

# ArAS News

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

## JENAM-2011 in ST. PETERSBURG



JENAM-2011

European Week of Astronomy and Space Science

4-8 July 2011

Saint Petersburg, Russia

The Joint European and National Astronomical Meeting JENAM-2011, the "European Week of Astronomy and Space Science" (EWASS) was held on July 4-8 in St. Petersburg, Russia. It was jointly organized by the European Astronomical Society (EAS) and Euro-Asian Astronomical Society (EAAS, Russia). The program consisted of 9 EAS Symposia and 10 Special Sessions (SPS), as well as plenary sessions, EAS and EAAS General Meetings, EAS Council and Business meetings, and some other additional sessions.

### **Symposia:**

S1: *Magnetic Universe*

S2: *Planets of the Solar System and Beyond*

S3: *The Sun: New Challenges*

S4: *Solar System Measurements of the Next Decade*

S5: *Physics of Stars*

S6: *Combined Radio/X-rays Approaches to Relativistic Astrophysics*

S7: *Far-Infrared Spectroscopy comes of age: the Herschel view*

S8: *Status and prospects in high-energy & particle astrophysics across the electromagnetic spectrum*

S9: *Galaxy Evolution: the key for Galaxy Formation theories*

### **Special sessions:**

SPS1: *Close Binaries with Compact Components*

SPS2: *Massive Stars Formation*

SPS3: *Science with the Virtual Observatory*

SPS4: *What powers AXPs and SGRs?*

SPS5: *Minor merging as a driver of galaxy evolution*

SPS6: *Space Projects*

SPS7: *The Missing Baryons and the Warm-Hot Intergalactic Medium: Current State and Future Prospects*

SPS8: *Astronomy Education and Public Outreach*

SPS9: *Amateur and professional astronomers in Europe*

SPS10: *European Astronomy: Moving Forward*

Many important scientists were present, such as Thierry Courvoisier (Switzerland, EAS President and Director of ISDC), EAS Vice-Presidents Jan Palous (Czech Republic) and Mary Kontizas (Greece), Alexander Stepanov (Director of Pulkovo Observatory and Chair of JENAM-2011), Tim de Zeeuw (Netherlands, ESO Director General), Joachim Krautter (Germany, EAS Past-president), John Davies (UK, OPTICON Project Manager), Johannes Anderson (Sweden, Director of NOT), Goran Pilbratt (Project Scientist, Herschel Space Observatory), Alice Rajewsky (Scientific Officer of ERC), Rashid Sunyaev (Director of MPA, Germany), Anatol Cherepashchuk (Director of Sternberg Institute of Astronomy, Russia), Boris Shustov (Director of Institute of Astronomy of RAS, Russia), Andrey Finkelstein (Director of Institute of Applied Astronomy, Russia), Yaroslav Yatskiv (Director of Main Astronomical Observatory, Ukraine), Co-Presidents of EAAS Nikolai Samus (Russia) and Mikhail Ryabov (Ukraine), Jean Clavel (Spain, Head of Astronomy and Fundamental Physics Division of ESA), et al.



*The Director of the Pulkovo Observatory, Chair of JENAM-2011 OC **Alexander Stepanov** (Russia) and EAS President, Director of ISDC **Thierry Courvoisier** (Switzerland) during JENAM in St. Petersburg*

