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CONTENTS

ARMENIA AS AN IAU REGIONAL CENTRE OF ASTRONOMY FOR DEVELOPMENT

The **International Astronomical Union** (IAU, www.iau.org) is the largest body of professional astronomers in the world. In frame of IAU strategic plan, the **Office of Astronomy for Development (OAD)** in partnership with the South African National Research Foundation (NRF) has been set up. The OAD was officially opened on 16 April 2011 at the South African Astronomical Observatory (SAAO) in Cape Town, South Africa. Kevin Govender is the OAD Director. The first major workshop of stakeholders was held on 12-14 December 2011. In addition to OAD, **Regional Offices of Astronomy for Development (ROAD)** will be established for coordination of astronomy development in the whole world, as well as **Language Expertise Centres**. Since the opening of OAD, three ROADs and one Language Expertise Centre have been established, as well as OAD is planning its activities within three **Task Forces**:

- Universities and Research (TF1);
- Children and Schools (TF2);
- Public Outreach (TF3).

In 2012 the first open Call for Proposals was launched for each of the task forces and in 2014, new Calls were announced. Many astronomy centres have benefited from these activities.

Since the beginning of this initiative, Armenia has been rather active in proposing projects and submitting a proposal to host a regional office in **Southwest Asian area**. IAU found Armenia's proposal rather strong and justified, however, only recently Armenia has been selected to coordinate IAU Astronomy for Development activities in this region. Armenia and particularly Byurakan Astrophysical Observatory (BAO) is a reliable centre for astronomy development in the Southwest Asia region, involving the South Caucasus countries (Armenia, Georgia and Azerbaijan), Iran, Turkey and Israel, where efforts are being made to develop astronomy (Arabic countries develop their own project for a similar centre). In addition, in frame of the European Eastern Partnership program, Armenia will play a role of the link between Europe and Eastern countries. Central Asian countries (former USSR republics) Kazakhstan, Uzbekistan and Tajikistan may also join.

History of **Astronomy in Armenia** goes back to very old ages. Since ancient times Armenians accumulated astronomical knowledge and have left this heritage in the forms of rock art, ancient observatories, calendars and chronology, records of astronomical events (Solar and Lunar eclipses, appearance of comets, Supernovae, etc.), medieval sky maps, astronomical terms in the language, etc. Nowadays Armenia is one of the developed countries in astronomical sense as well, though by its economic level Armenia is among the developing countries, and it is situated in a region (Middle East) where efforts are needed to develop and promote astronomical education and knowledge.

The famous **Byurakan Astrophysical Observatory (BAO)** founded in 1946 made a significant contribution in the fields of research of non-stable phenomena and evolutionary processes in the Universe. However, the development of astronomy depends not only on professional astronomers. Popular and amateur astronomy, astronomy education, preservation of astronomical heritage sites are signs of maintenance of high-level astronomy in any country.

Armenian astronomy has a number of features that justify such a selection by IAU, such as:

- **Byurakan Astrophysical Observatory** (BAO, http:///www,bao.am) is one of the important astronomical centres in the Middle East region,
- discoveries and achievements by the outstanding scientist, former IAU and ICSU President ***Prof.* Viktor Ambartsumian** (1908-1996, www.aras.am/FamousAstronomers/ambartsumian.html) and other famous Armenian astronomers (www.aras.am/FamousAstronomers/famousarmastr.html) are well known,
- BAO owns the largest in the region **2.6m** (http://www.bao.am/2_6m.htm) and one of the largest in the world **1m Schmidt** (http://www.bao.am/1m.htm) telescopes,
- many important international meetings (http://www.aras.am/BAO/meetings.html), including **five IAU Symposia (1966, 1986, 1989, 1998, and 2013)** and an **IAU Colloquium (2001)** (http://www.aras.am/Meetings/meetingsIAU.html), as well as the **Joint European and National Astronomical Meeting (JENAM)** in 2007 (http://www.aras.am/Jenam2007/index.htm),
- recently established series of **Byurakan International Summer Schools** (BISS in 2006, 2008, 2010, and 2012, http://www.aras.am/Meetings/meetingsSummerSchools.html), where the regional students can train and get experience,
- **active international collaboration** with a number of countries (http://www.aras.am/BAO/collaboration.html), such as USA, UK, France, Italy, Germany, Spain, Russia, Georgia, Bulgaria, Japan, China, Mexico, Australia, and other countries,

- **international PhD program** that in 1970s-2000s has awarded scientific degrees to astronomers from Russia, Ukraine, Hungary, Bulgaria, Georgia, Azerbaijan, Uzbekistan and Jordan,
- famous **Byurakan (Markarian) surveys** accomplished by Beniamin Markarian (1913-1985, www.aras.am/FamousAstronomers/markarian.html) and his colleagues and one of the largest world astronomical spectroscopic databases (DFBS, http://www.aras.am/Dfbs/dfbs.html), which recently was included in the **UNESCO *"Memory of the World"* international register**,
- **Armenian Virtual Observatory** (ArVO, http://www.aras.am/Arvo/arvo.htm), which is one of the 20 (18 national and 2 European) members of the IVOA (http://www.ivoa.net) and which is the only such project in the Middle East region,
- very active **Armenian Astronomical Society** (ArAS, http://www.aras.am/), an affiliated member of the European Astronomical Society (EAS), having 100 members, including those from 21 countries (Armenia, USA, France, Mexico, Germany, Russia, Spain, etc.), Annual Meetings, Electronic Newsletters, Annual Prizes for Young Astronomers,
- one of the major international prizes in astronomy (USD 500,000), recently established **Viktor Ambartsumian International Prize** (http://vaprize.sci.am/) with an International Steering Committee, including three IAU Presidents (*Prof.* Catherine Cesarsky, *Prof.* Robert Williams, and *Prof.* Norio Kaifu),
- **Galileo Teachers Training Program** (GTTP, http://www.aras.am/Iya2009/GTTP.htm) and very successful participation of the Armenian pupils in the **International Astronomical Olympiads** (http://www.aras.am/Education/IAOs.html).

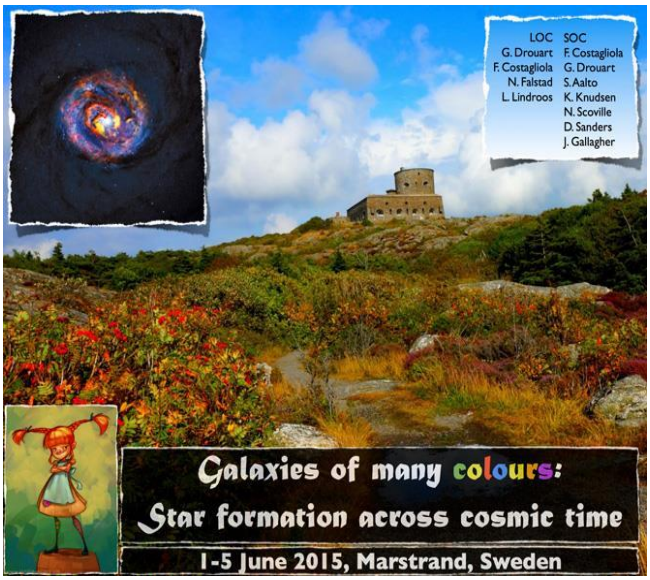
Armenia has a **unique geographical location** that gives it possibility to serve as a link between East and West; it is considered both as a European and as an Asian country, it is part of **Middle East** and **(South) Caucasus** (Armenia, Azerbaijan, and Georgia), it is one of the **former Soviet Union** republics and has tight relations to other such countries, including South Caucasus, Russia, Ukraine, Belarus, Moldova, Baltic (Estonia, Latvia, and Lithuania) and Central Asian states (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan). At last, Armenia is regarded by many European countries as a link for astronomical contacts between Europe and East; especially having tight relations to Eastern European countries like Bulgaria, Czech Republic, Greece, Hungary, Poland, Romania, Serbia and other countries.

Further plans are to establish a permanently operational Office in Byurakan with dedicated staff, create a regional Steering Committee, define the list of countries that will develop activities in frame of our ROAD, develop business plan for forthcoming years and start activities in frame of ROAD, including strengthening of contacts between the regional countries, establishing scientific collaborations, joint research and observing programs, exchange of scientists, training of young researchers and students, organization of meetings and schools, invitation of outstanding scientists to give lectures in the region, regional Olympiads, science camps, publication of scientific, popular and promotional books, booklets and other materials, and organization of all activities through the dedicated ROAD webpage.

