# ArAS News

NEWSLETTER

**ARMENIAN ASTRONOMICAL SOCIETY (A r A S)**


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# IAU Symposia 2018

The IAU Executive Committee has decided the list of the IAU symposia to be held in 2018; 3 before the IAU General Assembly (GA) and 7 during the IAU GA, totaling 10 IAU symposia in 2018.

**IAU S340:** ***Long-term datasets for the understanding of solar and stellar magnetic cycles***
19-23 Feb 2018, Jaipur, India

**IAU S341:** ***Challenges in Panchromatic Modelling with Next Generation Facilities***
02-06 Apr 2018, Osaka, Japan

**IAU S342:** ***Perseus in Sicily: from black hole to cluster outskirts***
14-18 May 2018, Noto, Italy

**IAU Symposia during the IAU General Assembly**

**IAU S343:** ***Why Galaxies Care About AGB Stars: A Continuing Challenge through Cosmic Time***
20-24 Aug 2018, Vienna, Austria

**IAU S344:** ***Dwarf Galaxies: From the Deep Universe to the Present***
20-23 Aug 2018, Vienna, Austria

**IAU S345:** ***Origins: From the Protosun to the First Steps of Life***
20-24 Aug 2018, Vienna, Austria

**IAU S349:** ***Under One Sky: The IAU Centenary Symposium***
20-23 Aug 2018, Vienna, Austria

**IAU S346:** ***High-mass X-ray binaries: illuminating the passage from massive binaries to merging compact objects***
23-30 Aug 2018, Vienna, Austria

**IAU S347:** ***EArly Science with ELTs (EASE)***
27-31 Aug 2018, Vienna, Austria

**IAU S348:** ***21st Century Astrometry: crossing the Dark and Habitable frontiers***
27-30 Aug 2018, Vienna, Austria

# IVOA Interoperability Meeting 2017

http://ivoa2017shanghai.csp.escience.cn/dct/page/1

**The International Virtual Observatory Alliance (IVOA) Interoperability Meeting 2017** was held on May 14-19, 2017 in Shanghai, China. The **Virtual Observatory (VO)** aims to provide a research environment that opens up new possibilities for scientific research based on data discovery, efficient data access, and interoperability. The vision is of global astronomy archives connected via the VO to form a multiwavelength digital sky that can be searched, visualized, and analyzed in new and innovative ways. VO projects worldwide working toward this vision are already providing science capabilities with new tools and services.


The **International Virtual Observatory Alliance (IVOA)** was formed in June 2002 with a mission to facilitate the international coordination and collaboration necessary for the development and deployment of the tools, systems and organizational structures necessary to enable the international utilization of astronomical archives as an integrated and interoperating VO. The IVOA now comprises 21 VO projects from 19 countries: Argentina (NOVA), Armenia (ArVO), Australia (Aus-VO), Brazil (BRAVO), Canada (CVO), Chile (ChiVO), China (China-VO), France (OV-France), Germany (GAVO), Hungary (HVO), India (VO-India), Italy (VObs.it), Japan (JVO), Russia (RVO), South Africa (SA3), Spain (SVO), UK (AstroGrid), Ukraine (Ukr-VO) and USA (USVOA) and 2 European ones: Euro-VO (European Virtual Observatory) and ESA-VO (European Space Agency VO). The **Armenian Virtual Observatory (ArVO)** was created in 2005 and in the same year joined IVOA.

The semi-annual **IVOA "Interop" Meetings** provide a venue for discussion and development of VO standards and VO-based applications. These meetings are open to those with an interest in utilizing the VO infrastructure and tools in support of observatory operations and/or astronomical research.

