

# ArAS News

NEWSLETTER

ARMENIAN ASTRONOMICAL SOCIETY (A r A S)



No. 95 (July 31, 2016)

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ArAS Newsletter online at: <http://www.aras.am/ArasNews/arasnews.html>

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# EUROPEAN WEEK OF ASTRONOMY AND SPACE SCIENCE



The European Week of Astronomy and Space Science (EWASS, formerly JENAM) 2016 was held on 4-8 July 2016 in Athens, Greece. 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 (this time, namely with Hellenic Astronomical Society, Hell.A.S., <http://www.helas.gr/>).



With more than 25 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 administrative 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 2016 gathered 882 astrophysicists and other participants from the 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-2016, including 17 symposia, 12 special sessions, 6 special meetings, 7 plenary lectures and 5 prize award talks and EAS General Assembly:

## EWASS-2016 Symposia

- S1 On the Threshold of 1st Gaia Data - the Gaia Research for European Astronomy Training (GREAT) Network Science Symposium
- S2 Understanding CMB Polarization Foregrounds - Clearing the Path to Inflationary B-modes
- S3 MUSE first year science and beyond
- S4 Future Prospects for Far-Infrared Space Astrophysics
- S5 How galaxies live and die: the onset and end of star formation across cosmic time
- S6 Exploring the outskirts of galaxy clusters
- S7 X-rays from AGN: looking into the central engine
- S8 Interstellar dust and gas coupling: linking observations, models and laboratory astrophysics
- S9 The Dynamics of Star and Planet Formation
- S10 Probing the New Frontiers with Cluster Lenses
- S11 Gamma-ray bursts: recent theoretical models and observations
- S12 Stellar and AGN feedback in galaxies: a multi-wavelength perspective of outflows
- S13 High and Very-High Energy Gamma-ray Astronomy: status and future
- S14 New Classes and Unique Events in Time Domain Astronomy
- S15 Exploring pulsar formation, evolution and magnetic field: from low mass X-ray binaries to magnetars
- S16 Frontiers of massive-star evolution and core-collapse supernovae
- S17 Magnetic Helicity in Sun and Stars: From Dynamo Action to Eruptive Phenomena

## EWASS-2016 Special Sessions

- SS1 The Square Kilometre Array Observatory: Current Status and Science Program
- SS2 Solar-Terrestrial Coupling and Space Weather: State-of-the-Art and Future Prospects
- SS3 Evolved stars at high angular resolution
- SS4 Planning the large spectroscopic surveys with the next generation of European high-multiplex spectroscopic survey instruments
- SS5 A multi-messenger view of mergers and multiple supermassive black holes
- SS6 The life and times of the Milky Way bulge
- SS7 The effects of solar and stellar magnetic activity on planets
- SS8 The challenges of multiple stellar populations in globular clusters
- SS9 Episodic accretion in star formation
- SS10 Nanoradians on the sky: VLBI across the Mediterranean and beyond
- SS11 The interplay between turbulence and micro-physical processes
- SS12 Promoting Diversity in Astronomy

## EWASS-2016 Plenary Lectures

- **Roland Bacon** (Observatory of Lyon, France): *From globular clusters to the Hubble deep fields: first science IMPACT of MUSE, the ESO VLT Multi-Unit Spectroscopic Explorer*
- **Corinne Charbonnel** (University of Geneva, Switzerland): *Multiple Stellar Populations in Globular Clusters - Observational breakthroughs and theoretical challenges*
- **Emanuele Daddi** (CEA/Saclay, France): *Observing galaxy formation and evolution: successes and open issues*
- **Reinhard Genzel** (MPI for Extraterrestrial Physics, Germany): *The Galactic Center Black Hole: a Quest*
- **Luigi Colangeli** (ESA): *ESA Report*
- **Rob Ivison** (ESO): *ESO Report*
- **Rob Fender** (University of Oxford, UK): *Black Holes at Large: extreme astrophysics around stellar-mass black holes*

## Prize Award Talks and Ceremonies

- Tycho Brahe Prize – **Joachim Trümper** (Max-Planck-Institute for Extraterrestrial Physics, Germany): *Discoveries in the X-ray Sky – a personal recollection*
- Lodewijk Woltjer Lecture – **Thibault Damour** (Institut des Hautes Etudes Scientifiques, France)
- MERAC Prize in Theoretical Astrophysics – **Maria Petropoulou** (Purdue University, West Lafayette, USA)
- MERAC Prize in Observational Astrophysics – **Yingjie Peng** (Kavli Institute for Astron. and Astroph. at Peking University, China): *Simplicity of the evolving galaxy population and the origin of the Schechter function*
- MERAC Prize in New Technologies – **Oliver Pfuhl** (Max-Planck-Institute for Extraterrestrial Physics, Germany): *High precision astrometry with the GRAVITY interferometer*

