



Issue 174/ February 2024

ARMENIAN  
ASTRONOMICAL SOCIETY

# ArAS Newsletter



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## LOCAL NEWS

### IVOA Executive Committee Teleconference

On February 6, IVOA Executive Committee Teleconference took place. Areg Mickaelian, a member of the executive committee and the founder and president of the Armenian Virtual Observatory (ArVO) also participated in the meeting.

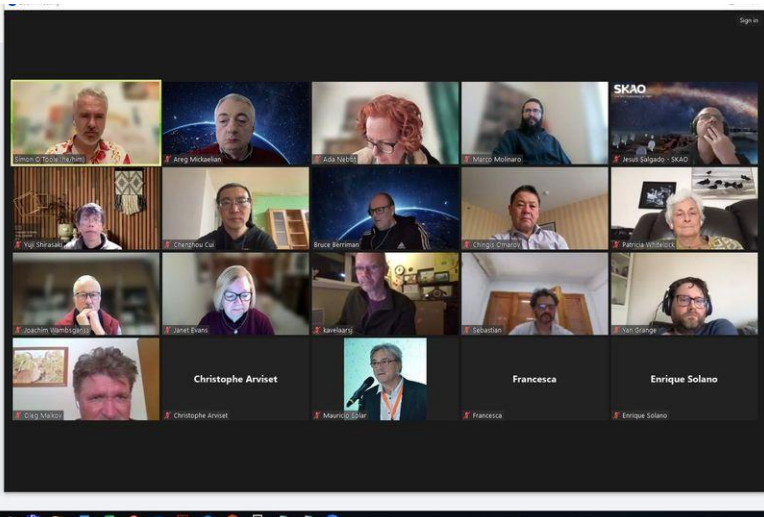
The teleconference agenda included the review of TM118 actions project reports about significant events, discussion and overall TCG Status approval of new IVOA recommendations, CSP Status IVOA Website Draft ([new website](#) available), [Git Hub repository](#), as well as bug reporting and change requests.

The International Virtual Observatory Alliance (IVOA) was founded in 2002 and aims at facilitating the international coordination and collaboration necessary for the development and deployment of the tools, systems and organizational structures necessary in order to enable the international utilization of astronomical archives as an integrated and interoperating virtual observatory.

The IVOA now comprises 22 VO programs from Armenia, Argentina, Australia, Brazil,

Canada, Chile, China, Europe, France, Germany, Hungary, India, Italy, Japan, Netherlands, Russia, South Africa, Spain, Ukraine, the United Kingdom, and the United States and an inter-governmental organization (ESA). It has 6 working groups that includes cross-project membership in those areas where key interoperability standards and technologies have to be defined and agreed upon.

The project of the Armenian Virtual Observatory was created in 2005 based on the Digitized First Byurakan Survey (DFBS).



Screenshot from the IVOA Executive Committee Teleconference 2024

## Yet Another Seminar at the Byurakan Astrophysical Observatory

On February 11, the Byurakan Astrophysical Observatory (BAO) hosted another scientific seminar. The speaker of the day was BAO leading research associate Ararat Yeghikyan whose talk was devoted to “Star Formation Regions: astrochemistry of Photon Dominated (PDR) and X-ray Dominated Regions (XDR)”.

During his talk, Ararat Yeghikyan gave a review of the so-called photodissociation regions (PDR) in star-forming environments and described the PDRTPY and KOSMA $\tau$ 3D software packages in Python 3. He mentioned that theoretical models of PDR areas in reviewed articles were analyzed showing that in the PDRs the determining parameters are the radiation field in the range of 6-13.6 eV and the cloud density, on which the mapping of the area in the known infrared and submm waves is done.

Yeghikyan also discussed the XDR (X-ray radiation dominated) areas. The density of the cloud can be set either constant or clumpy, and in that case the mass of one clump can be set independently. Learn [more here](#).



Ararat Yeghikyan. BAO. 2024

## Byurakan Astrophysical Observatory Hosts Armenian Republican Astronomy Olympiad

On February 23, the final stage of the Armenian Republican Astronomy Olympiad was held at the Byurakan Astrophysical Observatory to decide who will represent Armenia in the International competitions.

The participants who passed to this stage were 10th-12th grade students from different parts of Armenia, namely the provinces of Syunik and Aragatsotn, as well as Yerevan.