Dr. Areg Mickaelian, Project Manager, IAU Southwest Asian ROAD

Galaxies of Many Colours

"Galaxies of Many Colours: Star Formation across Cosmic Time" conference was hold on 01-05 June, Marstrand, Sweden in Carlsten Fortress. Some 60 scientists from Armenia, Canada, Chile, Finland, France, Germany, Great Britain, Iran, Italy, Japan, Netherlands, Spain, Sweden, Taiwan and USA participated in this conference. The Scientific Organizing Committee (SOC) was chaired by famous scientists, such as Guillaume Drouart, Francesco Costagliola, Kirsten Knudsen, Susanne Aalto, Nick Scoville, Dave Sanders and Jay Gallhager. Among the participants were such famous scientists, as Dave Sanders, Nick Scoville, Matt Lehnert, Susanne Aalto, Jay Gallhager, Jean Turner, Leslie Hunt and others. Leading Scientist and Head of research group of Byurakan Astrophysical Observatory (BAO) **Dr.Areg Mickaelian** was among the participants of the conference. He gave a talk on *Star-formation rates for IR selected Byurakan-IRAS Galaxies*.



Various topics of astronomy were involved and corresponding sessions were organized:

1. AGN feeding and feedback
2. AGN-star formation connection
3. ISM properties in resolved star forming systems
4. ISM properties at galaxy scale
5. Star formation in low-metallicity environment
6. Star formation in interacting galaxies
7. Star formation in secularly evolving galaxies

There were several other events that accompanied the conference, such as visit to Carlsten Fortress, Onsala Space Observatory, boat tours and visit to Paster Noter lighthouse and degustation, Conference Dinner at Villa Maritime.

Conference webpage: http://www.chalmers.se/en/conference/Galaxies-of-Many-Colours/Pages/default.aspx

EUROPEAN WEEK OF ASTRONOMY AND SPACE SCIENCE

The European Week of Astronomy and Space Science (EWASS, formerly JENAM) 2015 was held on 22-26 June 2015 in University of La Laguna, Tenerife (Canary Islands, Spain). It was the annual meeting of the European Astronomical Society (EAS), which is being organized every year in one of the European countries in combination with one of the EAS Affiliated Societies. With more than 20 years of tradition, it has imposed itself as the largest conference for European astronomy. In addition to plenary sessions and the award of prestigious prizes, EWASS hosts many symposia held in parallel, as well as special sessions and meetings.

The EAS together with one of its affiliated societies organizes the annual EWASS conference to enhance its links with national communities, to broaden connections between individual members and to promote European networks. EWASS 2015 was held for the first time in Tenerife, Spain and gathered 1164 astrophysicists from 53 countries all over Europe and even beyond, including outstanding scientists and many young astronomers.

A number of scientific meetings and other sessions and events were held during EWASS-2015, including 11 symposia, 23 special sessions, 7 special meetings, 7 plenary lectures and 5 prize award talks, 5 restricted meetings and EAS General Assembly:

EWASS-2015 Symposia

S1: Understanding the growth of the first supermassive black holes
S2: The Journey of Dwarf Galaxies
S3: Deconstructing Massive Galaxy Formation
S4: New Challenges in Astrophysics with Gravitational Waves
S5: The Sun under the microscope
S6: The Formation and Destruction of Molecular Clouds
S7: Worlds within particles: Representing supernovae and stellar populations in galaxy simulations
S8: What happened to the gas? Understanding the evolution of galaxies
S9: First Science from Gaia – the Gaia Research for European Astronomy Training (GREAT) Network Science Symposium
S10: Finding and identifying habitable planets and searching for signs of life: a comprehensive approach as to when and how
S11: Neutron stars at the crossroads: X-ray binaries and transitional millisecond pulsars

EWASS-2015 Special Sessions

Sp1: Timing compact objects in the multi-messenger era
Sp2: Observational anomalies challenging the Lambda-CDM cosmological model
Sp3: 3D view on interacting and post-interacting galaxies from clusters to voids
Sp4: Galaxy studies in the mid-infrared from space and ground
Sp5: AGB stars: a key ingredient in the understanding and interpretation of stellar populations
Sp6: Robotic telescopes and instrumentation for time domain astronomy
Sp7: Science with large spectroscopic surveys of Galactic OB stars: getting ready for Gaia
Sp8: The physics of fossil stellar magnetism
Sp9: The physics behind the Radio-FIR Correlation
Sp10: The quest for detecting the primordial gravitational wave background
Sp11: Horizontal branch stars and the UV radiation from old stellar systems: what we know and what we are still missing
Sp12: Circumbinary Planets
Sp13: Eruptions and explosions: the lives and deaths of massive stars
Sp14: Low-accretion physics in the Universe
Sp15: Metallicity scaling relations: insight into galaxy evolutionary processes
Sp16: The outskirts of galaxies: present status and future challenges
Sp17: Hunting down the elusive progenitors and explosion mechanisms of Type Ia supernovae
Sp18: Chemical abundances and gradients in spatially resolved late-type Galaxies in the Local Universe
Sp19: Single-dish and interferometric submm/mm astronomy in the era of ALMA and NOEMA
Sp20: 3D structure of the ISM from absorption data in the Gaia Era
Sp21: Science with Panchromatic Large Surveys in the SKA era
Sp22: Theory and Observations of the First Galaxies
Sp23: MHD-modeling of active solar structures

EWASS-2015 Special Meetings

SM1: European Interferometry Initiative (EII) Science Council meeting
SM2: VLTI Community Days 2015
SM3: Science with the Gran Telescopio Canarias
SM4: Databases for Site Characterization of Astronomical Observatories
SM5: Synergies between solar and night-time Adaptive Optics
SM6: Reaching Diverse Audiences in Europe through Astronomy Outreach
SM7: ASTRONET 2015-2025: The Next Decade

EWASS-2015 Plenary Lectures

- **Licia Verde** (Institute of Cosmological Sciences, Barcelona, Spain) – *The CMB turns 50*
- **María-Rosa Zapatero Osorio** (Centre for Astrobiology, Madrid, Spain) – *Impacting discoveries of brown dwarfs*
- **Amina Helmi** (University of Groningen, the Netherlands) – *Cosmology with Local Group galaxies*
- **Frédéric Bournaud** (CEA-Saclay, France) – *Internal structure and star formation in nearby galaxies: observational and theoretical progress*
- **Alvaro Giménez** (ESA) – *ESA Report*
- **Tim de Zeeuw** (ESO) – *ESO Report*
- **Mark Bentley** (Space Research Institute, Graz, Austria) – *Scientific results from the Rosetta mission*

Prize Award Talks and Ceremonies

- Tycho Brahe Prize – **Michel Mayor** (Observatory of the Univ. of Geneva, Switzerland)
- Lodewijk Woltjer Lecture – **Ewine van Dishoeck** (University of Leiden, Netherlands)
- MERAC Prize in Theoretical Astrophysics – **Michela Mapelli** (INAF - Padova Astronomical Observatory, Italy)
- MERAC Prize in Observational Astrophysics – **Saskia Hekker** (Max Planck Institute for Solar System Research, Göttingen, Germany)
- MERAC Prize in New Technologies – **Sylvestre Lacour** (Observatoire de Paris, France)

Restricted meetings

- EAS Council meeting 1
- EAS Council meeting 2
- EAS Affiliated Societies: business lunch
- EWASS 2016 Board meeting
- EWASS 2017 Board meeting

From Armenia, the Leading Research Associate of BAO and Co-President of ArAS ***Dr.* Areg Mickaelian** took part in EWASS-2015. In addition, Armenian astronomers working in foreign institutions one of the first Viktor Ambartsumian International Prize Winners ***Prof.* Garik Israelian** (Institute of Astronomy of Canary Islands, IAC), ArAS 2013 Annual Prize Winner ***Dr.* Avet Harutyunyan** (Telescopio Nazionale Galileo, TNG, Italy), and young astronomer **Vahagn Harutyunyan** (Rome Sapienza University, Italy). Interestingly, Garik Israelian has won Viktor Ambartsumian International Prize in 2010 together with well-known Swiss astronomer **Michel Mayor** and Portuguese astronomer Nuno Santos, and at this EWASS Michel Mayor was awarded the EAS main award, Tycho Brahe Prize. He also is an ArAS member, as well as **Michel Dennefeld** (France) and **Bernhard Brandl** (Netherlands), who also participated in EWASS-2015.

