in Astronomy Lunch Meeting, and 2 Young Astronomers' Events. For the details, please visit the IAU GA web site, which is available at <http://www.astronomy2009.com.br/>

THIRD BYURAKAN SUMMER SCHOOL for YSU STUDENTS

The school will be held on **July 1-8, 2009** in **Byurakan**. 32 Yerevan State University (YSU) students of the Department of Physics will stay in the observatory and learn astronomy, as well as will have possibility to meet Byurakan researchers and see the work of the research groups. The Byurakan astronomers will give reviews on different important topics of modern astrophysics, as

well as a lot of useful practical exercises, including observations will be organized for the students. Competitions and various interesting social events are also planned.

Organizers: Armenian Astronomical Society (ArAS), Byurakan Astrophysical Observatory (BAO)
Organizing Committee (OC): A.M. Mickaelian (Chair, aregmick@aras.am), L.A. Sargsyan (Secretary, sarl11@yahoo.com).

During the last days of their stay, the students will have chance to attend the sessions of the **ArAS VIII Annual Meeting** (see next section).

ArAS VIII ANNUAL MEETING



ArAS VIII annual meeting will take place on **July 6-8, 2009 in the Byurakan Observatory**. Given that this year we all celebrate the International Year Astronomy, the meeting will be devoted to more general topics, including relation of astronomy and astrophysics to other fields of science and society. The first day (July 6) will be devoted to the astrophysical results, and two other days (July 7-8) will be devoted to Astrobiology, Archaeoastronomy and other general topics.

Organizers: Armenian Astronomical Society (ArAS), Byurakan Astrophysical Observatory (BAO)
Organizing Committee (OC): H.A. Harutyunian (Co-Chair, hhayk@bao.sci.am), T.Yu. Magakian, N.D. Melikian, A.M. Mickaelian (Co-Chair, aregmick@aras.am), T.H. Movsessian, E.H. Nikogossian (Secretary, elena@bao.sci.am), E.S. Parsamian, L.A. Sargsyan.
Sponsors: Armenian State Committee for Science (SCS), ArAS

Topics:

- Achievements of the Armenian astronomy
- Astrobiology, life in the Universe
- Archaeoastronomy and history of astronomy
- Astronomical education
- The role of science and astronomy in the society
- Public outreach, amateur astronomy
- Scientific tourism and scientific journalism

The full program is available (in Armenian) at <http://www.aras.am/Meetings/arasVIIIprogram.pdf>.

Representatives from RA National Assembly and Government, fields of culture, other sciences, journalists, teachers, amateurs, and other interested people are invited.

The registration may be done at the registration desk. Summaries of talks will be published electronically through our Newsletter.

For further information, please contact *Dr.* E.H. Nikogossian at elena@bao.sci.am. A webpage at <http://www.aras.am/Meetings/arasVIIannualmeeting.html> is set up with more details and an online registration form is available at <http://www.aras.am/Meetings/arasVIIIregistration.html>.

FRENCH-ARMENIAN WORKSHOP



A small workshop will be organized on **22-24 September 2009** in the **Byurakan Astrophysical Observatory**, "**Present and future of collaborations in astronomy between France and Armenia**". Collaborations in Astronomy between France and Armenia are presently partially supported by PICS (CNRS), which provides also an administrative and institutional framework to these collaborations.

All PICS have a limited duration of 3 years, and this one will end in December 2009. One of the aims of this workshop is to make an assessment of the activities financed by the PICS. Another aim is to discuss about the future of the collaborations and possibly about new orientations. The workshop will be divided in two sessions: a scientific one and a political one (including a discussion about teaching and training of young researchers). The scientific session will consist of oral presentations of results and activities in current collaborations. To enlarge the view, it is also planned to invite presentations concerning collaborations outside the PICS, and possibly from other scientific domains. The political session will consist in a round table with, if possible, representatives of potential funding institutions.

About 20 astronomers will participate, including PICS members and collaborators, invited speakers for collaborations from outside the PICS and possibly from other domains than astronomy. For registration, send an email to **Georges Alecian** (georges.alecian@obspm.fr) and **Haik Harutyunian** (hhayk@bao.sci.am) before 3 September 2009 (it is advised not to wait so late if you need to book rooms in hotels of Yerevan). We will reply to confirm your registration and the scheduling of your presentation.