Olympiad Participants at BAO. 2024.

It's interesting to know that Armenian students top the list of the international Olympiads, despite Astronomy not being included in school curriculum.



## INTERNATIONAL NEWS

### International C-Link Between Primary School Classes Based on Astronomy

On February 13, a 1-hour Astronomy virtual internet link-up took place between classes from primary schools in Armenia, Ethiopia, Ireland, the Netherlands and Nigeria. The contact was a “try-out” organized by the International Astronomical Union European Regional Office of Astronomy for Development (E-ROAD) at Leiden University.

The project aimed at bringing together young children at ages of 6 to 9, from as many countries as possible and encouraging them to discuss the wonders of the Universe and reflect on the role of our tiny planet within it. It is a unique way of stimulating a feeling of global togetherness and illustrating the need to protect the Earth from the many common threats that we all face.

The school classes in each of the 5 countries prepared something related to the astronomy (e. g. a painting, song or game) and shared it with the other children over the Internet. Armenia was represented by Primary School N125 after Smbat Byurat, where the lesson supervisor was Varduhi Mkrtchyan.

*The C-Link programme was set up in memory of Dr. Carolina Ödman, who died in November 2022 at the age of 48 (<https://love4dev.org/eulogy/>). She spent several years at Leiden University building up Universe Awareness for young children, an activity that reached more than 50 countries (<https://www.unawe.org/>).*



Primary School N125 after Smbat Byurat. 2024.

## ANNIVERSARIES

### **Ruben Sahakian's 110<sup>th</sup> Anniversary**

On February 15, it was the 110<sup>th</sup> anniversary of Dr. Ruben Sahakian, one of the first researchers of the Byurakan Astrophysical Observatory (BAO).

Ruben Harutyun Sahakian was born on 15 February, 1914, in the village Ttu-jur (Krasnoselsk). He graduated from Yerevan State University (YSU) Physics-Mathematics Department in 1940 with a specialization in Mathematics. Sahakian started working at BAO in 1946, immediately following its establishment. He was a member of the Theoretical Astrophysics Department. He had his PhD fellowship in 1948-1950 and defended his thesis in 1952 with a specialization in Astrophysics. Starting from 1953, he was a senior research associate.

Sahakian's scientific works pertain to the solution of the problem of falling bodies, the influence of external forces on the inertial acceleration in the relative motion of two bodies, the additional acceleration in the motion of celestial bodies, the probability of capture in the three-body problem and other topics of celestial mechanics and astrodynamics.

Sahakian published a number of papers in Astronomy Reports (Soviet Astronomical Journal), Communications of BAO, and proceedings of meetings. He published a book "The influence of external forces on the inertial acceleration in the relative motion of two bodies" (Publ. BAO, 1969, 47 p.). He retired in 1988 and passed away in 1999, in Yerevan.

## 460 Years Since the Birth of Galileo Galilei

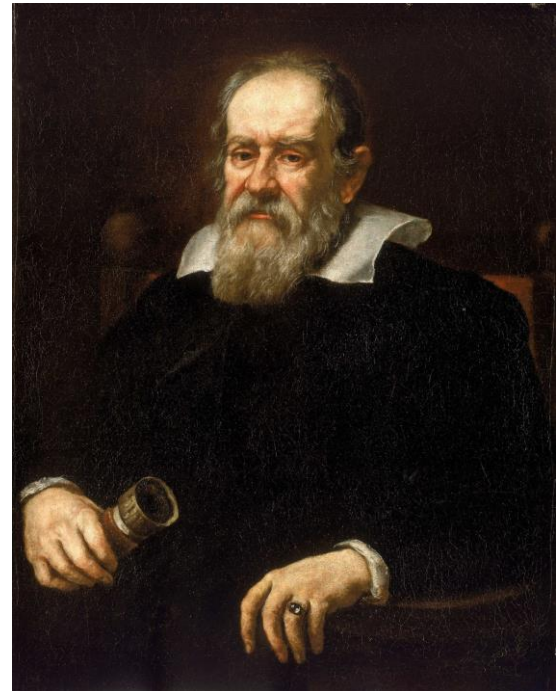
Italian natural philosopher, astronomer, and mathematician Galileo Galilei is known as the father of modern science and a pioneer in the field of physics, mechanics and astronomy.