The IVOA Northern Spring 2017 Interoperability Meeting was held in Shanghai, the largest city in China on May 14-19, 2017. The meeting was organized by the Chinese Virtual Observatory (China-VO) and Shanghai Astronomical Observatory (SHAO) with funding supports from Chinese Academy of Sciences (CAS), National Natural Science Foundation of China (NSFC) and Inspur Corporation. China-VO is the national VO project in China initiated in 2002 by Chinese astronomical community leading by National Astronomical Observatories, Chinese Academy of Sciences. China-VO became a member of the IVOA in 2002. In May 2007, the China-VO hosted the 2007 Spring IVOA Interop Meeting in Beijing. SHAO, an institute of CAS, was officially established in 1962. Astro-geodynamics, Galaxies & Cosmology and Planetary Science are the major basic research fields in SHAO. The main observational facilities include 25m and 65m radio telescopes with a VLBI data processing center, 1.56m optical telescope, and 60cm satellite laser ranging (SLR) telescope and GPS. SHAO manages the Chinese VLBI Network and the Chinese SLR Network. SHAO is planning to build the SKA Regional Science Data Center for Asia and Pacific.

In total, 116 participants from some 20 countries took part in the meeting. Among them, there were the members of the IVOA Executive Committee, projects managers and other representatives of national VO projects and many other astronomers and computer scientists. ?? plenary talks and ?? contributed ones were presented. From Armenia, **Areg Mickaelian** (Director of BAO and Project Manager of the Armenian Virtual Observatory, ArVO) participated. He also participated in two IVOA Executive Committee meetings on May 14 and 17.

# IVOA Interoperability Meeting 2017


The fourth Middle East and African IAU Regional meeting (MEARIM), was jointly hosted by Entoto Observatory & Research Center(EORC) and East African Regional Office of Astronomy for Development (ROAD-IAU) and was conducted from 22-25 May 2017 in Addis Ababa, Ethiopia with the theme of "Exploring our Universe for the benefit of Humankind" .

The purpose of the meeting was to strengthen and build capacity of Middle East and African Regional development in Astronomy, to provide a forum and network for scientists and students in the region to exchange ideas and experiences, share research outputs and knowledge's, to brief and updates current status of Astronomy development in the region , to build joint working groups of research networks , to provides an opportunity for young and upcoming scientists in training, education and cross border co-supervision and sharing of resources and to put forward cooperation of Middle East and African in furthering Astronomy and Space Science in the region.

During the symposium there were activities such as scientific paper presentations, Plenary Guest and Invited speakers sessions, meetings and discussion on the general progress and Assessments of Astronomy and Astrophysics development in the Middle East and Africa Region.

From Armenia, **Areg Mickaelian** (Director of BAO and SWCA ROAD) and **Sona Farmanyan** (Public Outreach Coordinator of SWCA ROAD) participated to the meeting.

# SHAW PRIZE FOUNDATION ANNOUNCED THE SHAW LAUREATES FOR 2017


The Shaw Prize Foundation announced the Shaw Laureates for 2017. The Shaw Prize consists of three annual prizes: Astronomy, Life Science and Medicine, and Mathematical Sciences, each bearing a monetary award of US$1.2 million. This will be the fourteenth year that the Prize has been awarded and the presentation ceremony is scheduled for Tuesday, 26 September 2017.

The Shaw Prize in Astronomy is awarded to Simon D M White Director, Max Planck Institute for Astrophysics, Germany for his contributions to understanding structure formation in the Universe. With powerful numerical simulations he has shown how small density fluctuations in the early Universe develop into galaxies and other nonlinear structures, strongly supporting a cosmology with a flat geometry, and dominated by dark matter and a cosmological constant.

# GRUBER PRIZE FOUNDATION ANNOUNCED THE LAUREATE FOR 2017

The 2017 Gruber Foundation Cosmology Prize recognises Sandra Faber for a body of work that has helped establish many of the foundational principles underlying the modern understanding of the Universe on the largest scales. The Gruber Foundation Cosmology Prize honours a leading cosmologist, astronomer, astrophysicist or scientific philosopher for theoretical, analytical, conceptual or observational discoveries leading to fundamental advances in our understanding of the Universe.