Important talks were given and important matters were discussed at **plenary sessions**. Plenary talks were given by Gennadi Bisnovaty-Kogan (Space research Institute, Russia), Didier Queloz (Observatoire de Geneve, Switzerland), Suzy Collin-Zahn (Observatoire de Paris, France), Alice Rajewsky (ERC), Jean Clavel (Head of the Astrophysics Missions Division, ESA), Johannes de Bruijne (Deputy project scientist, “Gaia” mission, ESA), Johannes Benkhoff (“BepiColombo” mission, ESA), F. Panessa (INAF-Roma, Italy; “Highlight talk by a young outstanding researcher”), Tim de Zeeuw (Director General of ESO), Marat Gilfanov (MPA-Garching, Germany and IKI, Moscow, Russia), and Xavier Barcons (CSIC-UC - Santander, Spain). In addition, on Tuesday the 5<sup>th</sup>, the morning plenary session started with the award of the **EAS “Lodewijk Woltjer Lecture”** to **Prof. George Miley**, for his fundamental contributions to the study of radio galaxies, and was continued with the **“Struve award” of the Pulkovo Observatory**, to **Roger-Maurice Bonnet** (Executive Director of International Space Science Institute (ISSI) in Bern, Switzerland), for his scientific achievements and his significant contributions towards the advancement of space research in Europe. On Thursday the 7<sup>th</sup>, the **EAS “Tycho Brahe Prize”** for 2011 was awarded to **Prof. Michael Perryman** (University of Bristol), the mission scientist, and subsequent mission manager, of “Hipparcos” at ESA. Important discussions were held about the future large facilities, medium size (2m-4m) telescopes, space projects, and future of the European astronomy.

**Dr. Areg Mickaelian** participated in JENAM-2011 **from Armenia** and he was one of the Conveners of SPS3. He contributed in SPS3 with an invited talk and in SPS8 with a contributed talk. **Dr. Igor Chilingarian** (Russia and France) contributed with 3 talks in S9, SPS3, and SPS5. Mickaelian also participated in the EAS and EAAS General Assemblies on July 6, and EAS Business Meeting on July 5 (with a report on SREAC activities in 2009-2011).

Next JENAM/EWASS will take place in Rome, Italy on 2-6 July 2012.

More information about JENAM-2011 is available at <http://jenam2011.org/>.

*Areg Mickaelian*

## **ANANIA SHIRAKATSI SEMINAR in BYURAKAN**



As it was informed before, UNESCO has included Anania Shirakatsi's 1400<sup>th</sup> anniversary in the list of its important anniversaries of 2012. At present, preliminary works for the preparation of this anniversary are being carried out. Meanwhile, a 2-day seminar on Anania Shirakatsi's heritage and other historical-astronomical matters will be organized at BAO during July 13-14, 2011, where scientists from BAO, Institute of History, Institute of Archaeology and Ethnography, Matenadaran (the Museum of Ancient Manuscripts), YSU, Anania Shirakatsi College and other institutions, as well as *Prof. Hrach*

Martirosyan from Leiden University (Netherlands) will participate. The program includes talks, visit to BAO 2.6m telescope and V.A. Ambartsumian's museum, and discussions. The list of talks is as followed:

### **July 13, Wednesday**

Lilit Nazaryan (Anania Shirakatsi College): *About the book "Anania Shirakatsi"*

Hrach Martirosyan (Leiden University): *Anania Shirakatsi's heritage: a philological review*

Hrach Martirosyan (Leiden University): *History of the Armenian astronomy from the linguistic point of view: the structure of the Universe and star-names among the Armenians*

Nora Yerznkyan (YSU): *Recovery of Anania Shirakatsi's 500-cycle*

Hrach Martirosyan (Leiden University): *Division of the time among ancient Armenians: the seasons, names of months, days, hours*

R.H. Vardanyan, L.A. Sargsyan, G.H. Simonyan, G.A. Harutyunyan (YSU): *Author of the time rule*

L.A. Sargsyan (YSU): *Religion-historical subtexts in Anania Shirakatsi's works*

Areg Mickaelian (BAO): *Anania Shirakatsi's 1400<sup>th</sup> anniversary events*

### **July 14, Thursday**

Areg Mickaelian (BAO): *Coordination of the historical-astronomical matters in Armenia*