Armenian astronomers in a number of sessions presented oral talsk and posters. Areg Mickaelian also participated in EAS Council Meeting with EAS Affiliated Societies. Many discussions were held, including those with the chairs, leaders or representatives of the European astronomical and space organizations; EAS President Thierry Courvoiser, ESO Director General Tim de Zeeuw, ESA Director of Science and Robotic Exploration (D/SRE), and Head of ESAC (near Madrid, Spain) Alvaro Giménez, European ASTRONET project leaders Johannes Andersen and Ron Stark, OPTICON consortium Project Manager John Davies, European NEON schools Programme Director Michel Dennefeld and others.

On June 27, the 30th anniversary of IAC's foundations was celebrated, and the King of Spain Felipe VI was present; this is an obvious sign of high reputation and respect of science in this country.

EAS was founded in 1990 and has 25 national Affiliated Societies (including ArAS) and some 1100 individual members. Its activities include the coordination of the European astronomy, organization of annual meetings (JENAM/EWASS), award of annual prizes for outstanding and young astronomers. In 2007, JENAM was held in Yerevan, Armenia and it was the largest scientific event ever organized in our country.

Past EWASS meetings

- EWASS 2014 in Geneva (Switzerland) from 30 June to 4 July 2014
- EWASS 2013 in Turku (Finland) from 8 to 13 July 2013
- EWASS 2012 in Rome (Italy) from 1 to 6 July 2012
- EWASS 2011 in St. Petersburg (Russia) from 4 to 8 July 2011
- EWASS 2010 in Lisbon (Portugal) - The European Week of Astronomy and Space Science
- EWASS 2009 in Herts (UK) - The European Week of Astronomy and Space Science
- JENAM 2008 in Vienna (Austria) - New Challenges to European Astronomy
- JENAM 2007 in Yerevan (Armenia) - Our Non-Stable Universe
- JENAM 2006 in Prague (Czech Republic) - Part of IAU General Assembly
- JENAM 2005 in Liège (Belgium) - Distant Worlds
- JENAM 2004 in Granada (Spain) - The Many Scales in the Universe
- JENAM 2003 in Budapest (Hungary) - New Deal in European Astronomy: Trends and Perspectives
- JENAM 2002 in Porto (Portugal) - The Unsolved Universe: Challenges for the Future
- JENAM 2001 in Munich (Germany) - Five Days of Creation: Astronomy with Larges Telescopes from Ground and Space
- JENAM 2000 in Moscow (Russia)
- JENAM 1999 in Toulouse (France)
- JENAM 1998 in Prague (Czech Rep.) - Prospects of Astron. & Astrophys. for New Millenium
- JENAM 1997 in Thessaloniki (Greece) - The New Trends in Astronomy and Astrophysics
- JENAM 1996 in Sevilla (Spain)
- JENAM 1995 in Catania (Italy)
- JENAM 1994 in Edinburgh (United Kingdom)
- JENAM 1993 in Torun (Poland)
- JENAM 1992 in Liège (Belgium)

Next two EWASS meetings will be held in July 2016 in Athens (Greece) and in 2017 in Prague (Czech Republic).

EWASS-2015 webpage: http://eas.unige.ch/EWASS2015/index.jsp

Prespectives of Scientific Tourism in Armenia

"Prespectives of Scientific Tourism in Armenia" meeting was held on 11th of June at the Presidum of National Academy of Sciences of the Republic of Armenia (NAS RA). Scientists, representatives of travel agencies, students, as well as, journalists were present at the meeting. The event was conducted by **Robert Minasyan**, the Rector of Armenian Institute of Tourism (AIT). *"There is not any sphere that can be developed without science and tourism is not an exeption. Scientifictourswill increasetheflow of touriststo Armenia, which will lead to the economic development"*, - said R. Minasyan.

NAS RA President **Radik Martirosyan** in his welcome speech mentioned that science is in the ideology of tourism. As we visit new destinations and grasp the information, that before we did not possess. The representatives of the Russian Embassy and Rosotrudichestvo also gave talks and welcomed the initiative.

Co-President of Armenian Astronomical Society, **Areg Mickaelian** represented the forthcoming action plan of Scientific Tourism chair of Armenian Institute of Tourism. The program included lectures, internships of students, visits to scientific institutions, contests and other events.

At the same day, also held the presentation of the book "Russian Trace: Russia-Armenia". The book summarizes the results of 2012, 2013 and 2014 years' scientific tours in the Rebulic of Armenia and at Kars region, Western Armenia (presently at Turkey).

International Conference Oxford VI and SEAC 99 "Astronomy and Cultural Diversity"

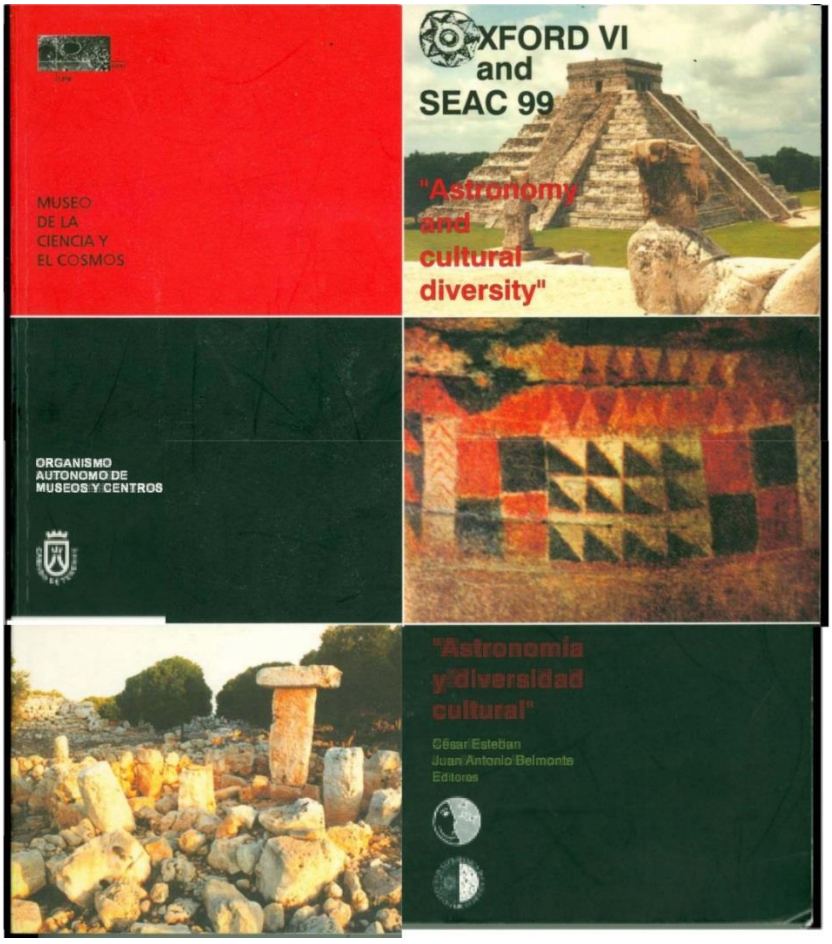
Deep interdisciplinary character of archaeoastronomy and cultural astronomy is reflected in the varied professional profiles of the authors: astronomers, historians, anthropologists, archaeologists, historians of science... Not many scientific disciplines can be enriched with so diverse points of view.

The Sixth Oxford International Conference on Archaeoastronomy and the Seventh Annual Meeting of the Société Européenne pour l'Astronomie dans la Culture (SEAC, European Society for Astronomy in Culture) was held jointly in the days around the summer solstice of 1999 at the Museo de la Ciencia y el Cosmos, in the historical city of La Laguna, in the Island of Tenerife. One hundred participants from more than 20 countries of the five continents and almost 60 talks indicate undoubtedly the relevance of this meeting.

From Armenia, ***Prof. Elma Parsamian*** *participated in the* ***International Conference Oxford VI and SEAC 99 "Astronomy and Cultural Diversity"****.*

Parsamian has significant contribution in archaeoastronomy. She has justified the astronomical significance of buildings in Metsamor (1967), Zorats Karer Karahunge (1984). Particularly, she discovered proves about the existence of astronomical observing platforms in Metsamor. She showed that Sirius was observed in Metsamor in 2500-2600 B.C.