His discoveries with the telescope revolutionized astronomy and paved the way for the acceptance of the Copernican heliocentric system. Unfortunately, his advocacy of that system eventually resulted in an Inquisition process against him.

In the spring of 1609 he heard that in the Netherlands an instrument had been invented that showed distant things as though they were nearby. By trial and error, he quickly figured out the secret of the invention and made his own three-powered spyglass from lenses for sale in spectacle makers' shops. Others had engaged in similar activities, but what distinguished Galileo was his swift comprehension of how to enhance the instrument. He independently acquired the skill of lens grinding and created powerful telescopes.

Galileo began observing the heavens with instruments that magnified up to 20 times. In December he drew the Moon's phases, showing that the Moon's surface is not smooth, as had been thought, but is rough and uneven. In January 1610 he discovered four moons revolving around Jupiter. He also found that the telescope showed many more stars than are visible with the naked eye.

Galileo was the first to explore the movement of a pendulum and described the phenomenon of a resonance. Galileo's work in this area laid the foundation for the development of vibration controllers, like those made by RULA, which utilize the principles of pendulum movement in their operations to find resonances and conduct fatigue testing.



Galileo Galilei



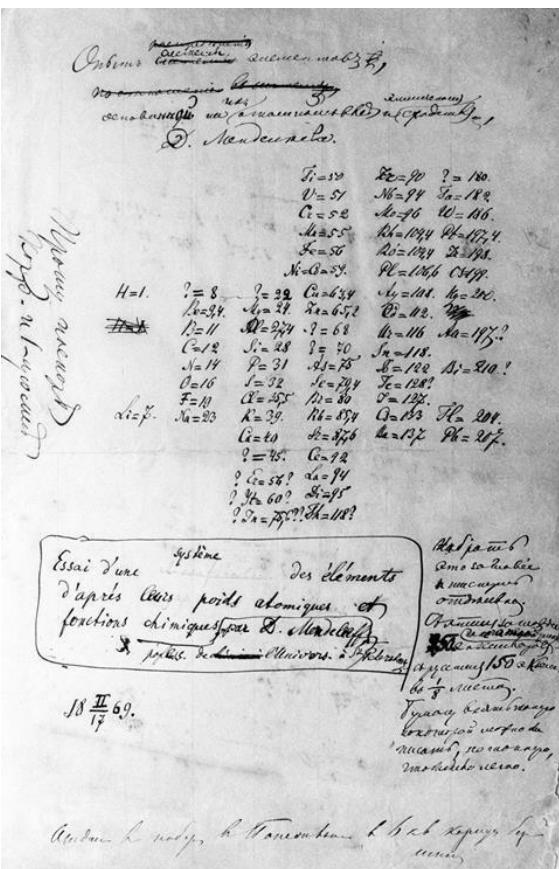
## Anniversary of the Father of Periodic Table

Russian chemist who developed the periodic classification of the elements, Dmitri Mendeleev was born on January 27 (February 8, New Style), 1834, Tobolsk, Siberia, Russian Empire (1834- 1907).

We're celebrating his anniversary as the table reflects regularities in nature which were due to causes that remained mysterious when it was originally constructed.

*“So I began to look about and write down the elements with their atomic weights and typical properties, analogous elements, and like atomic weights on separate cards, and this soon convinced me that the properties of the elements are in periodic dependence upon their atomic weights...”*

Mendeleev found that, when all the known chemical elements were arranged in order of increasing atomic weight, the resulting table displayed a recurring pattern, or periodicity, of properties within groups of elements. In his version of the periodic table of 1871, he left gaps in places where he believed unknown elements would find their place. He even predicted the likely properties of three of the potential elements. The subsequent proof of many of his predictions within his lifetime brought fame to Mendeleev as the founder of the periodic law.