Elma Parsamian (BAO, TBC): *Ancient astronomy in Armenia*

Lusine Margaryan (YSU): *Eratosthenes and expansion of his ideas in Armenia*

Areg Mickaelian (BAO): *On the Armenian names of constellations*

Haik Harutyunian (BAO): *Ancient Armenian names of planets*

Grigor Brutian (BAO, TBC): *Armenian calendar*

## **ARMENIAN-RUSSIAN PROJECT ON REVEALING SPACE JUNK FRAGMENTS**

Since October 4, 1957 vast number of metallic debris have been gathered in the Earth centered orbits called space junk or space waste. They have an anthropogenic origin and for a certain period have been used for various purposes but no longer have any application. There are spent rocket stages, collision fragments, clusters of small objects, etc. Altogether these fragments and unused satellites weigh quite a lot, nearly, 5000-6000 tons. As the orbits of these objects often overlap the trajectories of spacecraft, debris is a potential collision risk. A 1-kg object impacting at 10 km/s, for example, is probably capable of catastrophically breaking up a 1,000-kg spacecraft if it strikes a high-density element in the spacecraft. Thus there is real deadly threat for operating satellites and especially for manned space stations. Moreover, the situation is estimated to become extremely unfavorable for new satellite launch in some 10-15 years. Therefore all the great cosmic powers desperately seek for ways to clean the near-Earth space from the mentioned cosmic junk.

It is clear that the cleaning process, if possible, can be initiated if the orbital characteristics of debris to be cleaned are known. However, out of the estimated 600,000 objects above 1 centimeter diameter, only about 19,000 can be tracked as of today. This leads to wide uncertainties in the estimated quantities of debris, and the predicted path of their orbits. This situation makes very important the role of the first stage of revealing the fragments to be eliminated and therefore various national and international projects launched for this purpose.

In August 2010 a Russian delegation from the Keldish Institute for Applied Mathematics visited the Byurakan Astrophysical Observatory (BAO) to negotiate on the collaboration in the field of revealing the cosmic junk fragments. Actually this team headed by *Dr. Igor Molotov* had been working in this field for several years. Last year a general Memorandum has been signed between Armenian and Russian sides on the cooperation in the frame of an International project making provision of joint activity in observational studies of near-Earth space as well as in training of students for these works.

In May 2011 another representative delegation from Russia visited Armenia for more detailed discussions. The Keldish Institute, The Space Agency “*Roscosmos*”, as well as the company “*Technics-Project*” have been represented in the group. During their visit to BAO they met the specialist engaged in the reconstruction of telescopes and observations, inspected the situation with the 2.6m and 1m Schmidt telescopes, as well as the site where special observational equipment for cosmic junk revealing would be mounted. The Armenian and Russian sides agreed that the needed for the mentioned purposes observations could be carried out at BAO, which has skilled observers, necessary technique and infrastructure. Russian side is going to back the observations and renovation of obsolete technical parts of telescopes. Such an investment undoubtedly will improve the observational base of the observatory and increase its efficiency, which was and is required for fundamental studies as well. Moreover, participating in this project our young specialists will have very good chance for earning money using and improving their professional skills. Nowadays this possibility is very important and it will encourage new talented young people to launch their career at the observatory and be hired for astrophysical studies.

*Haik Harutyunian*

## **ANSEF ANNOUNCES 2012 COMPETITION**

# A . N . S . E . F .

The Armenian National Science & Education Fund

The Armenian National Science & Education Fund invites grant applications for the 2012 competition. Applicants are to submit their applications through the ANSEF website portal, accessed from the top bar of the ANSEF website ([www.ansef.org](http://www.ansef.org)) or directly through the link <http://ansef.herokuapp.com>. The deadline for submissions is August 31, 2011. Competition results will be announced by January 1, 2012. For further questions, one may contact [help@ansef.org](mailto:help@ansef.org). For any technical questions about the ANSEF portal, one may contact [website@ansef.org](mailto:website@ansef.org).

Since 2001, ANSEF distributes 25 grants annually to research groups based in Armenia and each group receives USD 5000 for individual financial support, equipment and/or science missions. Since 2001, more than 500 senior and junior scientists and scholars have benefited from the support that ANSEF has provided. Their research work has resulted in at least 250 articles published in prestigious international academic journals.