Less than a hundred years ago, astronomers were still debating whether our Milky Way Galaxy was the entirety of the Universe or if other galaxies existed beyond our own. Today, astronomers estimate the number of galaxies within the visible Universe at somewhere between 200 billion and 2 trillion. For more than four decades, Sandra Faber — now Professor Emerita at the University of California, Santa Cruz, and Astronomer Emerita of the University of California Observatories — has served as a pivotal figure in leading and guiding the exploration of this unimaginably vast and largely unknown scientific territory.

The citation praises Faber for "her groundbreaking studies of the structure, dynamics, and evolution of galaxies." Her work has led to the widespread acceptance of the need to study dark matter, to an appreciation of the inextricable relationship between the presence of dark matter and the formation of galaxies, and to the recognition that black holes reside at the heart of most large galaxies. She has also made significant contributions to the innovations in telescope technology that have revolutionised modern astronomy. Through these myriad achievements, Faber has aided and inspired the work of astronomers and cosmologists worldwide.

The advances and discoveries she has been involved in, both observational and technological, have helped define how scientists think about and investigate galaxies and superclusters of galaxies, the largest structures in the Universe. For Faber, though, they have also helped define how civilisation can conceive of its place in the cosmos. In recent years, she has become a prolific public speaker, delivering her lecture "Cosmic Knowledge and the Future of the Human Race" around the world.

"Astronomical knowledge is probably the most important single discipline that you need to know in order to be an informed citizen of Earth," Faber comments. The reason, she says, is that developments in astronomy over the past few decades have shown us that we have been given "the precious gift of cosmic time" — the concept that the universe exists on a scale of billions of years and that planet Earth will be a safe haven for us for hundreds of millions of years into the future. "Astronomical knowledge tells us how we got here and furthermore, having understood that, we can extrapolate more confidently for the future."

In addition to a cash award of $500 000, Faber will receive a gold medal and a citation that reads: "The Gruber Foundation proudly presents the 2017 Cosmology Prize to Sandra Faber for her groundbreaking studies of the structure, dynamics, and evolution of galaxies. Her research ranges from detailed studies of the stellar populations, masses, dark matter content, and supermassive black holes in nearby galaxies, to surveys of distant galaxies over cosmic time. The results of these investigations have aided and inspired the work of astronomers and cosmologists worldwide."

# FIRST STONE CEREMONY FOR ESO'S EXTREMELY LARGE TELESCOPE

**A ceremony marking the first stone of ESO's Extremely Large Telescope (ELT) has been attended today by the President of the Republic of Chile, Michelle Bachelet Jeria. The event was held at ESO's Paranal Observatory in northern Chile, close to the site of the future giant telescope. This milestone marked the beginning of the construction of the dome and main telescope structure of the world's biggest optical telescope, and ushered in a new era in astronomy. The occasion also marked the connection of the observatory to the Chilean national electrical grid.**

President Bachelet was today received by Tim de Zeeuw, Director General of ESO, Roberto Tamai, the ELT Programme Manager, and Andreas Kaufer, the Director of the La Silla Paranal Observatory. Aurora Williams, Minister of Mining, Luis Felipe Céspedes, Minister of Economy, and Andrés Rebolledo, Minister of Energy, were also present. In addition, the ceremony was attended by many other distinguished international and Chilean guests from government and industry, along with ESO scientists and engineers, and local and international media representatives [1].

Highlights of the ceremony included the sealing of a time capsule prepared by ESO. The contents include a poster of photographs of current ESO staff and a copy of the book describing the future scientific goals of the telescope. The cover of the time capsule is an engraved hexagon made of Zerodur®, a one fifth-scale model of one of the ELT's primary mirror segments.

In her speech, the President emphasised: "With the symbolic start of this construction work, we are building more than a telescope here: it is one of the greatest expressions of scientific and technological capabilities and of the extraordinary potential of international cooperation."

Tim de Zeeuw thanked the President and her Government for their continuing support of ESO in Chile and their protection of the country's unequalled skies: "The ELT will produce discoveries that we simply cannot imagine today, and it will surely inspire numerous people around the world to think about science, technology and our place in the Universe. This will bring great benefit to the ESO Member States, to Chile, and to the rest of the world."