For **accommodation**, we suggest the YSU Guest house (we cannot guarantee available rooms), or the hotel of the Byurakan Observatory. There will be no special support from the workshop organization concerning travel and accommodation. But, we can provide practical information for those who need. Other practical information: there are no fees, no grant for travel.

There will be no proceedings, but a final report for the PICS, and a short document gathering the conclusions.

Georges Alecian

ANNIVERSARIES



HRANT TOVMASSIAN – 80. On June 3, Hrant Tovmassian, one of the most famous Armenian astronomers, celebrated his 80th anniversary. It is hard to overestimate his numerous scientific results, as well as administrative, teaching, editorial, and organizational activity. Most of Tovmassian's very productive creative life has passed in the Byurakan Observatory, and now it is being successfully continued in Mexico. The significant part of achievements of the Armenian astronomy in the field of radioastronomy is connected with Tovmassian's name, and during the last years, he obtains important results in other fields of astronomy.

Hrant Mushegh Tovmassian was born on June 3, 1929 in Yerevan. He entered the Yerevan State University (YSU) Department of Physics in 1948 and graduated from it with a specialization of Astrophysics in 1953. In the same year he joined the staff of the Byurakan Astrophysical Observatory (BAO). He was a post-graduate at BAO in 1953-1956, and took his Ph.D. degree in Physical-Mathematical Sciences in 1958 under the supervision of Prof. S.E. Khaikin (*"Increase of the sensitivity of interferometric radio telescopes"*). In 1969, at the age of 40 (one of the youngest), Tovmassian became a Doctor of Physical-Mathematical Sciences (thesis: *"Optical and radio studies of galaxies and clusters of galaxies"*). He was the Scientific Secretary of BAO in 1968-1972, Head of Laboratory in 1972-1992, Deputy Director of BAO on Science in 1979-1986, Leading Research Associate and Head of a research group since 1986. Tovmassian has lectured at the YSU Chair of Astrophysics in 1967-1992, and became a Professor in 1986. Since 1992, he works at Instituto Nacional de Astrofisica, Optica y Electronica (INAOE, Puebla, Mexico) as a scientist of title "C". During different years, he has also worked and mainly made radio observations in UK, Australia, USA, Germany, Spain, and South Korea. He has been the supervisor of numerous theses both in Armenia and Mexico.

Prof. Tovmassian's main research fields are radiogalaxies, radio properties of Markarian galaxies, space astronomy, groups of galaxies, flare stars. His main scientific results may be given as:

- 1960s-1970s, Radio observations of more than 1000 Markarian galaxies on radio telescopes of the USA and FRG. Discovery of radio emission from Seyferts and BL Lac objects among them. Revealing differences of radio emission between Sy1 and Sy2 galaxies.
- 1970s, Radio observations of a few hundred clusters of galaxies and a consequent identification of detected radio sources with individual galaxies. It was shown that radio sources occur mainly in clusters of Bauts-Morgan type I, clusters having only one very bright galaxy.
- 1970s, By means of radio continuum (HII) and monochromatic (H I) observations of ~20 young stellar clusters it was shown that around some of them exist expanding gas clouds.
- 1970s-1980s, Discovery of supershort (spiky) flares of duration of a few tenths of a second by observations with specially constructed two-color fast photometer. It was shown that spiky flares usually appear on the declining part or after the usual flares of duration of a few minutes, and that they usually are bluer. It was shown that the multiplicity of forms of stellar flares depend on the position of flare on the star's disc (with V.P. Zalinian, et al.).
- 1980s, Study of the IR radiation of more than 100 late-type giant stars with anomalous chemical composition (excessive abundance of C, Zr, La, etc.); discovery of IR excess for many of them proving the presence of dust shells (with Yu.K. Melik-Alaverdian, et al.).
- 1980s Study of the UV spectra of galaxies by means of the Soviet space observatory Astron; significant increase of radiation at far UV was detected for some galaxies.
- 1984-2004, Spectroscopic studies of the Second Byurakan Survey galaxies aimed at study of the sample at $B < 17$; discovery of many new Seyferts, LINERs, Starbursts, BCDGs, etc. (J.A. Stepanian, L.K. Erastova, V.H. Chavushian, H.M. Tovmassian, in collaboration with astronomers from Mexico).
- 1987, Designing and building of the space observatory "Glazar" (40 cm telescope, 1.3 degree field of view), which operated onboard Soviet space station "Mir". About 20 O-type stellar associations were observed at 1640 Å. Due to larger influence of extinction at 1640 Å, a number of new O-associations were detected in directions of known associations.
- 1990-1996, Study of OB Stellar Associations with the Glazar UV space observatory at 1640 Å wavelength; O-B-A type stars were observed in the direction of 20 associations, 93 stars with dust envelopes were found, half of them also being IR sources (with R.Kh. Hovhannessian, R.A. Epremian in collaboration with astronomers from Switzerland).
- 2003, Suggestion of a unified phenomenological model of light curves of stellar flares to explain a wide variety of flares. An assumption was made that a flare consists of a fast and relatively strong rise in brightness followed by a slow and fainter component. The latter is a result of re-radiation of the part of the energy of the prime flare by the photosphere of the star (with V.P. Zalinian, in collaboration with astronomers from Mexico).