In the field of astronomy and astrophysics, ANSEF has supported 30 projects by 20 Principal Investigators involving more than 70 scientists, including 24 from Byurakan Astrophysical Observatory (BAO) and 6 from the Yerevan State University (YSU). Areg Mickaelian (2001, 2002, 2007) and Ruben Andreatsyan (2004, 2005, 2011) have received 3 ANSEF grants each, Aram Saharian (2001, 2005), Gagik Ter-Kazarian (2004, 2006), Elena Nikogossian (2006, 2008), Abraham Mahtesyan (2006, 2010), Tigran Magakian (2002, 2011), and Artur Hakobyan (2010, 2011) – 2 ANSEF grants each.

## **BAO/ARAS ANNUAL PRIZE for the BEST SCIENTIFIC PAPER**



The Byurakan Astrophysical Observatory (BAO) and the Armenian Astronomical Society (ArAS) are pleased to announce joint award for the **Best scientific paper by BAO astronomers in 2011**.



Applications may be made by individual authors or groups of co-authors. The full paper published or

accepted for publication before Dec 15, 2011 is required. In case of several co-authors, at least half of them should be the 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 deadline for applications is December 15, 2011, and the recipient(s) will be announced at the end of December. The winner(s) will receive BAO/ArAS certificate and monetary award. We would like to make these awards traditional, so that they become annual.

## **“FROM THE DEEP OF AGES TO THE UNIVERSE” BOOK**



Former BAO researcher [Avetik Grigoryan](#) has presented an unprinted popular science book “*From the Deep of Ages to the Universe*” written by him in Armenian. 20 years of experience in educating astronomy and related scientific and technical disciplines (aeronautics, aviation and astronautics, as well as the fundamentals of physics, chemistry, biology, informatics, technology) for secondary school students resulted in writing this book, which required five years of hard work and persistent efforts. The author has passed through it as a real enthusiast and patriot, even having no hope for funding the publication of the book.

It presents a fascinating popular science story about the cognizing race of mankind in aeronautics, aviation, astronomy and astronautics starting from ancient ages to our time, as well as about the man-kind’s space future. Under the attraction of extraordinary phenomena and mysteries of the outer space this book leads the reader from simplest and ordinary notions to deep and encyclopedic knowledge in natural science and technology, awakes inquisitiveness, develops ability and tendency to creative research and investigation, as well as gives a comprehensive conception of Universe and the history of its study.

The book has serious methodological advantages against the existing text-books and encyclopedias. It's even hard to recall such a comprehensive and valuable popular science book, written by an Armenian author. The contribution of the Armenian nation and its famous scientists to the described areas is specifically presented in the historical context of development of science and technology in the world.

The book will be very interesting, inspiring and useful for a wide range of readers (especially secondary and high school students, teachers of natural sciences, amateur astronomers, and generally any inquisitive person). After being published it will surely have an appreciable success and will contribute to popularization and education of the mentioned areas in Armenia. By this it will promote particularly the future development of astronomy in Armenia.

The only problem for publication is funding. It requires sponsorship from all interested organizations and individuals, who are not indifferent to the scientific and technological future of Armenia.

See more detailed presentation of the book in the following [site](#) initiated by ArAS and created in cooperation with Aerospace Club led by Avetik Grigoryan.