From Armenia, three astronomers took part; BAO Deputy Director and Leading Research Associate, ArAS Co-President **Dr. Areg Mickaelian**, BAO Senior Research Associate **Dr. Artur Hakobyan** and BAO Junior Research Associate **Hayk Abrahamyan**. In addition, Armenian astronomer working in Institute of

Astronomy, UNAM (Mexico) **Gagik Tovmassian**. Several other ArAS members, **Michel Dennefeld** (France) and also participated in EWASS-2016.

Armenian astronomers in a number of sessions presented oral talks (A.M. Mickaelian and G.H. Tovmassian) and posters (A.A. Hakobyan and H.V. Abrahamyan). They also participated in EAS General Assembly and 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.

**EWASS-2016 webpage:** <http://eas.unige.ch/EWASS2016/>

EAS was founded in 1990 and has 25 national Affiliated Societies (including ArAS) and some 800 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.

### All past JENAM and EWASS meetings

- EWASS-2016 in Athens (Greece) from 4 to 8 July 2016
- EWASS-2015 in La Laguna (Tenerife, Canary Islands, Spain) from 22 to 26 June 2015
- 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 Large Telescopes from Ground and Space*
- JENAM-2000 in Moscow (Russia)
- JENAM-1999 in Toulouse (France)
- JENAM-1998 in Prague (Czech Rep.) – *Prospects of Astronomy & Astrophysics 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 EWASS meeting will be held on 26-30 June 2017 in Prague (Czech Republic).

## V. AMBARTSUMIAN INTERNATIONAL SCIENCE PRIZE 2016 WILL NOT BE AWARDED



VIKTOR AMBARTSUMIAN INTERNATIONAL PRIZE  
ՎԻԿՏՈՐ ՀԱՄԲԱՐՉՈՒՄՅԱՆԻ ԱՆՎԱՆ ՄԻՋԱԶԳԱՅԻՆ ՄՐՑԱՆԱԿ

V. Ambartsumian International Science Prize has been established by the President of Armenia in 2009 and at present is one of the important awards in astronomy/astrophysics and related sciences. It is being awarded to outstanding scientists from any country and nationality having significant contribution in science. The Prize totals USD 500,000 and since 2010 is being awarded once every two years.

The **International Steering Committee (ISC)** consists of 9 outstanding scientists: *Acad. Radik Martirosyan* (President of the Armenian National Academy of Sciences, Armenia, ISC Chair), *Prof. Catherine Cesarsky* (Saclay Centre for Nuclear Research, France, Past International Astronomical Union President), *Prof. Anatol Cherepashchuk* (Director of Sternberg State Astronomical Institute, Moscow, Russia, academician), *Prof. Norio Kaifu* (Past General Director, Japan National Astronomical Observatory, Tokyo, Japan, Past International Astronomical Union President), *Prof. Michel Mayor* (Geneva University, Switzerland, First Winner of V. Ambartsumian International Science Prize), *Prof. Vahe Petrosian* (Chair of Astronomy Program, Stanford University, California, USA, NAS RA Foreign Member), *Prof. Brian Schmidt* (Australian National University, Research School of Astronomy and Astrophysics, Mount Stromlo Observatory, Canberra, Australia, 2011 Nobel Prize Winner), *Prof. Joseph Silk* (Professor of Oxford University and Institut d'Astrophysique de Paris (IAP), Member of the Royal Society, UK) and *Prof. Yervant Terzian* (Cornell University, Ithaca, New York, USA, Chair of the Scientific Council of the Armenian National Science and Educational Fund, NAS RA Foreign Member).

According to the By-Laws, 2016 **Prize was announced on September 18, 2015**, March 18, 2016 was the deadline for nominations of candidates, and the ISC received nominations from national academies of sciences, universities, observatories and astronomical institutions for 6 individual scientists and teams from different countries: Armenia, Brazil, France, Germany, Switzerland, Ukraine and some other countries representing the team members. The nominated works were sent to famous independent experts of the given field suggested by ISC members and at least two referee reports were received for each work. The International Steering Committee, based on a thorough study of the nominated works, discussions and independent evaluation, summarized its opinion at a Teleconference meeting held on July 15.