Below you can read Prof. Parsamian's article published at the proceeding of the conferece.



ON ANCIENT ASTRONOMY IN ARMENIA

The Armenian highland is one of the ancient cradles of civilisation. Many investigators of the history of astronomy, having no facts to hand, mainly by logical approach came to the conclusion that the ancient inhabitants of Armenia not only knew, but also took part in the formation of ancient astronomy (Maunder, 1906, Olcott, 1914).

Thus Olcott (1914) wrote: "Astronomical facts correspond with historical and archaeological investigations and prove that people who have invented the ancient figures of constellations probably lived in the valley of the Euphrates, as well as in the region near the mountain Ararat".

Maunder (1906), investigating the question of the origin of the constellations, wrote:
"People, who divided the sky into constellations, most probably lived between 36 and 42 degrees of the northern latitude, so neither Egypt nor Babylon could be the motherland of creation of constellations. Calculating in what place the centre of this empty region coincides with the North Pole, we got the figure 2800 BC, which is probably the date during which the naming of the constellations were completed. It was observed that such animals as the elephant, camel, hippopotamus, crocodile and tiger were not amongst the figures representing the constellations, therefore we can assert India, Arabia and Egypt could not have been the place where the idea of firmament originated.

We can exclude Greece, Italy and Spain on the basis of the fact that the figure of tiger is present in the figures of constellations.

Thus, purely by logical thinking we can assert that the motherland of celestial figures must be Minor Asia and Armenia, that is to say a region limited by the Black, the Mediterranean, the Caspian and the Aegean Seas..."

Figure 1: Image of the Earth with the antidopes found on rocks

The above statements had to be confirmed.
The discoveries made during the last decades in Armenia, have enriched our knowledge of the ancient civilization and ancient astronomy in this region.
On Armenian territory, a belt calendar and geocentric model of the universe were discovered from the Bronze Era, dating back to the XI century BC (Tumanian, Mnazakanian, 1965). Furthermore, rock carvings of astronomical representations of the Sagittarius, Lion and Scorpio constellations, along with symbols of the Sun and the Moon, were discovered on fragments of rocks older than 3000 years. The diameters of the pictures are different from each other, indicating the relative brightness of the stars. On one fragment the Sun, Moon, and five planets, as seen with the naked eye are pictured, and on another two fragments there are circles with short and 29 long rays. The rays carved on the rocks probably depict the period of repetition of the Lunar phases. A carved circle found on one of the rocks created a great deal of interest. This circle is divided into orthogonal lines, in which (on opposing sides) are also carved human figures. These symbols represent the Earth and antipodes.

THE ANCIENT "OBSERVATORY" OF MEZAMOR

The important discovery, which enriched our knowledge of ancient astronomy in Armenia, was the complex of platforms for astronomical observations on the Small Hill of Mezamor, which may be called an ancient "observatory". Investigations on that Hill show that the ancient inhabitants of the Armenian Highlands have left us not only pictures of celestial bodies, but a very ancient complex of platforms for observing the sky.
On the bank of the river Mezamor, some 30 km west of Yerevan, a metal-producing centre was found, dating back to the third millennium BC. The life here dated from V millennium BC till to XVIII century AD.
Here on the Small Hill of Mezamor in 1966 the platforms for astronomical observations were discovered, which form a peculiar complex - an ancient "observatory" (Parsamian and Mkrtchian, 1969, Parsamian, 1985, 1988).

Of the platforms, three are particularly well preserved.
The first is triangular in shape, with its smallest angle facing the South. The bisector of that angle coincides with the North-South direction (to an accuracy 2 degrees). On the rock surfaces a number of symbols are carved. These symbols and images are sometimes also repeated on the other rocks as well.
On the east side of the first platform there are four identical stellar symbols surrounded by a trapezium measuring 55x40 cm. Of these four symbols, three are particularly well preserved. This trapezium is drawn narrower in the south-east a choice of geometry which is not accidental, as will be revealed later.
One might assume that the centre of the platform might be a good place to place the symbols. However, the positioning of the trapezium and the symbols may be the key to its secrets. The fact that the trapezium with the star symbols is carved on the eastern side suggests the idea that it is connected with the rising of some star or the Sun. The Sui however can be excluded, as it used to have its own unique symbol in ancient times. The question now is which heavenly body was the trapezium pointing to?

Let's continue mentally the altitude of the trapezium till the horizon and see, with the rising of what heavenly bodies this direction is connected. We measured the azimuth of the trapezium with a compass and made some calculations. Let A - be the azimuth of the carved altitude of the trapezium dividing it into two equal parts (the line of the altitude is preserved but it is drawn roughly, so an error of measurements of the azimuth of the trapezium gave the value A: 298°. The value of declination was found to be - 21°, the value of hour angle t = 71°. From these data it is not difficult to establish what bright stars had the above mentioned declination and when. According to 5000 year star catalogue (Hawkins and Rosental, 1967) table 1 gives the name of four brightest stars, their brightness, as well as the epochs when declination was equal to - 21° there are four candidates: Sirius, Rigel, Antares, β C.Ma.

Table 1

STAR	MAGNITUDE	EPOCH
Sirus	-1.58	-2.600
Rigel	0.34	-2.100
Antares	1.22	400
β C. Ma	1.99	-1000

Most probably Sirius was observed and worshipped by the ancient inhabitants of Mezamor and the information they left is about this star.
Table 2 below gives the results of calculations for the rising of Sirius in Mezamor at summer Solstice; we indicate the epoch for three different values of azimuth (A = 298° being the most probable value).
The table 2 shows how strongly the epoch changes with a change in declination of two degrees.

Table 2

AZIMUTH (°)	DECLINATION (°)	LOCAL TIME	EPOCH
300	**-22.20**	**4h 39m**	**-2800**
298	**-22.55**	**4h 43m**	**-2600**
296	**-19.00**	**5h 03m**	**-1900**

It was shown that in the years between 2800-2600 BC Sirius could have been observed at Solstice in the morning, in the rays of the rising Sun, this being the so-called helical rising of Sirius. It is obvious from the data that Sirius, the brightest star in our hemisphere could have been the object of worship by the inhabitants of Mezamor. It is possible that, like the ancient Egyptians, the inhabitants of Mezamor related the first appearance of Sirius with the opening of the year.

The occurrence of the symbol for Sirius four times in the trapezium can be explained by the fact that as in the Egyptian calendar, where the year had 365 days, after each 4 years the rising of Sirius was shifted from the first day to the second day of the month, and after another 4 years from the 3rd day to the 4th and so on. If these suppositions are correct, then the findings on the first platform prove that the inhabitants of Armenia were well acquainted with the sky, and could have used the periodical appearance for measuring time.

The second platform is situated 2.5m above the first one. It is also triangular and in the plane of meridian. The sign of the Sun and other signs are there.

Of special interest is the third platform. It differs from the other two in having seven steps carved in the rock, which lead in from a North-South direction. These steps are positioned roughly in the plane of the meridian. If the stairs leading to the platform were in the East-West direction, then one might assume that the platform was being used for religious ceremonies. The stairs however were positioned in the North-South direction, which provided an optimum position for carrying out astronomical observations.On the last step leading to the platform, a carved directional indicator (compass) was made which shows North-South-East directions. The presence of the compass suggests that the platform was not positioned exactly on the meridian plane and this compass had to be use to correct the position of the observer. The other carved signs found on the hills and the platforms also lead us to understand that the platforms, as well as serving as astronomical observation platforms, could also be used for religious rituals.

But for religious rituals on the Main Hill of Mezamor was found Pagan Altar situated in the plane east-west from the first millennium BC.

MEGALITHIC MONUMENT ZORAZ KAR

Among the ancient monuments in Armenia there is a megalithic monument, probably, being connected with astronomy. 250km south-east of Yerevan there is a structure Zoraz Kar dating back to II millennium BC. Vertical megaliths many of which are more than two meters of height form stone rings resembling to ancient stone monuments -henges in Great Britain and Brittany (Parsamian,1984, 1985, Khunkikian, 1984, Parsamian and Barsegian, 1987, Geruni, 1999).

The diameter of the main stone ring of Zoraz Kar is more than 30m and it is notable that on some stones found in the eastern part there are well polished round holes, which could have been used for the observation of the Sun in the days of equinox and solstice. The main ring is connected with megaliths in S-E direction by gate of two megaliths the distance between which more than between other stones. The first observations of the sunrise the days of solstice shows that the middle line of gate has direction East-West.