## ANNIVERSARIES



**Gonzalo ALCAINO – 75.** *Dr. Gonzalo Alcaino, the President of the Isaac Newton international institute, recently celebrated his 75<sup>th</sup> anniversary. He was born in Santiago, Chile on May 28, 1936. When he was 42 he founded in 1978 the Isaac Newton Institute for research in Astronomy. Using the facilities of the observatories in the north of Chile namely, Cerro Tololo, ESO La Silla and Carnegie Las Campanas he produced till 1992 around 100 papers mostly in the field of globular clusters. Following cooperation with Russian astronomers in 1992 he opened a branch of the Institute in Moscow. This*

*endeavour was so successful that in 1997 he opened a branch in Crimea also with productive results. This fact lead him as from 2000 to establish branches in the following places: Armenia, Bulgaria, Kazakhstan, Kazan (Russia), Kiev (Ukraine), Odessa (Ukraine), St. Petersburg (Russia), Poland, Pushchino (Russia), SAO (Russia), Tajikistan, Uzbekistan and Yugoslavia. So far the branches of The Isaac Newton Institute of Chile have published up to 2010, 632 papers only in the main astronomical journals, namely The Astrophysical Journal (ApJ), The Astronomical Journal (AJ), Astronomy and Astrophysics (A&A), and the Monthly Notices of the Royal Astronomical Society (MNRAS). All papers together with the first page and the abstract are displayed in the website <http://www.ini.cl>. So far Alcaino has produced around 200 papers also shown in the website. The Armenian Branch of INI was created in June 2000 by an agreement between the INI President *Dr. Gonzalo Alcaino and the Director of the Byurakan Astrophysical Observatory (BAO), wishing to contribute to further development of scientific research in observational and theoretical astrophysics in Armenia. Since then *Dr. Areg Mickaelian is its Resident Director. At present, 25 researchers make up the INI Armenian Branch staff: Hamlet Abrahamian, Tigran Arshakian, Marine Avtandilyan, Smbat Balayan, Lidia Erastova, Kamo Gigoyan, Armen Gyulbudaghian, Artur Hakobyan, Susanna Hakopian, Haik Harutyunian, Lilit Hovhannisyan, Rafik Kandalyan, Artur Karapetian, Tigran Magakian, Norair Melikian, Areg Mickaelian, Gor Mikayelyan, Tigran Movsessian, Hripsime Navasardian, Arthur Nikoghossian, Elena Nikoghossian, Artashes Petrosian, Lusine Sargsyan, Parandzem Sinamyman, and Armen Sinanian. Six research groups***

have been created in the Armenian Branch for more purposeful work: “Physics and Evolution of Stars” (Head: T.Yu. Magakian), “Variable Stars” (Head: N.D. Melikian), “Physics and Evolution of Galaxies” (Head: A.R. Petrosian), “Surveys and Studies of New Objects” (Head: A.M. Mickaelian), “Observational Cosmology” (Head: H.A. Harutyunian), “Theoretical Astrophysics” (Head: A.G. Nikoghossian). During these 11 years, 60 high-level papers have been published in *ApJ*, *AJ*, *A&A*, and *MNRAS* in frame of the INI Armenian Branch, in fact the vast majority of the best papers produced by BAO researchers. Most productive members have been A.R. Petrosian (19 papers), A.M. Mickaelian (11), T.Yu. Magakian (10), K.S. Gigoyan (9), T.H. Movsessian (8), and N.D. Melikian (7). During its 11-years existence, INI have played an important role in the development of astronomy in Armenia, and we hope it will continue supporting the Armenian astronomers and the Armenian astronomy in general.



**Rudolf MURADIAN – 75.** *Prof.* Rudolf Muradian, an Armenian well-known physicist, celebrated his 75<sup>th</sup> anniversary. Though he is a physicist-theorist, he has a significant contribution in the solution of astrophysical problems. Rudolf Murad Muradian was born on June 19, 1936 in Yerevan. He graduated from the Moscow State University (MSU, 1959). In 1962 he successfully defended the candidate thesis in the field of physical-mathematical sciences. In 1962-1979 he worked at the United Institute of Nuclear Researches (Dubna, USSR, at present Russia) (since 1966, as a senior scientist), in 1970 he defended the doctorate