According to ISC, **V. Ambartsumian International Science Prize will not be awarded this year**, as among the nominated candidates there was no reliable nominee to fit all conditions of the Prize.

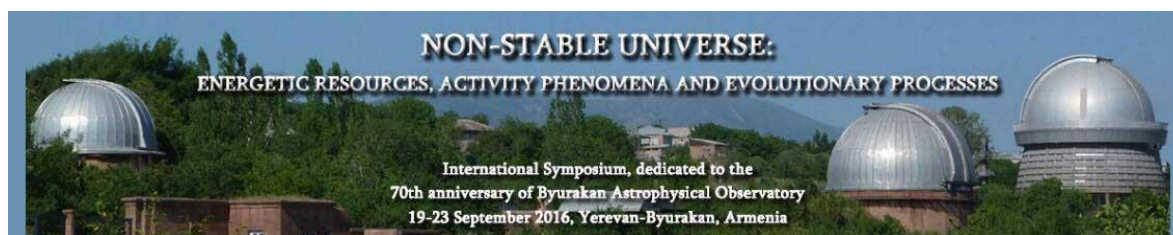
### Previous winners were:

- 2010** – Michel Mayor (Obs. de Genève, Switzerland), Garik Israelian (Instituto de Astrofísica de Canarias, Spain), Nuno Santos (Centro de Astrofísica da Universidade do Porto, Portugal)
- 2012** – Jaan Einasto (Tartu Observatory, Estonia) and Igor Novikov (Astro-Space Center, P.N. Lebedev Physics Institute, Russia)
- 2014** – Felix Aharonian (Ireland and Germany), and jointly Igor Karachentsev (Russia) and Brent Tully (USA),
- 2016** – The Prize was not awarded.

The Call for the next Prize will be released on September 18, 2017 and the award will take place in September 2018.

*V. Ambartsumian International Science Prize Steering Committee*

## Symposium Dedicated to the 70<sup>th</sup> Anniversary of BAO



The meeting “*Non-Stable Universe: Energetic Resources, Activity Phenomena and Evolutionary Processes*” dedicated to the 70<sup>th</sup> anniversary of Byurakan Astrophysical Observatory (BAO) will be held on 19-23 September 2016 in Yerevan and Byurakan, Armenia. A number of outstanding scientists, astronomers having tight relations to BAO, representatives of regional countries with an involvement of BAO traditional research areas related to instability phenomena in the Universe, both observational and theoretical will participate to the meeting. BAO is famous for its studies related to activity phenomena and evolutionary processes in the Universe. BAO is also famous for its surveys, which also led to the discovery of many new non-stable objects (variable stars, active galaxies, etc.) to investigate the abovementioned phenomena and processes. Markarian Survey and other surveys are famous as well: Arakelian and Kazarian galaxies, Shahbazian compact groups, Parsamian cometary nebulae and other objects.

### Topics

Instability phenomena in the Universe  
 Active Sun and the evolution of the Solar System  
 Stars and nebulae  
 Galaxies, quasars and cosmology  
 Energetic resources of activity phenomena and evolutionary processes

### Proceedings

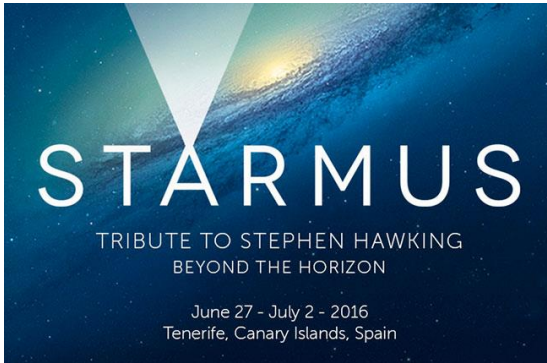
The Proceedings will be published by BAO and NAS RA before 31.03.2017. Haik Harutyunian and Areg Mickaelian are the editors. The deadline for submission of papers is 15 December 2016. Instructions for preparation of the papers will be given later. Page limits: Invited talks 8 pages, Contributed talks 5 pages, Posters 2 pages