Patrick Roche, President of the ESO Council, adds: "This is a milestone in ESO's history, the ELT will be the most powerful and ambitious telescope of its kind. We have reached this point thanks to

the efforts of many people in the Member States of ESO, in Chile and elsewhere, over many years. I thank them all and am delighted to see many of them here today, celebrating on this occasion." With a main mirror 39 metres in diameter, the Extremely Large Telescope (ELT) will be the largest optical/infrared telescope in the world and will take telescope engineering into new territory. It will be housed in an enormous rotating dome 85 metres in diameter — comparable in area to a football pitch [2].

One year ago, ESO signed a contract with the ACe Consortium, consisting of Astaldi, Cimolai and the nominated sub-contractor EIE Group, for the construction of the dome and telescope structure (eso1617). This was the largest contract ever awarded by ESO and also the largest contract ever in ground-based astronomy. With the laying of the first stone, the construction of the ELT dome and telescope structure has officially begun.

The ceremony also marked the connection of the Cerro Paranal and Cerro Armazones sites to the Chilean national electrical grid. This connection, which has been made possible thanks to the strong support of the Chilean Government, is managed by the Chilean Grupo SAESA. The new connection will reduce costs and provide greater reliability and stability, as well as reduce the observatory's carbon footprint.

The ELT is the latest of many ESO projects that have benefited greatly from the continuing support of the Government of the host state of Chile over more than half a century. The strong support of the Ministry of Foreign Affairs, the Ministry of Energy and the National Commission for Energy (CNE) has been vital in establishing the successful connection of the site to the power grid.

The ELT site was donated by the Government of Chile, and is surrounded by a further large concession of land to protect the future operations of the telescope from interference of all kinds — contributing towards retaining Chile's status as the astronomy capital of the world.

The ELT will be the biggest "eye" ever pointed towards the sky and may revolutionise our perception of the Universe. It will tackle a wide range of scientific challenges, including probing Earth-like exoplanets for signs of life, studying the nature of dark energy and dark matter, and observing the Universe's early stages to explore our origins. It will also raise new questions we cannot conceive of today, as well as improving life here on Earth through new technology and engineering breakthroughs.

The ELT is targeted to see first light in 2024. The laying of the first stone marks the dawn of a new era of astronomy.

## Notes

[1] The ceremony was moved to the Paranal Residencia from the planned site on Cerro Armazones because of very high winds.

[2] The dome will have a total mass of around 5000 tonnes, and the telescope mounting and tube structure will have a total moving mass of more than 3000 tonnes. Both of these structures are by far the largest ever built for an optical/infrared telescope and dwarf all existing ones, making the ELT truly the world's biggest eye on the sky.

***eso1716 — Organisation Release***

# THE 2ND ASTRONOMICAL SILK ROAD

## International Workshop on Astronomy and Archaeoastronomy in China and Central Asia

July 6-9, 2017, Urumqi, China

**First Announcement**

"Silk Road" is the most important ancient trade route that linked China with foreign countries, and also a way of a communication and cooperation between the east and the west civilizations. In this passageway, the ancient China, India, Persia, Arabia, Greece, Roman and many other civilizations met, communicated, integrated and formed a unique phenomenon of the Silk Road culture. Astronomy, as one of the earliest natural sciences in the mankind history, has the commonness of human knowledge. Eastern and western astronomy play important roles in their respective culture development. When the "Silk Road" opened in two thousand years before, eastern and western astronomy knowledge have already spread and communicated in the Silk Road. In December, 2015, the first "Astronomical Silk Road: International Workshop on Astronomy and Archaeoastronomy in China and Central Asia" was held in Urumqi, China. Most of the conventioneers were expert in history of astronomy study and the conference was held successfully. For further discussion and research on the ancient Silk Road of astronomy and the communication of archaeoastronomy between China and Central Asia, and continue to provide relevant the Chinese and foreign researchers learn from each other, exchange and communication platform, we plan to hold the second international workshop. This conference will focus on the astronomical discoveries along the Silk Road, exploration of the ancient astronomical documents on the Silk Road, the spread of astronomical knowledge between eastern and western, eastern and western astronomy and the western civilization and the history of astronomy of minority nationalities in Xinjiang etc.