thesis in the field of physical-mathematical sciences, he was awarded a title of professor, in 1979-1986 he was the Head of the Department of Radiation Researches of Yerevan Physics Institute. In 1984-1995 he worked as a leading scientist at the Byurakan Astrophysical Observatory (BAO). Then he left for Brazil and now he works at the Institute of Physics of the Federal University of Baya. Muradian’s works refer to the problem of the theory of elementary particles, the large-scale structure of the Universe, cosmology, the theory of superdense matter, cosmogony and mathematical physics. He examined questions of higher symmetry of elementary particles. Proceeding from the properties of interactions of elementary particles, he proposed the hypothesis of scale invariance in the physics of high energy, which the so-called formula of quark account particularly results from. He discussed the origin of stars, galaxies and the Universe from the primary hadron, as well as the connection between the origin of rotation in the Universe and the magnetic fields. Muradian investigated the connection between the origin of magnetic fields and the superdense Universe, as well as between the cosmological constant and the rotation of the Universe. The hypothesis of cosmogony proposed by Muradian, connected with V.A. Ambartsumian’s theory of cosmogony, allows to explain the origin of rotation of cosmic objects (stars, galaxies, etc.) quantitatively, relying on the connection existing between the moment and the mass of the rotation known in the physics of elementary particles. As a result of the mentioned works Muradian published more than 100 scientific papers, including in international high-ranked journals of physics and astrophysics. Muradian is a Lenin prize winner (1988). In 1994 he was elected a member of the Academy of Vatican (Pontificia Academia), and in 1996 an academician of the National Academy of Sciences of the Republic of Armenia (NAS RA).



**Avetik GRIGORYAN – 50.** Former BAO researcher Avetik Grigoryan celebrated recently his 50th anniversary. He was born on June 13, 1961, in Yerevan. He has graduated from the Yerevan State University (YSU) in 1983 (Department of Astrophysics). In 1983-1985 he had served in the Soviet Army, and then worked at the Theoretical Department of BAO up to 1992, first as assistant astronomer and then junior research associate. After doing some research work on celestial mechanics, diffusion in nonhomogeneous medium,



light transfer and reverse problems on supernova envelopes and their spectra he started working on his Ph.D. thesis. However the political and military situation in the region at that time forced him to leave BAO and dedicate himself to defense problems. He led the theoretical research work in this area, which after 9 years was also stopped by cutting the funding for such projects. From 2000 he is working in "LTX-Credence Armenia" IT company (subsidiary of US based "LTX-Credence Corporation") as a technical writer. Besides that, in 1988 Grigoryan started his educational activity. He developed an extracurricular course for secondary school students for teaching interesting aerospace subjects such as astronomy, aeronautics, aviation and astronautics, though for deep understanding of all these disciplines the fundamentals of physics, mathematics, chemistry and technology were also included. Actually he created an educational center now called Aerospace Club, which is promoting its activity till now. The key feature of the course is the highly creative approach in both teaching and studying. He has arranged and carried out many educational and scientific events for secondary and high school students. Many of his students had significant achievements in studying natural sciences (many diplomas from international Olympiads and competitions) and after graduation became highly qualified physicists, mathematicians, programmers and engineers. Most of them are working now in Armenia, and some of them in USA, Europe and Russia (10 graduates have got Ph.D. degree, and one of them is already a Professor). They also contribute to education in Armenia by teaching in different educational centers. Based on his long experience in education he wrote a popular science book (*"From the Deep of Ages to the Universe"*), which required five years of hard work and persistent efforts (see more detailed presentation of the book in the ArAS and AYAS websites: <http://www.aras.am>, <http://ayas.ar.am/>). The author passed through it as a real enthusiast and patriot, even having no hope for funding the publication of the book. After being published it will surely have an appreciable success and will contribute to popularization and education of the mentioned areas in Armenia. By this it will promote particularly the future development of astronomy in Armenia. Avetik is an ArAS member, member of committee of the astronomy republican Olympiad, he has participated in International Olympiads in astronomy as a jury member and leader of the Armenian team.