Tovmassian's contribution in astronomical instrument-making is also significant. He was the initiator and direct supervisor of the "Glazar" (launched on the *Mir* Space Station in 1987) and "Glazar-2" (1990) space telescopes, the project of "Ashot" (1988) space observatory, the offset guiding system (1984) and two-channel fast photometer (1987) of "Astron" space observatory.

He was a member (1969-1986) of Editorial board and Editor-in-Chief (1986-1991) of "Communications of the Byurakan Observatory", member of editorial boards of "Astrofizika" (1969-1986) and "Zemlya i Vselennaya" (1975-1996) journals. Tovmassian was a member of BAO

Scientific (1969-1992) and Specialized (1976-1992) Councils, Council of All-Union Astronomical-Geodetic Society (VAGO, 1975-1983), Joint USSR NAS and State Space Astronomical council (1978-1991), as well as a number of scientific societies: IAU (1967), EAS (1990), Mexican Scientific Society (1994), and ArAS (2002). In 1985, for the space project "Astron" he was awarded the State Prize of the Armenian SSR.

Prof. Tovmassian published 167 papers in scientific journals, about 50 papers in the proceedings of International Conferences, 12 books, including monographs, textbooks for schools and university courses, and popular books being important for popularization of astronomy in Armenia. Among most important are: "Astronomy. Textbook for secondary schools" (1970, 1971, 1973, co-authors: M.A. Arakelian, A.T. Kalloghlian, L.V. Mirzoyan), "Crazy Galaxies" (1974), "Radioastronomy" (1976), "Exploding Worlds" (1979), "Extragalactic radio sources" (1986), and "Radiogalaxies" (1987).

Areg Mickaelian



MARTIN ABRAHAMIAN – 60. Martin Abrahamian is one of the known physicist theoreticians working in the field of astronomy, as well as one of the reknown professors at the Yerevan State University (YSU). He was born on 18 March 1949 in Yerevan. He graduated from the YSU Department of Physics in 1971 and started his Ph.D. studies. In 1976, Abrahamian defended his Ph.D. (Candidate of Science) thesis in theoretical and mathematical physics "On the Equilibrium Figures of Two-component Gravitating Systems" (at the YSU) and in 1986, he got his Doctoral degree in Astrophysics from the Byurakan Astrophysical Observatory (subject: "The Dynamics of Enclosed Gravitating Subsystems").

Martin Abrahamian is a Professor at the Department of Physics, YSU, and a Professor and Head of Chair of Physics, Armenian State Pedagogical University.