On the direction N-E from the gate there is a range of nine megaliths. Sunrise observations on June 22, 1985 show that at the moment of sunrise Sun appearance on the top of highest megalith from the gate. In the same moment it was possible to see Sun in the holes of two megaliths N 39 and N 44. Numeration was beginning

from north end of stone avenue which lead to main stone ring in the N-S direction. After short time during sunrise Sun was seen trough first megaliths hole from the gate.
During the observations of sunrise on 21 September, 1985 before appearance of Sun in the middle of gate we observed Venus.
We suggested that the place of gate was chosen for observations of periodic events (Parsamian, 1985, Parsamian and Barsegian, 1987).
In the same region about 40 km from Zoraz Kar there is a village the name of Karahunge which give us some information to meditate.
Karahunge is a complicate word: "Kara"- means stone, "hunge" may be means bouquet, in Armenian dictionary there is not that word (Parsamian, 1985).
According to hypothesis of Gamkrelidze and Ivanov (1990) Indo-European languages were originated on the eastern Anatolia which is historical homeland of Armenians.

MEDIEVAL OBSERVATIONS OF COMETS AND NOVAE BY DATA IN ANCIENT ARMENIAN MANUSCRIPTS

In the collection of ancient Armenian manuscripts (Matenadaran) in Yerevan there are many manuscripts with information about observations of astronomical events as: solar and lunar eclipses, comets and novae, bolids and meteorites etc. in medieval Armenia.
In particularly there are interesting information about observations of supernovae in 1006 , 1054, possible supernova in 716, two novae in 762 , (Astapovich, 1974 , Tumanian, 1964, 1967, Barseghian, Parsamian, 1990).
Until now 75 information about appearances of 60 comets are found in Armenian medieval sources (Vsekhsvjatskij and Tumanian, 1970, Tumananian, 1968, Barsegian and Epremian, 1989). In particularly Halley's comet were observed from Armenia in 684, 989, 1066, 1222, 1145 and 1531 (Brutian, 1988, Barseghian, Epremian, 1989, Barseghian, Parsamian, 1998).

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Gruber Cosmology Prize 2015

The 2015 Gruber Foundation Cosmology Prize recognizes John E. Carlstrom, Jeremiah P. Ostriker, and Lyman A. Page, for their individual and collective contributions to the study of the universe on the largest scales.

The 2015 prize is divided into two parts: half to a distinguished theorist, and the other half to two exceptional experimentalists. The theorist is Ostriker, who is being honored for his groundbreaking body of work over a five-decade career, while Carlstrom and Page have each overseen ground-based experiments providing a wealth of information about the origins and evolution of the universe. Together the theoretical and experimental work of these three scientists has contributed to, clarified, and advanced today's standard cosmological model.

Ostriker will receive half of the $500,000 award, while Carlstrom and Page will divide the other half. Each will also receive a gold medal at the XXIX General Assembly of the International Astronomical Union in Honolulu, Hawaii, on August 3.

The current scientific interpretation of the universe began to crystallize in the mid-1960s with the discovery of relic radiation from the infancy of the universe. This radiation, called the cosmic microwave background (CMB), finally allowed scientists to test the longstanding and sometimes contradictory predictions of competing cosmologies. The winner: the Big Bang model— a universe that arose out of an inconceivably dense state of matter and energy, and has been expanding and cooling ever since, eventually coalescing into today's familiar skyscape of planets, stars, and galaxies. Over the past five decades, experiments and theories have rapidly (at least on the scale of most scientific progress) led to a scientific consensus about the Big Bang universe: what's in it and how it came to look the way it does today. Our universe appears to consist of part dark energy, part dark matter, and part regular matter. In addition, the distribution of all that energy and matter seems to have been determined by a primordial hyper-expansion of space called inflation. The work of this year's Gruber recipients has made extraordinary contributions to the understanding and refinement of that model.Jeremiah P. Ostriker, now an emeritus professor at Princeton University and currently teaching at Columbia University, belonged to the first generation of theorists who examined how such a universe might operate. He has made significant contributions to the studies of galaxy formation, the interstellar medium, and the intergalactic medium. But he has also achieved renown for helping to overturn two basic assumptions about the very nature of the universe.

In the early 1970s he noticed that a spiral galaxy like our own Milky Way could not rotate stably according to Newton's laws if it only contained the matter we can see in the stars. It shouldn't be able to complete even one rotation without wobbling and breaking apart into a binary galaxy or a bar, at least if you take the galaxy at face value—that is, if you assume that the visible stars and gas are the only matter in the galaxy. Ostriker and his Princeton University colleague P. James E. Peebles (the recipient of a 2000 Gruber Cosmology Prize) challenged that assumption. In 1973 they reported that computer simulations indicated that if such a galaxy were immersed in a sufficiently dense halo of some sort of invisible mass, it could in

fact remain gravitationally stable. And they soon showed that there was a great deal of other evidence for extra matter outside of the visible galaxy.

Today we call that mysterious substance dark matter. Although cosmologists don't know what dark matter is, they do know what it does. It serves as the glue that not only stabilizes galaxies and clusters of galaxies but gives the universe its web-like structure on the largest scales: vast filaments of super-clusters of galaxies spanning hundreds of millions of light-years, separated by even vaster voids.

In 1995, Ostriker and another Princeton colleague, Paul J. Steinhardt, argued that the total amount of matter alone in the universe, dark or otherwise, is at odds with some key theoretical implications of Big Bang cosmology. Again, Ostriker and Steinhardt invoked a mysterious missing component that would be permeating the universe. Some other theorists were making the same argument—and in fact evidence for that component was discovered within three years by two competing teams of observers (led by Saul Perlmutter and Brian Schmidt, who along with their team members received the 2007 Gruber Prize in Cosmology). In retrospect, though, what distinguishes Ostriker and Steinhardt's paper is the suggestion that this component, today known as dark energy, should contribute about 70 percent to the total mass and energy of the universe—a figure validated by a number of later observations, including those made by the instruments overseen by John E. Carlstrom and Lyman Alexander Page, Jr.

While both Page and Carlstrom have worked extensively in the study of the CMB, they currently lead two projects in particular. Carlstrom, who has been at the University of Chicago since 1995, is the principal investigator on the South Pole Telescope, which was constructed at the U. S. science station at the Pole in late 2006 and early 2007. Page, who has been at Princeton since 1990, serves in the same capacity for the Atacama Cosmology Telescope, which was constructed on Cerro Toco in the mountainous Atacama Desert in Chile in 2007.

Those instruments, both still active, probe the CMB, the relic radiation discovered in the 1960s, inaugurating the modern era of cosmology. When the universe was 380,000 years old it had cooled enough for hydrogen atoms and photons to decouple and go their separate ways. That "flashbulb" moment has survived as a sort of snapshot—a "baby picture" of the universe—though over the past 13.7 billion years the expansion of space has stretched the light from the image all the way into the microwave end of the electromagnetic spectrum. Look closely enough and finely enough at the CMB, though, and you should be able to see extraordinarily subtle shadings in temperature: the DNA for the galaxies, clusters of galaxies, and super-clusters of galaxies that populate the universe as we know it.

Among the many contributions to cosmology that those instruments have made are: the discovery of hundreds of clusters of galaxies going back to when the universe was about one-third its present age, providing a history of the growth of the large-scale structure of the universe; independent verification that the universe consists of approximately 25 percent dark matter, 70 percent dark energy, and 5 percent atoms; and strong evidence that the structure in the CMB is a remnant of quantum fluctuations. This latter data provides support for inflation, a theory which in turn suggests that the universe itself is one big quantum fluctuation.

What is dark matter? What is dark energy? How to explain a quantum universe? In honoring Carlstrom, Ostriker, and Page, the 2015 Gruber Cosmology Prize recognizes science doing what science does best: answering fundamental questions while opening new frontiers for observers and theorists alike and raising new fundamental questions to puzzle us.

ArAS Annual Prize 2015 Call

ArAS is pleased to announce the **ArAS Annual Prize for Young Astronomers (Yervant Terzian Prize) 2015**. 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 (Haik Harutyunian, Areg Mickaelian or Yervant Terzian).