### Dates and Deadlines

|               |  |
|---------------|--|
| 08.07.2016    | First announcement and webpage; call for abstracts and registration  |
| 10.08.2016    | Abstract submission and registration deadline                        |
| 20.08.2016    | Accepting abstracts and selection of participants                    |
| 31.08.2016    | Final programme and list of participants. Abstracts available online |
| 31.08.2016    | Accommodation reservation deadline                                   |
| 10.09.2016    | Final announcement with practical information                        |
| 19-23.10.2016 | “Non-Stable Universe” symposium                                      |
| 15.12.2016    | Submission of papers for the Proceedings deadline                    |
| 31.03.2017    | Publication of the Proceedings Book                                  |

Webpage: <http://bao-70.aras.am/index.html>

## STARMUS FESTIVAL III: “Beyond the Horizon – Tribute to Stephen Hawking”



From June 27 to July 2, under the unique stellar sky of the islands of Tenerife and La Palma, in the Canary Islands, “the third edition of Starmus brought together scientific authorities and the brightest minds in the world to help experts, lovers and those curious about science, to venture into the great enigmas, threats, discoveries and curiosities to which we are exposed today, we realize it or not,” said Garik Israelian, astrophysicist and founder-director of Starmus. Under the theme ‘Beyond the Horizon – Tribute to Stephen Hawking’ the 2016 event took

inspiration from the legendary man himself and the notion that nothing is impossible. A comprehensive programme of events included lectures from key note speakers, round table discussions, exclusive music performances, creative arts exhibitions and visits to local observatories. In addition to a glittering line-up of Nobel prizewinners in different fields, the festival featured renowned astronomers, astrophysicists and scientists, including notably astronauts. Discussions focused on pushing the boundaries of science and touch on subjects such as the blurring relationship between science and science fiction and how technology will affect the future of humanity. The Starmus Festival is supported by the Tenerife Island Government and is the brainchild of Garik Israelian, an astrophysicist researcher at the IAC. He sits on a scientific advisory board which includes Prof. Stephen Hawking, Dr. Brian May, legendary Russian cosmonaut Alexei Leonov, who became the first human to make a ‘spacewalk’ back in 1965, British ethnologist and scientist Prof. Richard Dawkins, Peter Gabriel, Sir Harold Kroto, David Eicher.

To bring science to the people and to position it in our daily lives. With this mission, in late 2015, the Stephen Hawking Medal of Science was born to honor individuals and entities that had contributed, in an eminent way, to popularizing science in the category of Science, Art and Film. Sponsored by Starmus and by astrophysicist and Professor Stephen Hawking, the medals were delivered by Professor Stephen Hawking in a ceremony which took place during Starmus Festival on Wednesday, June 29th 2016 in Tenerife. 2016 was the first edition of these awards. In Science category, the medal has been awarded to Jim Al-Khalili, physicist, writer and broadcaster. The medal of Arts has been awarded to Hans Zimmer, composer of film soundtracks. The documentary film, “Particle Fever”, directed by Mark Levinson and produced by David E. Kaplan, Mark Levinson, Andrea Miller and Carla Solomon, is the winner in the category of Film.

During the festival, Kuoni Congress offered several excursions which gave STARMUS delegates the opportunity to discover the Teide Observatory in Tenerife as well as Roque de los Muchachos, located in the island of La Palma.

*“I greatly enjoyed the STARMUS festival. It is a combination of science and rock music, both of which I love. I hope there is a STARMUS next year, and you invite me. In a world beset by so many terrible problems, and so lacking in solutions, STARMUS offers a ray of hope.” - Stephen Hawking*

Source: STARMUS official website (<http://www.starmus.com/>)



## Almaty Hosted International School-Seminar on "Spectrophotometry of Astronomical Objects: Theory and Practice"

On the basis of the Astrophysical Institute named after Fessenkov "National Center for Space Research and Technology" of Kazcosmos Almaty held the International scientific and practical School-Seminar on the theme: "Spectrophotometry of astronomical objects: Theory and Practice". The seminar was attended by the representatives of scientific organizations from Kazakhstan, Russia, Germany, the Ukraine, Mongolia, Armenia, Georgia, Uzbekistan and Tajikistan.



From Armenia, BAO Junior Research Associate **Gurgen Paronyan** took part to this school-seminar.

The main purpose of the event was the development of advanced software tools and products used in the world's astronomical research and their integration into research activities, Kazcosmos reported. It should be noted that this problem is currently relevant and important in view of the fact that through the use of digital technologies, systems and matrices a CCD in astronomy there is an opportunity to study the processes not previously available.