His main research fields are: theoretical physics, superdense matter, astrophysical jets, astrophysics of gravitating systems, plasma physics, magnetic hydrodynamics, stellar dynamics, dynamics of galaxies and their subsystems. Beside his work in Armenia for most of the time, he has also worked at the Budapest University (1985), Nanjing, Beijing, and Shanghai Universities in China (1990-1991). He has published more than 80 papers in *Astrophysics* and other international journals, papers in proceedings of international meetings.

For many years, Abrahamian teaches at the YSU. The academic courses are: Physical principles of mechanics; Thermodynamics & molecular physics; Electricity & magnetism; Wave physics & optics; Quantum physics; Hydrodynamics; Non-linear wave theory.

He is a member of the European Physical Society (EPS), Armenian Physical Society (APS), member of the Scientific doctoral theses council at the Byurakan Observatory and the YSU Physics Department council. He is an Academician of the International Academy of Ecology and Life Protection Sciences, Academician of the Canadian Informatization Academy, Academician of the Technical Academy of Russian Federation.



ASHOT CHILINGARIAN – 60. Prof. Ashot Chilingarian is the Director of Yerevan Physics Institute (YerPhI), named after Artem Alikhanyan and head of the Cosmic Ray Division, one of 5 divisions of YerPhI. He earned his Ph.D. in 1984 and Doctor of Science in Physics and Mathematics in 1991 from YerPhI. He was born on May 18, 1949 in Yerevan. From 1971 to 1993 he was a scientist, then senior scientist at the Yerevan Physics Institute. In 1993 he became the deputy director of the Institute as well as head of the Cosmic Ray Division. Since 1975 he has been a lecturer of Physics and Software Engineering at Yerevan State University (YSU). His expertise is in the sphere of high energy astroparticle physics, particle detector instrumentation and advanced statistical

computation, including Bayesian and neural network models. His current interests include the Galactic and Solar cosmic ray origin and acceleration, detection of secondary cosmic ray fluxes on earth surface, Space Weather and supernovae explosions.

Prof. Ashot Chilingarian has won more than 20 research grants from foundations such as the International Science and Technology Center (ISTC), International Technology and Science foundation (INTAS) and others. He is the author of the ANI (Analysis and Nonparametric Inference) computer code library, which has been extensively used during the last few decades for multidimensional analysis of data from modern cosmic ray detectors. He also introduced the "multidimensional nonlinear cuts" method for analyzing data from the Atmospheric Cherenkov Telescopes (ACT) and event-by-event analysis for Extensive Air Shower experiments. Under his supervision, the Data Visualization Interactive Network (DVIN) was developed for the Aragats Space Environmental Center. This project won a UN World Summit on Information Society award in Geneva in 2003.

The main scientific achievements include:

- Discovery of the features of Galactic Cosmic Rays' spectra such as: very sharp change of the power spectra index (~ 1) for the light nuclei group at 2-4 PeV and no pronounced change for the heavy nuclei group (at least for energies 20-30 PeV) Discovery of charge dependent "knee" in energy spectra pointed on the shock acceleration initiated by the supernovae blasts as most probable mechanism of particle acceleration.
- Discovery of energetic protons (with energies greater than 20 GeV) accelerated in vicinity of Sun at 20 January, 2005 during Ground Level Enhancement (GLE) event N 69.

Prof. Chilingarian is the founder of the Aragats Space Environment Center (ASEC), which is equipped with new hybrid particle detectors that simultaneously measure charged and neutral fluxes in secondary cosmic rays. He is also the author of the concept of world-wide network of new particle detectors for research in space weather and solar physics named SEVAN (Space Environment Viewing and Analysis Network). Nodes of the SEVAN network are now operating in Armenia, Bulgaria and Croatia.

He proposed using the large ground-based detectors on Mt. Aragats for the detection of low fluxes of charged particles to detect highest energy solar cosmic rays; violent solar eruptions of 23rd solar activity cycle indicates that the CRD research stations on Mt. Aragats are ideally located for this purpose.