Nominations should include personal data of the nominee (first name, surname, affiliation, position, education, degree, birthdate, e-mail address, personal homepage if available) and a brief description of his/her achievements during the year (2015) including:

1. Scientific results (up to 1 page)
2. Letter from the supervisor describing the personal contribution of the nominee
3. Published, accepted and submitted papers (in refereed journals, in proceedings of meetings, and other)
4. Participation in meetings and schools
5. Given talks, seminars, and presented posters
6. Scientific mission
7. Honours, awards and research grants
8. Membership
9. Teaching activity
10. Organizational activity
11. Other activities, whatever is considered to be important

At least one refereed publication is required to qualify for the Prize. Preference will be given to nominees having publications in journals with higher impact factors (IF), with less co-authors and papers with the nominee as the first co-author, as well as the own contribution stated by the supervisor will be rather important. Nominations will be discussed and the winner(s) will be named by the ArAS Council (Haik Harutyunian, Tigran Magakian, Areg Mickaelian, Elena Nikoghosyan and Yervant Terzian).

The **deadline** for applications is **December 1**. The winner will be announced in the last issue of ArAS Newsletter (#88) at the end of the year. A **diploma** and sum of **$500** will be awarded to the winner. The Prize was established in 2004 and is being sponsored by ArAS Co-President ***Prof.*Yervant Terzian** (Cornell University, USA). Since 2009 the Prize is named after Yervant Terzian.

Previous ArAS Annual Prize (Yervant Terzian Prize) Winners

2014 Gurgen PARONYAN (BAO)

2013 Hayk ABRAHAMYAN (BAO) and Avet HARUTYUNYAN (IAC, Spain)

2012 Vardan ADIBEKYAN (CAUP, Portugal)

2011 Marine AVTANDILYAN (ASPU)

2010 Parandzem SINAMYAN (BAO)

2009 Lusine SARGSYAN (BAO)

2008 Vardan ADIBEKYAN (YSU) and Artur HAKOBYAN (BAO)

2007 Igor CHILINGARIAN (OBSPM, France)

2006 Lilit HOVHANNISYAN (BAO) and Parandzem SINAMYAN (BAO)

2005 Artak HARUTYUNYAN (BAO) and Elena HOVHANNESSIAN (BAO)

2004 Lusine SARGSYAN (BAO)

ANSEF Grant 2016 Call

A.N.S.E.F.

The Armenian National Science & Education Fund

The Armenian National Science & Education Fund invites grant applications for the 2016 competition. Applicants are to submit their applications through the ANSEF website portal, accessed from the top bar of the ANSEF website (www.ansef.org) or directly through the link ansef.herokuapp.com. The deadline for submissions is August 31, 2015. Competition results will be announced early January 2016. For further questions, contact help@ansef.org.

For 2016, we have funds for a total of 31 grants. Five of these are provided through the support of the Young Scientists Council of Armenia, and one through the Armenian Engineers & Scientists of America.
If you have applied for an ANSEF grant in the past through our portal, you may use your old account to submit new applications. If you have forgotten your password, the portal allows you to reset it and log in with a new password. This allows you to access all your past information in your new proposals. Watch the video tutorials on the portal's login page for more instructions.

If you are a new applicant who has not used the ANSEF portal before, you need to use the portal to first register. You will then receive an email to confirm your new account, and then proceed with logging in.

For any technical questions about the ANSEF portal, please contact website@ansef.org.

In the field of **astronomy and astrophysics**, ANSEF has supported **40** projects (USD 5000 each; projects by 22 Principal Investigators involving more than 70 scientists), including **34** from **Byurakan Astrophysical Observatory (BAO)** and **6** from **Yerevan State University (YSU)**.

Past ANSEF grants on astronomical subjects

2015
Aramyan L. (BAO), The influence of various triggers of star formation on supernova rates
Movsessian T.H. (BAO), On the nature of various type emission structures in the jets from young stars

2014
Mickaelian A.M. (BAO), X-ray properties of active galaxies
Hakobyan A.A. (BAO), Study of Supernovae and their host galaxies in the far (z ~ 0.3 – 0.6) Universe

2013
Balayan S.K. (BAO), Software for control 1m telescope bao
Hakobyan A.A. (BAO), Supernovae distribution and host galaxy properties
Movsessian T.H. (BAO), Investigation of the internal structures in the jets from young stars

2012
Mickaelian A.M. (BAO), Study of Multiwavelength Properties of Markarian Galaxies using Virtual Observatory
Movsessian T.H. (BAO), Spectro-imagery of Herbig-Haro jets with scanning Fabry-Perot interferometery
Yeghikyan A. (BAO), Theoretical investigation of cosmic ray and ultraviolet radiation processing of astrobiologically relevant ices in interstellar molecular clouds

2011
Andreasyan R.R. (BAO), The differences in the morphology and physical properties in parent galaxies of nearby extragalactic radio sources and other elliptical galaxies of the same luminosities and red shifts from the field
Hakobyan A.A. (BAO), Study of the supernova progenitors via their host galaxies from the SDSS DR7
Magakian T.Yu. (BAO), Searches of young stellar objects by H-alpha and CaII emission
Sargsyan L.A. (BAO), Dust obscuration and velocity distribution in narrow line regions of AGN

2010
Hakobyan A.A. (BAO), Different Type of Supernovae, Stellar Population and Star Formation in Galaxies
Mahtesyan A.P. (BAO), Two-point correlation functions of groups and clusters of galaxies, radio galaxies and quasars

2009
Ohanian, G.A. (BAO), Integral Field Spectroscopy of Different Types Radio Galaxies with Various Linear Sizes

2008
Nikoghosyan, E.H. (BAO), The investigation of the very active star formation region in Cygnus OB7 complex
Sadoyan, A.A. (YSU), Investigation of Gravitational Wave Sources in Medium Frequency Band

2007
Balayan S.K. (BAO), Reconstruction of the BAO 1m Schmidt Type Telescope
Mickaelian A.M. (BAO), Science with the Armenian Virtual Observatory

2006
Mahtesyan A.P. (BAO), The Influence of the Surroundings on the Physical Characteristics of Galaxies in Groups
Nikoghosyan, E.H. (BAO), Search and the Proper Motions of Herbig-Haro Objects in the Star Forming Regions
Ter-Kazarian G.T. (BAO), Multi-Nuclei Features of Markarian Galaxies and Physical Mechanism Beyond

2005
Andreasyan R.R. (BAO), The 3-D structure of the magnetic field of the Galaxy
Saharian A.A. (YSU), Casimir Densities and Induced Cosmological Constant in Higher-Loop String Cosmology
Sedrakyan D.M. (YSU), Gravitational Waves from Relativistic Superdense Stellar Objects

2004
Andreasyan R.R. (BAO), The Distribution of Free Electrons in the Galaxy
Hakopian S.A. (BAO), 3D-study of SBS galaxies
Ter-Kazarian G.T. (BAO), An Activity of Galactic Nuclei and Superdense “Protomatter” Sources in the Universe

2003
Movsessian T.H. (BAO), Multi-Component Investigation of Extragalactic Radio Sources
Vardanyan Yu.L. (YSU), Quark Matter in Superdense Stellar Objects
Zalinian V.P. (BAO), Updating the Control of the Telescope ZTA-2.6

2002
Hovhannisyan M.A. (BAO), The Investigation of the Extended Radio Galaxies
Magakian T.Yu. (BAO), Searches and Detailed Studies of Outflows from PMS Stars
Mickaelian A.M. (BAO), Digitization of the First Byurakan Survey (FBS)
Shahabasyan K.M. (YSU), Problems of Magnetic Field Behavior and Rotational Dynamics of Pulsars

2001
Khachikian E.Ye. (BAO), Radio and Optical Investigations of Extragalactic Objects
Mickaelian A.M. (BAO), Study of Starburst/AGN/Interaction Phenomena in IRAS Galaxies
Saharian A.A. (YSU), Dynamics of Higher-Loop String Cosmology and Dilation Stabilization

WDS Data Stewardship Award 2015

In today's digital era, data-enabled scientific research cannot fully benefit society without scrupulous data stewardship. The pressing challenges faced by the planet and humankind require discipline-integrated research and sound science-driven policies that are critically dependent on trusted scientific data. The World Data System (WDS) of the International Council for Science (ICSU) supports long-term stewardship of quality-assured scientific data and data services across a range of disciplines in the natural and social sciences, and the humanities. The WDS Data Stewardship Award highlights exceptional contributions to the improvement of scientific data stewardship by early career researchers through their engagement with the community, academic achievements, and innovations.