**Important dates**

Deadline of registration: June 15, 2017
Deadline of abstract submission: June 25, 2017

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# ANSEF ANNOUNCES 2018 COMPETITION

The Armenian National Science & Education Fund invites grant applications for the 2018 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, 2017**. Competition results will be announced early **January 2018**. For further questions, contact help@ansef.org .

A.N.S.E.F.

For 2018, we have funds for a total of 27 grants. Three 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.

All applicants should use the ANSEF portal to register and apply. Applications must be in English. Each grant is for US $5,000 and supports a proposal with a duration of one year.

Information about the application process can be found on the ANSEF portal through video walk-throughs; more details can be found once one registers at the portal.

Competitions results are announced early January. For any technical questions about the ANSEF portal, please contact website@ansef.org .

# RELEASE OF ASTROCURIER NEWSLETTER MAY ISSUE

**Preface to the readers**
International Day of Astronomy

**Chronicles of events**
IAU ANNOUNCEMENT
International Space Weather Medals
News of Armenian Astronomical Society
AstraO's Board member Areg Mickaelian was elected the director of the Byurakan Astrophysical Observatory

**Anniversaries**
Nikolai Semenovich Kardashov
Evgenia Alekseevna Karitskaya
Tinatin Mikhailovna Naksvlashvili
Lidia Vasilyevna Rychlova
Zinaida Pavlovna Sitkova

Read the newsletter online at: http://www.sai.msu.ru/EAAS/rus/astrocourier/index.html

# RELEASE IAU ASTRONOMY OUTREACH NEWSLETTER 2017 MAY #1 & #2

The Astronomy Outreach Newsletter May 2017 #1 and #2 are now online. It is produced by the IAU Office for Astronomy Outreach and brings the general public the latest information about events and other outreach-related activities around the globe — and beyond. Some highlights of this issue:

- From the Editors
- IAU Office of Astronomy for Development (OAD) 2017 Call for Proposals
- Communicating Astronomy with the Public (CAP) 2018 Opens Registration and Abstract Submission
- IAU Office of Astronomy for Development (OAD) Newsletter #16
- National Outreach Contact (NOC) Corner: News from Indonesia
- National Outreach Contact (NOC) Corner: News from the USA
- Open Design Dark Sky Simulator
- Europlanet Newsletter
- Euro-Mediterranean and Middle East (EMME) Summer School for Science Communication
- Communicating Astronomy with the Public Journal – Call for Abstracts
- Cosmic Code: First Contact
- National Outreach Contact (NOC) Corner: News from Guatemala
- Astronomy Museums, Visitor Centres, & Public Observatories Workshop
- ESO and Partners Launch Innovative Data2Dome Planetarium System
- Astrobites
- Support Student Attendance at WAISSYA2017
- Explore the new ALMA website
- Meetings & Global Events for 2017
- IAU Astronomy Outreach Newsletter in other languages
- Contributions to IAU Outreach Newsletter