Prof. Ashot Chilingarian has been lecturing at YSU more than 30 years. He delivers courses on Neural Networks, Data Analysis, Introduction to High Energy Astrophysics, Models of Stochastic processes in Cosmic Ray Physics and other for students of Applied Mathematics and Physics departments. Recently he organizes Space Education Center in Yerevan Physics Institute. Outside his field, Prof. Chilingarian has been interested in applying his data analysis methods to pattern recognition and genome analysis. He was awarded a research grant from the Civilian Research and Development Foundation (CRDF) to develop new methods of DNA micro-array data treating based on quantification of different types of gene expression in normal and tumor-affected tissues. The work culminated in a patent application by Utah's Huntsman Cancer Research Center.

Prof. Ashot Chilingarian has authored ~ 300 scientific publications and served on many international scientific boards. He has been chairperson of several international conferences and given numerous presentations in the fields of high energy and cosmic ray physics and on new methods of data analysis.

Currently he is Armenia's representative to COSPAR (the COMmission for SPace Research) and International Heliophysical Year 2007, spokesperson for ANI and ASEC collaborations. In addition, he is on the board of the Armenian National Foundation of Science and Advanced Technologies (NFSAT).



GEORGES ALECIAN – 60. Dr. Georges Alecian is already 60. But he does not like speaking about the age. After 35 we are climbing down from our life-hill, and the older we are, the faster the pace gets. So it is better to consign to oblivion birthdays after childhood, he wrote to me in response to my greetings. That is why I decided to take some kind of different approach to this jubilee article. I will not write a lot about his scientific achievements, about the problems of element stratification in stellar atmospheres, about microscopic diffusion, radiative transfer and collision acts, diffusion velocities, different theoretical approaches to these very serious problems.

He visited Armenia for the first time when the country was independent already. It was in 1993 and that was the worst time for Armenia. Karabagh was at war, the majority of the population could only enjoy electricity at their homes for as little as two-three hours a day. However, it was the beginning. Only in two years by his initiative the first astronomical meeting in the independent Armenia was organized. That was French-Armenian astronomical colloquium held in Byurakan in 1995, which became the first very bright event after “dark ages”.

Since that time Georges Alecian is closely tied with the astronomical society in Armenia and tries to make French-Armenian relations in astronomy more efficient and fruitful. Very smoothly he succeeded Dr. Daniel Kunth as the French coordinator of PICS in 2006 when Dr. Kunth decided to hand over his permissions after a decade of very effective work. Thus the new three year PICS was approved thanks to his efforts as well. At present he is one of the co-supervisors of an Armenian PhD student from Byurakan and will provide for the research very recent observational data obtained by COROT space program.

So on behalf of the ArAS and other members of Armenian scientific community I would like to congratulate Georges Alecian once more upon his birthday although he does not like jubilees and wish him many-many healthy years in forthcoming future, many new interesting scientific objects and, of course, a lot of personal happiness. And also I cannot resist the temptation to write the word I usually put at the end of my letters to him: “chvakhenas”.

Haik Harutyunian

NEW ArAS MEMBERS

We are happy to announce that we have 4 new ArAS members:

- **Dr. Vardan Adibekyan** (Byurakan Astrophysical Observatory, Armenia),
- **Dr. Ruben Buniatian** (Institute of Hydroponics Problems, Armenia),
- **Dr. Artur Hakobyan** (Byurakan Astrophysical Observatory, Armenia),
- **Dr. Alain Sarkissian** (LATMOS, Paris, France).

Alain Sarkissian is a French-Armenian astronomer engaged in planetary science and Virtual Observatories (he is a member of the VO-France). Vardan Adibekyan and Artur Hakobyan are the winners of the ArAS Annual Prize for Young Astronomers (2008) and have recently defended their Ph.D. theses. Ruben Buniatian is a researcher at the Institute of Hydroponics Problems. He will give a talk at the ArAS VIII Annual Meeting on the activities of the amateur astronomy in Armenia.

At present **ArAS has 81 members from 18 countries** and may in fact be regarded as an international organization. 51 members are from Armenia (37 BAO, 6 YSU, 4 YerPhI, 4 other), 9 from the USA, 3 – France and Mexico, 2 – Russia, 1 – Bulgaria, Canada, Chile, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Romania, Spain, UK, and Ukraine.

The full list of ArAS members with links to their personal webpages is available at <http://www.aras.am/Members/members.html>.