Award

The Award will be given each year and will be presented at the subsequent SciDataCon Conference. The 2015 WDS Data Stewardship Award will thus be presented at SciDataCon 2016 (exact dates and venue TBC).
The 2015 Award will include:

- Award presentation in plenary at SciDataCon 2016.
- Conference participation: travel expenses (economy airfare), lodging costs, and registration.
- A state-of-the-art electronic tablet device.

Guidance for Nomination

- Nominees should be preferably under the age of 40 and within ten (10) years of the award of their PhD or equivalent professional training.
- Nominations may be received from representatives of ICSU World Data System Members and Working Groups , ICSU Interdisciplinary Bodies , and ICSU National and Union Members .
- Nominations may be completed returned to the

WDS International Programme Office by no later than Monday, 07 September 2015: IPO@icsu-wds.org

Selection Process

A panel of members of the WDS Scientific Committee will designate the winner of the 2015 Award.

RELEASE OF ASTROPHYSICS JUNE ISSUE

Determination of the Magnitude of the Spins of Supermassive Black Holes and the Magnetic Fields in Active Galactic Nuclei
A. G. Mikhailov, Y. N. Gnedin, A. V. Belonovsky

Environmental Density vs. Colour Indices of the Low Redshifts Galaxies
D. V. Dobrycheva, O. V. Melnyk, I. B. Vavilova, A. A. Elyiv

Globular Star Cluster Systems Around Galaxies. II. Spiral and Dwarf Galaxies
I. U. Tadjibaev, S. N. Nuritdinov, J. M. Ganiev

UX Ori Variables in the Cluster IC 348
O. Yu. Barsunova, V. P. Grinin, S. G. Sergeev, A. O. Semenov…

Study of the Large-Scale Distribution of Gamma-Ray Burst Sources by the Method of Pairwise Distances
R. V. Gerasim, V. V. Orlov, A. A. Raikov

Strange Quark Stars with a Rotating Superfluid Core
D. M. Sedrakian, M. V. Hayrapetyan, D. S. Baghdasaryan

Post-Glitch Relaxation of Pulsar Angular Velocity in the Context of an Inverse Problem
M. V. Hayrapetyan, D. Baghdasaryan

Note on the Derivation of the Equation of Motion of a Charged Point-Particle from Hamilton's Principle
R. A. Krikorian

Correlations between the Morphological Type and Concentration Indices in Different Photometric Bands
Xin-Fa Deng, Guisheng Yu

Interaction of an Accretion Disk with the Magnetosphere of a Star: the Magnetic Propeller Effect in the Ballistic Approximation
S. G. Shulman

Maximum Mass of Strange Stars and Pulsars with the Most Accurately Measured Masses
Yu. L. Vartanyan, A. K. Grigoryan, H. A. Shahinyan

Hot Strange Stars. III. Stability
G. S. Hajyan, A. G. Alaverdyan

Effect of Mass Variation on the Radial Oscillations of Differentially Rotating and Tidally Distorted Polytropic Stars
Seema Saini, Sunil Kumar, A. K. Lal

RELEASE OF IAU ASTRONOMY OUTREACH NEWSLETTER #8

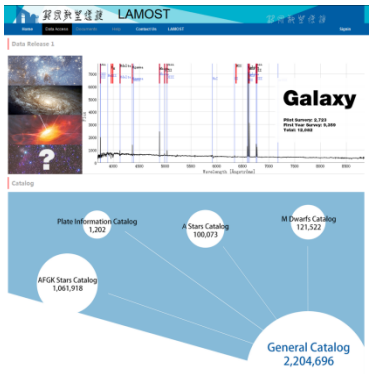
Read in this issue

The newsletter is available in the following link:http://www.iau.org/public/publications/newsletter/2015_08/

RELEASE OF IVOA NEWSLETTER JUNE ISSUE

IVOA NEWS

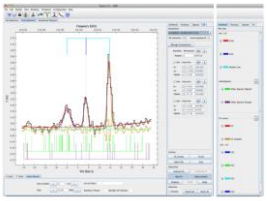
ChiVO officially launched On April 24th the Chilean Virtual Observatory (ChiVO) was officially launched to the community in a seminar held at Technical University Federico Santa María, Valparaíso, Chile.The highlights of the seminar were: First dataset: ChiVO offers all the ALMA Cycle 0 FITS (http://chivo.cl/resources/data.html), which are accessible through the IVOA registry under SCS, SIA, and TAP protocols. Web portal: with information about ChiVO and a web-based interface to SCS, SIA, and SSA protocols (http://www.chivo.cl).



LAMOST DR1 Public Release LAMOST DR1 was released to the public in March, 2015, consisting of 2.2 million of spectra of stars, galaxies, quasars, and other unknown types. It is the largest astronomical spectra archive in the world. The data access system is developed by Chinese Virtual Observatory (China-VO) under a collaboration with LAMOST team. VO tools, such as Aladin and SpecView, and dedicated tools for LAMOST are integrated into the web portal. Search results and spectra can be displayed and analyzed on the fly.

First IVOA Meeting in Africa the 2016 Northern Spring Interoperability Meeting of the IVOA will be hosted by the South African Astroinformatics Alliance (SA3). It will be held at the Stellenbosch Institute for Advanced Study (stias.ac.za), near Cape Town from 8-13 May 2016.

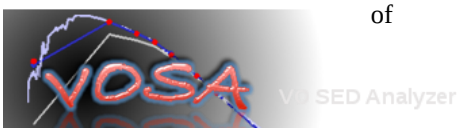
VO APPLICATIONS AND IMPLEMENTATION HIGHLIGHTS



CASSIS Spectral Tool updates A new version of CASSIS (free spectral tools) has been released. It is made availabe as either a stand alone application (http://cassis.irap.omp.eu/?page=installation), or it can be used via Java web start technology (http://cassis.irap.omp.eu/online/cassis.jnlp).

Advanced web application for X-ray research Following the recent release of the largest catalog of X-ray sources ever created, built from the XMM-Newton data and nicknamed 3XMM-DR5, the supporting website has been opened. For the first time it provides an intuitive search interface for the database of almost 400,000 X-ray sources and several advanced features for scientific analysis such as XSPEC-style spectral fitting of a vast collection of X-ray spectra right in a web browser.

New Release and upgrades to VOSA The Spanish VO will release a new version of VOSA in June 2015. VOSA (VO Sed Analyzer) is a web-based tool designed to build observational spectral energy distributions and to estimate physical parameters (Teff, logg, [M/H], masses, ages, etc) from comparison with models.



Iris v2.1 beta release We are glad to announce the Iris v2.1 beta release. The latest version of Iris includes new, powerful analysis features, like integrating under fitted model components, a tool for statistically combining groups of SEDs, and the ability to arbitrarily combine template libraries and table models with other libraries, models, and functions

SOME RECENT PAPERS ABOUT VO-ENABLED SCIENCE

- Special Issue on The Virtual Observatory
- Featured Science Publication
- Refereed Publications

VO CALENDAR

15-19 June 2015 - IVOA Interoperability Meeting
Sexten (BZ), Italy

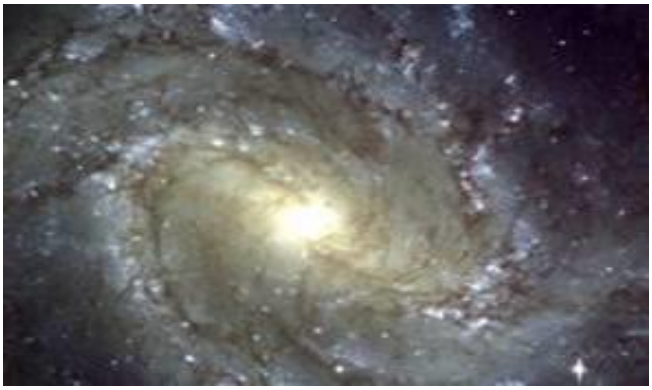
5-9 October 2015 - Astronomical Surveys and Big Data
Byurakan, Armenia

25-29 October 2015 - ADASS XXV
Rydges World Square, Sydney, Australia

30 October - 1 November, 2015 - IVOA Interoperability Meeting
Sydney, Australia

3-6 November, 2015 - .Astronomy 7
Sydney, Australia

RELEASE OF ASTROCOURIER JUNE ISSUE



CONTENTS

Astrocourier Newsletter is available in the following link:http://www.sai.msu.su/EAAS/rus/astrocourier/070415.htm

"Astronomy is historically well established and one of the thriving sciences in Armenia": Bernhard Brandl

Prof. Bernhard Brandl *recently celebrated his 50th anniversary. And on that occasion ArASNews had an interview with the Professor and discovered his relations with Armenia.*

Prof. Brandl was born in Netherlands. In 1991 he graduated from DESY (Germany) and obtained his Ph.D. degree in 1996 at MPE / LMU Munich (Germany). In 1996-2000 he was Research Associate, and in 2000-2003, Senior Research Associate at Cornell University (Ithaca, N.Y., USA). In 2003-2015 he was Associate Professor, and since 2015 he is Full Professor at Leiden University & Technical University Delft (Netherlands). Prof. Brandl's scientific interests include massive star clusters and starbursts, infrared spectroscopy and instrumentation. He is a member of the instrument teams of Spitzer-IRS, JWST-MIRI and EELT-MIDIR.