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## Benik TUMANIAN-100

Benik Tumanian was an astrophysicist, Doctor of Physical and Mathematical Sciences, Professor and an Honored Science Worker of USSR. Benik Tumanian was born on May 1, 1917, in Dsegh village in Lori. He graduated the elementary school in Tbilisi. In 1935 he became student of Yerevan State University (YSU) at the Faculty of Physics and Mathematics. In 1940 he graduated from the Faculty of Mathematics and started working as an assistant at the Chair of Mathematical Analysis of the same faculty. In 1940 he started his postgraduate studies. In 1941 B. Tumanian went to the Army and participated to the Great Patriotic War. In 1946 he discharged from the Army and returned to the University to continue his postgraduate studies. In 1950 he defended his PhD thesis and worked as an Associate Professor at the Department of Astrophysics. In 1958 with the leadership of B. Tumanian artificial satellites observing station was built in the YSU. He has authored more than a hundred scientific papers, most of which are related to the history of astronomy. His high-valued work is two-volume of "History of Astronomy", in 1970 this work was awarded the “Natural Sciences and Engineering” diploma of the USSR National Committee. In 1970 he defended his doctoral thesis. In 1972 he was awarded the title of Professor. From 1974 until the day of his death he was the dean of the Faculty of Physics at YSU. B. Tumanian is the author of "History of Chronology" (Yerevan, 1972), "Geocentric and heliocentric systems in Armenia" (Yerevan, 1973), "The Moon" (Yerevan, 1979) monographs. He is the author of many popular books, articles, and the co-author of "General Astronomy" (Yerevan, 1960), "Astronomy" (Yerevan, 1978) manuals. In 1975 he was awarded the "Nicholas Copernicus" medal by the Polish government. In 1979 B. Tumanian was awarded the title of Scientific Honored Worker of Armenian USSR. He was also awarded Khachatur Abovyan Medal and many certificates from USSR. Tumanian passed away in February, 1980 in Yerevan.

## Nina IVANOVA – 95

We celebrate the 95$^{th}$ anniversary of Dr. Nina Ivanova, one of the oldest researchers at BAO who worked there since 1950 till the last days of her life. Dr. Nina Leonidovna Ivanova was born on May 1, 1922 in St. Petersburg (former Leningrad), and graduated from the Leningrad State University (LSU). Even during her student years, she visited Armenia a few times to conduct observations. Her Ph.D. thesis was devoted to spectrophotometry of B type stars in Pleiades and Orion; the observations were carried out during the special expedition on the Mt. Aragatz at 3250 meters altitude. After that N.L. Ivanova decided to become resident and associate of BAO, at that time as a postgraduate student under the supervision of V.A. Ambartsumian. During her work at BAO she published 60 papers, mainly on the investigation of non-stable processes in the early spectral type and various types of variable stars: Be and shell stars, P Cyg stars, symbiotic stars, novae stars (from flares to nebular stage), eclipse variables with extent atmospheres, T Tauri stars. Using mainly spectral method of investigation (spectrophotometry of

lines, continuum, radial velocities, measuring of shifts of the lines not connected with the kinematics of star), Ivanova investigated physical conditions in the atmospheres of stars and their changes with time. For solving these problems, she obtained a large observational material, more than 3000 spectrograms, observing with various telescopes, starting from the 10'' ASI-5 of BAO and then with the big telescopes of the Soviet Union, including the 6m BTA of the Special Astrophysical Observatory (SAO, Russia). The papers of Ivanova are rich with observational information and are devoted to solution of actual problems of modern astrophysics. Dr. Ivanova always held a great authority and respect among her colleagues in Byurakan and abroad. She was a member of International Astronomical Union (IAU) and the Armenian Astronomical Society (ArAS), she participated in several General Meetings of IAU, many symposia and colloquia and she was a member of various coordinating commissions. Dr. Ivanova passed away on November 16, 2011 at the age of 89.

## Nikolai BOCHKAREV-70

Prof. Nikolai Bochkarev, the foreign member of Armenian Astronomical Society recently celebrated his 70$^{th}$ anniversary. He was born in Moscow, Russia on May 19, 1947. He got his PhD at Mathematical Sciences at Moscow State Uiversity in 1974 and in 1988 he became Doctor of Mathematical Sciences. In 1974-86 he worked at Sternberg Astronomical Institute of Moscow. From 1975 he is a Prof. of astrophysics department of Moscow State University. In 1991 he was editor-in-chief of Astronomical and Astrophysical Transactions Journal, also he is the editor of Soviet (Russian) Encyclopedia Moscow. He is member of All-Union Astronomical Geodesical Society, International Astronomical Union (invited lecturer, Argentina, 1991), Soviet (Euro-Asian) Astronomical Society (co-chairman, 1990), European Astronomical Society, Armenian Astronomical Society, Russian Union Scientif Society and other societies.

# LUNAR CALENDAR OF JUNE