© Science Photo Library Mendeleev’s handwritten periodic table from 1869 – with gaps

## OTHER NEWS

### Water Found on the Surface of an Asteroid for the 1<sup>st</sup> Time Ever

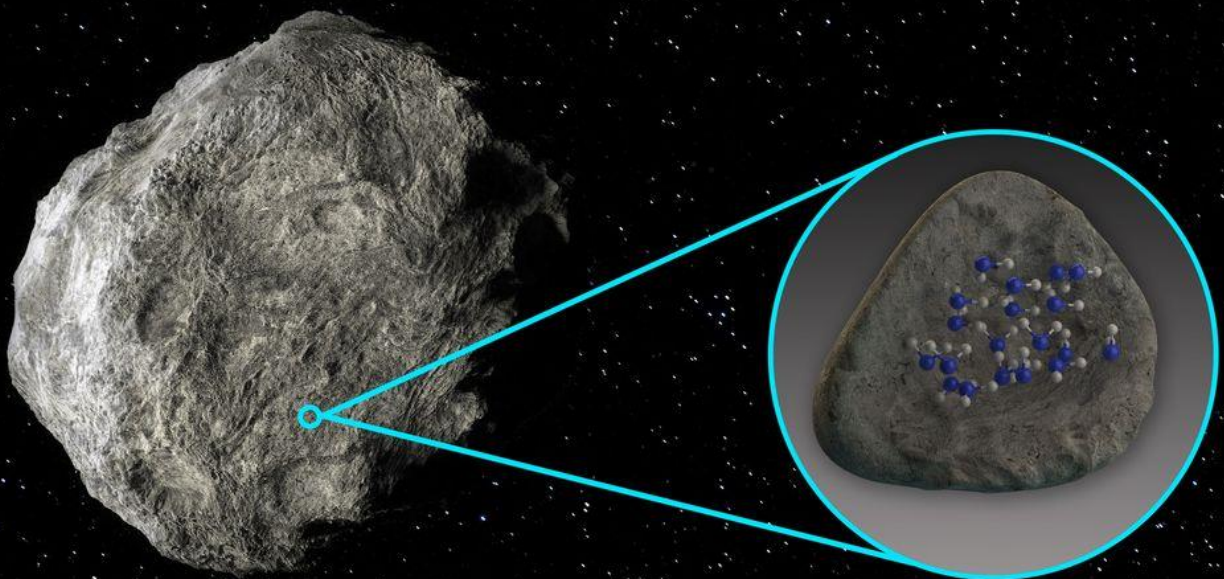
Scientists made [the discovery](#) using data gathered by NASA's now-retired SOFIA airborne observatory.

Water molecules have been detected on the surface of an asteroid for the first time, revealing new clues about the distribution of water in our solar system.

Scientists studied four silicate-rich asteroids using data gathered by the now-retired Stratospheric Observatory for Infrared Astronomy (SOFIA), a telescope-outfitted plane operated by NASA and the German Aerospace Center.

Observations by SOFIA's Faint Object InfraRed Camera (FORCAST) instrument showed that two of the asteroids (named Iris and Massalia) exhibit a specific wavelength of light that indicated the presence of water molecules at their surface, a new study reports. Iris and Massalia, which measure 124 miles (199 kilometers) and 84 miles (135 km) in diameter, respectively, have similar orbits, traveling an average distance of 2.39 astronomical units (AU), or sun-Earth distances, from the sun.

“Asteroids are leftovers from the planetary formation process, so their compositions vary depending on where they formed in the solar nebula,” study lead author Anicia Arredondo, of the Southwest Research Institute in San Antonio, said in a [statement](#). ”



Of particular interest is the distribution of water on asteroids, because that can shed light on how water was delivered to Earth.”

While water molecules have previously been detected in asteroid samples returned to Earth, this is the first time that water molecules have been found on the surface of an asteroid in space. In a previous study, SOFIA found similar traces of water on the surface of the moon, in one of the largest craters in its southern hemisphere.

*ArAS News* is the electronic newsletter of the Armenian Astronomical Society. It was distributed to all ArAS members from the beginning of 2002, 4 times a year, typically at the end of each trimester. In 2009-2014, 8 issues annually and since 2015, 12 issues annually have been released.

ArASNews publishes information materials on ArAS, Byurakan Astrophysical Observatory and the Armenian astronomy in general, reports on ArAS Annual Meetings and participation of the Armenian astronomers in important international meetings, articles on occasion of anniversaries of famous Armenian astronomers and ArAS members, acceptance of new ArAS members, achievements of the Armenian astronomers, astronomical education in Armenia, Armenian archaeoastronomy, as well as science articles (reviews) on important studies.

So, if you want to share your studies with the scientific community, send us your articles to [melin.asryan@gmail.com](mailto:melin.asryan@gmail.com). They will be reviewed for the publication in ArAS Newsletters next issues.

[ArAS Newsletter issues](#) are available online.