– Why have you chosen this branch of science, Astronomy?

– I've always been fascinated by black holes, galaxies, and the expanding Universe. However, I have actually studied physics, and entered the field of astronomy through the back door of astronomical instrumentation. I switched from particle physics to astronomybecause, at least at the time, astronomical research was organized in smaller groups where younger scientists could make a more significant impact, than in the huge consortia of particle physicists. I must admit that I have never regretted my change to astronomy. But it also meant that I had to learn astronomy "on the fly". I am still learning "classical" astronomy when preparing lectures in areas outside my field of research.

– Which of your works or inventions do you consider to be the most important?

– My main science contributions are in the area of the interstellar medium in starburst galaxies, mostly on the basis of observations with Spitzer and the VLT. However, my most significant contributions are probably in the area of instrumentation, most notably to JWST-MIRI, and most recently, to establish METIS – a mid-infrared instrument for which I am the Principal Investigator – as one of the first three science instruments on the E-ELT.

– How does your work affect on your social and family life?

– It is clear that a career in astronomy cannot be pursued with a regular 5 days per week, 8 hours per day, work schedule. Luckily, my family has always been very flexible and supportive, and accepting my frequent absence due to travel, moving to other countries, and working on weekends and evenings. On the other hand, working as a university astronomer usually provides flexible work hours to accommodate family or school events.

– What is your advice to those young people who have chosen science? And what about those who have chosen, especially Astronomy?

– If you really like astronomy, go for it. You should be aware that there are many more students than permanent positions, so not everyone will find a job in astronomy. However, let this worry not limit your enthusiasm about the work. Try to find a project/group that you really like and put all your efforts into that – but don't worry every day whether your career is still on track. Good people are always in demand, and astronomers learn the basics of scientific thinking, project organization, modern technologies, and computer programming. Astronomers arehence good candidates for jobs outside of academia as well.

– More often do you use computers than telescopes?

– If "computers" means numerical astrophysics, then the answers is 'no' (although I am always impressed by the computational work of my colleagues at Leiden, Joop Schaye and Simon Portegies Zwart, who run simulations of the dark matter distribution in the Universe and complex N-body processes). But computers have become essentials in our professional lives even if we "just" work with data from telescopes. Most big observational projects even provide their own dedicates data reduction packages. Besides, no modern big telescope or instrument would work without computer control.

– Have you ever collaborated with Armenian astronomers? Do you plan to accomplish any scientific project with Armenia?

– I have worked with Areg Mickaelian on the correlation of infrared sources between the IRAS catalog and the Byurakan Surveys. And during my time at Cornell University, our department chair was Yervant Terzian. But this question is a good reminder to refresh my contacts.

– With 10-point scale, how do you assess the level of professional astronomy in Armenia? Would you suggest any solution how to improve it?

– That's a tricky question and I would prefer to not give a simple "grade".I am quite impressed by the qualification and dedication of the astronomers – and in particular young astronomers – in Armenia. It appears to me that astronomy is historically well established and one of the thriving sciences in Armenia. Thriving sciences get more public attention and attract the brightest students, who contribute to keep it at a high level – a fortunate circle. On the other hand, since Galileo Galilei, astronomy has been foremost an observational science, which requires big and expensive telescopes. Almost every new observing facility, on the ground or in space, leads to new discoveries. In many countries, it is rather easy – even for young students – to work on brand new data from facilities like the VLT, ALMA, Keck, Gemini, or from ESA or NASA missions. In Europe, many countries are members in ESO, which provides a great advantage to realize your own observing program. In this regard, the hurdles for Armenian astronomers for direct access to world-class facilities are much higher, which makes it more difficult to achieve the same presence in scientific journals or public attention.

– Are today's Armenian astronomers recognized in the world?

– Yes, definitely.

– What new discoveries to expect from you in the future?

– Well, if I would already know that, it wouldn't be a real discovery anymore, right? But I expect a lot of exciting data from the next big mission I am involved, the mid-infrared instrument (MIRI) aboard the James Webb Space Telescope (JWST). And, eventually, from METIS on the E-ELT.However, it is almost impossible to predict the science we'll be doing in ten years. This uncertainty also makes science and astronomy so exciting.

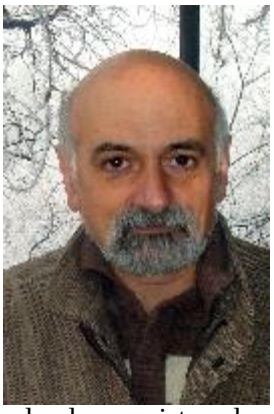
Sona Farmanyan

Ararat YEGHIKYAN – 60

Dr. Ararat Yeghikyan recently celebrated his 60th anniversary. He was born on 17 June 1955 in Alaverdi, Armenia. In 1978 he graduated from Yerevan State University with a Diploma in Physics & Astrophysics and in 1982 got his master's degree on the Theoretical & Mathematical Physics at the Institute of Theoretical Physics and Astronomy (Vilnius, Lithuania). In 1984 he again got his master's degree at this time on Theoretical Astrophysics at Leningrad State University (Saint Petersberg, Russia). In 1988 he got his Ph.D. at the Institute of Astrophysics and Atmospheric Physics (Tartu, Estonia). His thesis of a Doctor of Science will be defensed during 2015 in the Byurakan Astrophysical Observatory. The title of the thesis is "Radiation-chemical transformations of molecules in the interstellar gaseous nebulae". At present he is Senior Scientist at Byurakan Astrophysical Observatory (since 2011) and lecturer at Yerevan State University (since 2007).

As a result he has supervised 11 graduated projects at Yerevan State University, Department of Physics/Astrophysics and published about 40 papers, including 8 popular astronomical papers, 2 in the Armenian Encyclopedia.

Grigor BROUTIAN – 60



Dr. Grigor Broutian recently celebrated his 60th anniversary. He was born on 28 June 1955 in Yerevan, Armenia. In 1978 he graduated from Yerevan State University (YSU) with a Diploma in Physics and in 2004 got his Ph.D. in "Astrometry and Celestial Mechanics". His main scientific results concern the study of the old and the ancient Armenian calendars. The beginning of the old Armenian Haykian calendar was found out (2341 B.C.), as well as the position (in the tropical year) of the main feast – the Navasard: its beginning was 8 days before summer solstice. The structure of the ancient Armenian "Protohaykian" calendar was reconstructed. The year in this calendar consists only of 10 months and lasted 300 days and 60-70 days were considered out of the year. Some corrections were done concerning medieval Armenian calendars. Particularly the essence of the calendar reform of Anania Shirakouni (Shirakatsi) was adjusted, the structure of Anania's Calendar and the circumstances of the creation of Anania's famous work – the K'nnikon. The chronological systems used by Hovhannes Sarkawag were adjusted. The Armenian calendar of early Bronze Age was reconstructed on the basis of the analysis of the ornaments on a vessel of the 32th century B.C. The concept of time and space in the ancient Armenian world-view was restored from the analysis of Armenian fairy tales and the epic Sasountsi Davit.

At present *Dr.* Broutian is the Director of Viktor Ambartsumian Museum of National Academy of Sciences of Armenia (since 2000) and researcher at Mashtots Matenadaran in Yerevan (since 2009). As a result of his research he has 5 monographs (2 are in press) and about 60 scientific papers.

JULY CALENDAR OF ASTRONOMICAL EVENTS