The latest digital technology and advanced communication systems contribute to the unification of the thematic group of astronomers from different countries in order to improve efficiency and reduce the dependence of the results of these works from the bad weather in any single observatory, as the project uses several observatories, united by a common goal.

Much attention was paid to the event monitoring gamma-ray bursts, supernovae, quasars, gravitational lenses, asteroid danger and other urgent scientific problems.

*Gurgen Paronyan*

## ANSEF Grant Call



# A.N.S.E.F.



The Armenian National Science & Education Fund

The Armenian National Science & Education Fund invites grant applications for the 2017 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 [ansef.herokuapp.com](http://ansef.herokuapp.com). The deadline for submissions is August 31, 2016. Competition results will be announced early January 2017. For further questions, contact [help@ansef.org](mailto:help@ansef.org).

For 2017, we have funds for a total of 30 grants. Five of these are provided through the support of the Young Scientists Support Program under the auspices of the RA President.



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 have 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](mailto:website@ansef.org).

## ESO Outreach Community Newsletter July 2016



### **ESO ANNOUNCEMENTS**

\*The Messenger No. 164 Now Available\*

\*ESO Supernova Basic Construction Complete - A supernova as a beginning, rather than an end\*

\*La Silla Observatory Opens for Public Visits during Winter\*

\*ESO Signs Agreement to Build Detectors for MOONS - The world-class MOONS spectrograph will use the largest near-infrared detectors available\*

\*ALMA Sounds, an Interactive Project to Search for a Common Cosmic Language\*

\*Science in School: Issue 36 now available\*

\*ESO Annual Report 2015 Now Available\*

### **STARS@ESO**

\*art&science@ESO Residency Award winners Quadrature make a visit\*

### **ESOCAST**

\*ESOCast 85: Chile Chill 7 — "Visitors to the Desert"\*

### **ESO PRESS RELEASES**

\*A Surprising Planet with Three Suns\*

\*Jupiter Awaits Arrival of Juno - Spectacular VLT images of Jupiter presented just days before the arrival of the Juno spacecraft\*

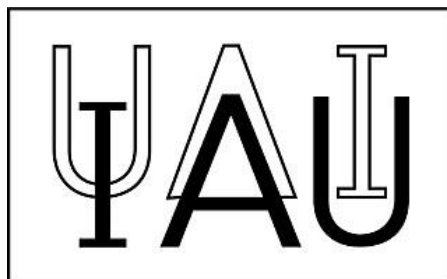
\*Successful First Observations of Galactic Centre with GRAVITY - Black hole probe now working with the four VLT Unit Telescopes\*

\*Unexpected Excess of Giant Planets in Star Cluster\*

\*ALMA Observes Most Distant Oxygen Ever\*

\*First Detection of Methyl Alcohol in a Planet-forming Disc\*

## RELEASE OF IAU ASTRONOMY OUTREACH NEWSLETTER 2016 #14, July #2



In this newsletter:

From the Editors

IAU/NASL Office for Young Astronomers (OYA) nomination

National Outreach Contacts (NOCs) corner: News from Sweden

My Sky Tonight

Fronteras/Borderlines: A fulldome show based on social use of astronomy

The new world atlas of artificial night sky brightness

Let's Look at the Sun with Hinode Satellite 2016

Silicon Valley Astronomy Lecture Series

Space TV app for Android

Meetings & global events

Recently added

Important deadline

Upcoming

IAU Astronomy Outreach Newsletter in other languages

Contributions to IAU Outreach Newsletter for 2016



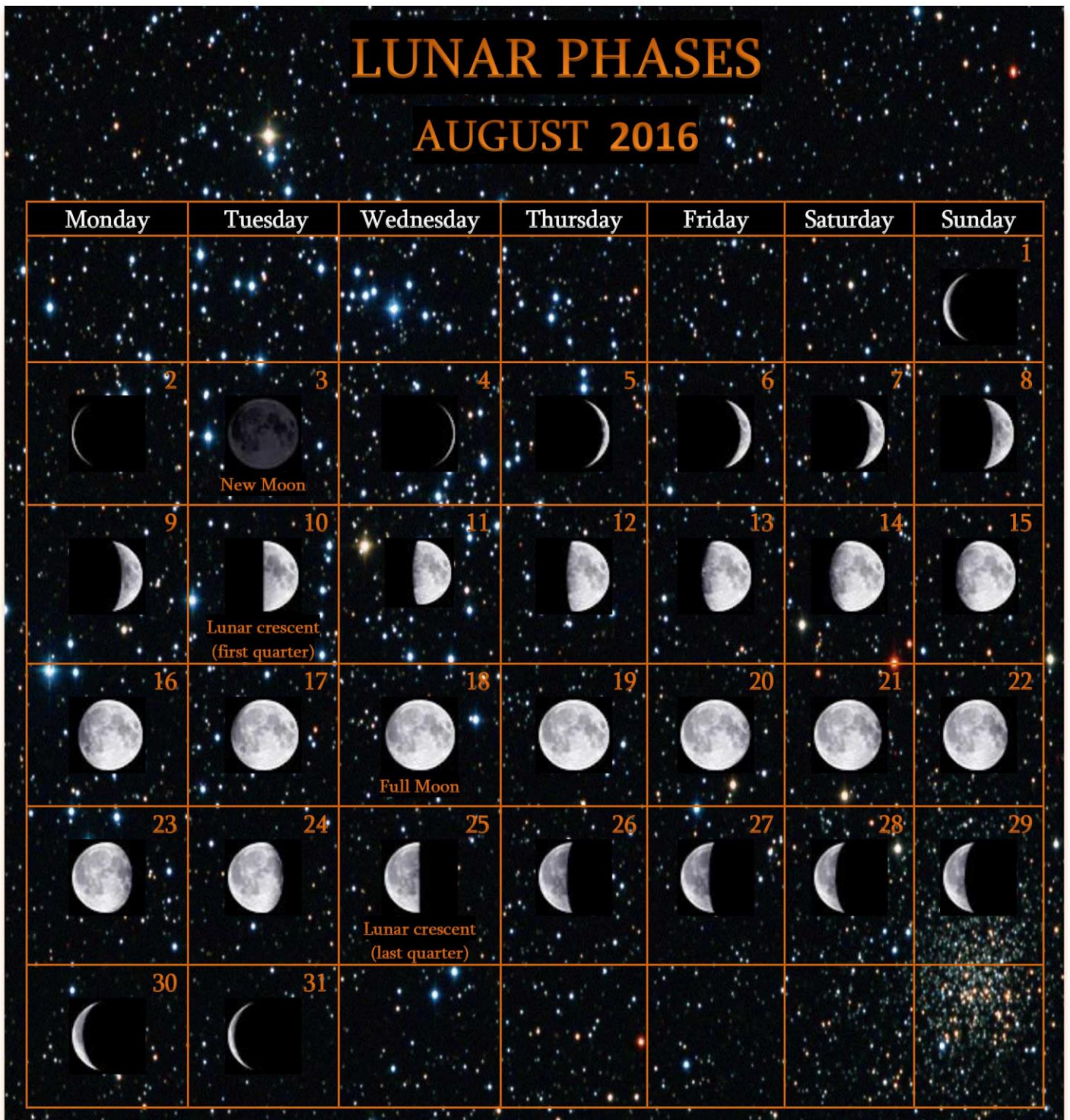
## Rudolf MURADIAN – 80



Well known Armenian physicist, Prof. Rudolf Muradian celebrated his 80<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 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).

LUNAR PHASES OF JULY



# AUGUST CALENDAR OF ASTRONOMICAL EVENTS

Monthly Calendar of Astronomical Events  
AUGUST 2016

| Monday | Tuesday                           | Wednesday  | Thursday   | Friday                             | Saturday   | Sunday   |
|--------|-----------------------------------|--|--|------------------------------------|--|--|
| 1      | 2                                 | 3<br>Full moon                                       | 4  | 5                                  | 6<br>Lunar occultation of Jupiter  | 7  |
| 8      | 9                                 | 10<br>Lunar crescent (first quarter)                 | 11   | 12                                 | 13   | 14   |
| 15     | 16                                | 17   | 18<br>New moon   | 19<br>Lunar occultation of Neptune | 20<br>Yuri Vardanyan's 80th anniversary                                    | 21<br>Cepheids-2 meteor shower; peak at 2016.08.20-21  |
| 22     | 23                                | 24   | 25<br>Conjunction of Mars vs. Saturn<br>Lunar crescent (first quarter) | 26                                 | 27<br>Conjunction of Venus vs. Jupiter<br>Conjunction of Mercury vs. Venus | 28<br>Triple Conjunction of Mercury, Jupiter and Venus |
| 29     | 30<br>ArAS Newsletter #96 Release | 31<br>Deadline for submission of ANSEF projects 2016 |  |                                    |  |  |